Simulation-Based Evaluation and Recommended Guidelines for the VLCS *Royal Princess*

Proposed Operations in Southeast Alaskan Pilotage Waters, 2019

Figure 1: Royal Princess simulation model. Photo courtesy of Captain Levi Benedict ©.

Prepared by the Southeast Alaska Pilots Association

Based on Simulations Conducted at Alaska Vocational Technical College (AVTEC), Seward, Alaska December 8–13, 2018

Report Version 3.7
Prepared: 4/1/2019

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Disclaimer

The research and findings in this report reflect the cooperative work product of the SOUTHEAST ALASKA PILOTS' ASSOCIATION (SEAPA) and HOLLAND AMERICA GROUP (HAG). This report, and the safe operational guidelines recommended herein are founded on simulation-based research. The results and findings are based on data accumulated in the process of that research as well as the use of the best available technology and the good faith effort of the participants. The use and application of these safe operational guidelines (Operational Envelope) do not relieve the prudent mariner of the obligation to exercise safe navigational practices and do not hold SEAPA or HAG liable. This report is intended for further consideration by SEAPA and HAG to enact the recommendations contained herein.

Acknowledgements

Many thanks are due to a great many people for their efforts expended in the course of this project. First and foremost, the SEAPA Members, Officers and Board of Directors who committed significant personal funds, personal time and effort in this pursuit of due diligence. Mr. George Burkley of the Maritime Pilots Institute, for not only producing a magnificent simulation model, but also taking-on the monumental task of forging a nonwriter pilot's ideas into this report. SWAPA for jumping in to share the costs of the simulation model, along with the participation of Captains Josh Weston, Brian Vermette, and Jeff Pierce. SEAPA's Captain Jill Russell for taking on the task of administrator for this project, her many hours of preparation, advice and expertise in the field of simulation, and for keeping us all on task during the week of simulation work. The simulation facility AVTEC, in Seward Alaska, for providing a highly professional and excellent facility and support. The SEAPA VLCS (v2) Committee Members -Captains Hans Antonsen, Tomi Marsh, Levi Benedict and Norbert Chaudhary for their significant efforts during the course of this last year. SEAPA Pilots Captains Jeff Baken, Rich Preston, Steve Axelson, Frank Didier, Scott Jones and Kathy Flury for their participation in the simulations. Our industry partners from Holland America Group/Princess Cruises, Captain Tim Stringer, and Captain Alan Wilson. *Royal Princess's* Captain Nick Nash, Staff Captain Allessandro Genzo as well as all the officers and crew. Captain Bill Kennedy, a fellow SEAPA pilot who stepped-up at the last minute to join an observation trip aboard the Royal Princess to take part in the simulation model data collection effort. Amak Towing master's, Captain Lonnie Adams, and Captain Mike Korsmo. CLAA agent, Mr. Rick Erickson. USCG COTP Juneau, Captain Steve White, BMP members of the Alaska Marine Board, in particular Mr. Charles Ward and Captain David Artz (AMP), for their interest and strong support.

Introduction

This study is the third in the series of joint simulation-based studies to apprise cruise companies and SEAPA of operational limits and to create safe operating guidelines for VLCS (Very Large Cruise Ships) operating in Southeast Alaska waters. The first study, completed in December of 2017, studied the Norwegian Cruise Lines (NCL) vessel *Norwegian Bliss.* The Norwegian Bliss report may be found on Southeast Alaska Pilots' website.[1] In 2019, SEAPA membership chartered a second VLCS (v2) committee to conduct two additional studies for the Royal Caribbean International (RCI), "Ovation of the Seas", and Princess Cruises "Royal Princess" due to these vessels' pending deployment to Southeast Alaska. This report addresses the findings of these collaborative studies conducted by SEAPA and Princess Cruises/Holland America Group, for our collective work for the *Royal Princess,* recognizing the separate roles with common goals in the effort to "protect life and property, and the marine environment"[2], in an economically achievable manner.

The primary goal of this simulation-based risk assessment, and corresponding simulation evaluations, was to identify the environmental and operational parameters at which undesirable incidents began to happen, defined by the SEAPA VLCS (v2) Committee as the Edge Of the Comfort Zone (**EOCZ**). The standard of care used by the Committee as a basis for these recommended guidelines was if a simulation maneuver could be reliably completed by an average Marine Pilot, on an average day, while achieving consistent, above average results. Evaluation scenarios were designed to address the challenging operating maritime environment in Southeast Alaska, including restricted channels, fjords, and bays with unpredictable ice concentrations (from glacial calving); as well as, high winds, large tidal ranges, and strong tidal currents. The Committee utilized a framework closely based on the previous study work for Norwegian Bliss for identifying and evaluating the level of risk for simulated evolutions. The base framework involved: 1) the professional judgment of a senior mariner; 2) the measurement of operating performance according to predetermined risk criteria; 3) a separate, individual debrief interview of the master; 4) a separate individual debrief of the pilot (to assess their perceptions of risk); and 5) correlation, comparison, and resolution of the previous four measures by the Committee as a whole.

Various industry stakeholders observed the simulation efforts during the course of the two studies including (2) Amak Towing Company tug masters, The Captain of the Port (COTP) for US Coast Guard Sector Juneau, Cruise Lines Agencies of Alaska (CLAA), Southwest Alaska Pilots Association (SWAPA), Alaska Marine Pilots (AMP), Hawaii Pilots, The Marine Pilot Coordinator (MPC) for the Alaska Board of Marine Pilots. The stakeholders once again responded favorably to the collaborative efforts of the Committee.

[1] https://www.seapa.com/
[2] AS 08.62.157

Summary

To initiate this study for the Royal Princess, the SEAPA committee engaged in thorough data-gathering for the vessel which included an observation trip in November of 2018 during a 9-day voyage, followed by a week of full-mission simulation conducted at AVTEC in Seward, Alaska, for various Southeastern Alaska ports and waterways.

Simulations were conducted during the week of December 8-13, 2018, by a team made up of nine members of the Southeast Alaska Pilots Association (SEAPA) and two representatives from Princess Cruises/Holland America Group, including Captain Tim Stringer (Regal Princess Master) of a Royal-class Passenger vessel and Captain Alan Wilson (VP Marine, Fleet Operations). The project team completed thirty-seven simulation runs covering four geographic pilotage areas, simulating the most unfavorable and frequent wind and current conditions. The objectives of the simulations were to identify pilotage navigation scenarios which presented challenges for safe operations of the Royal Princess.

Overall the simulations produced serious challenges in wind and current conditions common to the SEAPA Pilotage area. The pilots reported that the Royal Princess model displayed unusually high drift "crab" angles and poor steering response as compared to their everyday safe operation experiences with cruise vessels presently calling in region. This steering response has been described by experienced pilots as 'similar to a twin-screw single rudder ship but of greater size, at slow speed'[3]. The recommendations in this study strictly limit port calls and necessitate restricted operating parameters to ensure safe operations of the *Royal Princes*s in Southeast Alaska waters.

Figure 2: Cruise Vessel Royal Princess

[3] Note, twin propeller ships with a single rudder in-between are known by pilots to steer poorly.

Principal Dimensions - Mega Ship – *Royal Princess*

The Royal Princess is a large passenger vessel of 142,714 Gross Tons, with a length of 1083' (330m), maximum structural beam at the "SeaWalk" of 155' (47m), Air draft of 198.4' (60.5m), and summer-load draft of 29' (8.55m). She is outfitted with conventional propulsion composed of two straight shaft inboard turning propellers (18MW each), conventional - spade rudders, as well as (3) Bow and (3) Stern tunnel thrusters with a combined power reported as 10,134hp at each end. Lateral windage, also known as "sail area" for this vessel is 13,446 square meters. Passenger maximum is 3537, with 1342 crew for a total of 4879. This vessel will be the largest conventional propulsion vessel to date to engage in the Alaskan passenger ship trade.

Figure 3: Royal Princess – Principal Dimensions

Findings

The following findings are based upon simulations of transits in and out of Ketchikan, Tracy and Endicott Arm, Skagway, and Juneau.[4] Early simulation outcomes influenced the selection of later simulations, as challenge scenarios were identified by the research process. Ice work navigation in the simulation runs were found to be generally typical in ship behavior for this class of vessel and additional study effort for ice transits was limited. Emphasis was focused on transits of the Ketchikan East Channel navigation area vicinity of California and Idaho rocks and North Tongass Narrows vicinity of the shipyard and the airport areas, as well as reduced-speed harbor transits in Ketchikan, Skagway and Juneau.

Primary Findings: From the thirty-seven runs conducted in simulation are:

1. *Royal Princess* exhibits extremely poor low speed handling characteristics. This vessel behavior resulted in extreme difficulty for Pilots to manage directional stability during transits. This poor steering behavior occurred in the commonly encountered conditions of 15 knots wind, and no current. The significant challenges to steer the ship in these conditions during simulation led pilots to engage in emergency ship handling practices to accomplish normal transits. This was of particular note during simulations run in the narrow channels of the Ketchikan area and Tongass Narrows.
2. Minimum steering speed is listed as 4 knots as per the wheelhouse poster. Simulations found that even at speeds of 7 to 8 knots the vessel is extremely sluggish with thrusters often required to maintain or regain positive control of the track of the vessel.
3. The vessel requires speed to turn, with no response to rudders without way on. She has limited to no response to a kick-ahead to turn and displays no ability to impart a "twisting moment" to turn the ship given use of opposite engines and rudders alone.
4. The vessel displays unusually high crab-angles in moderate crosswind and cross current conditions, providing scant allowance for any single-point failure, or even minor distraction in piloting maneuvers.
5. Due to the vessel's thruster limitations and poor low-speed steering capabilities, slow approaches and berthing maneuvers in the port areas were generally impaired given moderate winds of 20 knots and current velocities of 1 to 2 knots.
6. The vessel's thrusters are effective to hold the ship, dead in the water, given beam wind conditions of 25-27 knots or less without consideration for current.
7. The ship behavior results of these simulations are similar to those provided by Princess Cruise Lines for other ports the vessel currently calls upon. [5]

[4] Due to simulation capabilities, ice transit simulations were conducted in Tracy and Endicott Arm as a substitute for Yakutat/Glacier Bay operations

[5] Carnival Corporation studies use a computer "track pilot" to guide vessels during simulation research. Study results of computer-guided vessels in simulation and human pilot-guided vessels in simulation are noted as not equivalent by the SEAPA Pilots.

Findings: Use of Tugs

A study utilizing tractor tugs to control the Royal Princess was concurrently conducted by SEAPA pilots, with input from experienced tug operators, to evaluate the use of tractor tugs to mitigate risk to ports particularly for VLCS class vessels. Because of the diminished handling characteristics for this particular VLCS vessel, the tractor tug study found that even the conventional tugs presently in region were of benefit in lower environmental conditions to improve handling of the Royal Princess and to meet SEAPA's standards of care. The report recommends a minimum of two 70-ton bollard pull (BP) tractor tugs be deployed to the ports of Ketchikan, Juneau and Skagway. Tugs of this capability are not available in the region with only one tractor tug in region estimated to have a 50-ton BP rating. All other tugs in region are conventional propulsion (significant reduction in capability to assist) with a maximum estimated rating of 33-ton BP.

Findings: Known Limitations of Simulation

The SEAPA Pilots recognize that simulation is an excellent tool for general studies and is valuable for informing the decision process. SEAPA also recognizes that simulations, both this current AVTEC effort and the efforts conducted by others in the port studies prepared by Princess Cruise Lines, have inherent limitations in the reliance on mathematical models and assumptions that may be incongruent with actual wind, currents, ship behavior and other intangible factors experienced in actual operations.

Findings: Request for Additional Onboard Data

To clarify and mitigate these concerns, the SEAPA Pilots have requested a selection of actual on-board data to assure the Royal Princess can be operated in Southeast Alaskan waters according to a general standard of care. SEAPA expects that the response from Princess will include graphical track plots of the vessel transiting similar-sized narrow, windy, and high current areas, with the corresponding ship data of crab angle, vessel speed, wind and current conditions, and the engine and rudder orders used to maintain positive and safe control of the vessel.

The SEAPA Pilots extend their thanks for the participation and support from Princess Cruises/Holland America Group, in the conduct of this important research. The study team agreed it was a privilege to be able to participate in these simulations, and that this process is an essential part of fostering the safety of navigation and the protection of the environment, people and property of the State of Alaska.

Figure 4: Simulation Image of the Royal Princess Model

Simulation Debrief Notes – Navigation and Controllability

1. The vessel has side-thruster power capable to maneuver to a maximum of 25-27 knots of wind on her beam (Design criteria – 25kn)
2. At a speed through the water of approximately 10 knots, the ship carries between 9^{o} and 12^{o} of crab angle given 20-25kn of beam wind.
3. Steering the vessel with current abaft the beam of velocity greater than 1kn given ship's speed through the water of 7 knots or less causes her to become sluggish in her steering, requiring hard over rudder and kicks ahead.
4. The vessel is docked in the final 2-3 meters to a berth using closed circuit cameras due to the stowed position of lifeboats overhanging the side of the ship. Direct visual sightline of the berthing line is impeded for the final approach alongside.
5. The vessel has a 76.4m blind zone ahead only visible to the conning officer by using a ('dolphin') camera.[6]
6. The vessel's bulbous bow is exceptionally long, projecting nearly to the furthest extension of the bow on deck.
7. When the ship is dead in the water, the bow thrusters are stronger in their effect on the vessel's behavior than the stern thrusters.
8. The rudders may be used fully during high speed astern maneuvers.
9. At speeds of 4 to 5 knots astern the vessel will "answer" to her rudders at an angle of 15 degrees.[7]
10. For vessel slow down maneuvers at harbor speeds, the Royal Princess requires 50% power astern or greater for the engine power to be effective in slowing the ship.
11. The crew typically do not maneuver the vessel in tight areas using the computer "Track Pilot" as the system has a tendency to "drag the stern" in turns. The captain (*Regal Princess*) reports he uses manual steering for critical maneuvers.
12. The vessel has two wind speed anemometers, one forward and one aft. The aft unit is particularly useful during backing maneuvers.
13. The typical method to maneuver the Royal Princess in other ports (outside of Alaska) is to maintain a higher harbor transit speed of 7 to 8 knots and then to sharply back the ship in the vicinity of the berth. This maneuver is used to avoid transiting at slower 4-6 knots which is a speed that the ship is sluggish and impaired in her steering.
14. The Royal Princess is reported to use the services of escort tractor tugs in other ports. Interviews of various PCL Masters state this is necessary in winds of 20 knots or greater.
15. The Royal Princess is equipped with escort-rated chocks and bollards for center-lead forward and center-lead aft escort towing services. Bollard pull rated for 75 tons as reported by VP Marine Ops.

[6] "dolphin" camera and blind zones noted on vessels Pilot Card.

[7] "Answering to her rudders" means that the ship will follow the direction of the rudder angle. Note: many ships do not respond to their rudders when going astern.

Recommendations

Given the outcome of the simulations and review of reports conducted by Princess Cruises of other port areas, the following recommendations are offered by SEAPA:

1. Request a selection of actual on-board data to assure the *Royal Princess* can be operated in Southeast Alaskan waters according to the general standard of care.
    a. Response will include graphical track plots of the vessel transiting similar-sized narrow channel, windy, and high current areas, with the corresponding ship data of crab angle, speeds, wind and current conditions and the engine, thruster and rudder orders used to maintain positive and safe control of the vessel. These must be verified to be accomplished in hand steering. Stockholm and Oslo (Drobak Narrows) were suggested during team simulation discussions.
2. Recommend against any port entry at Ketchikan until SEAPA VLCS Committee review of actual ship operational data, from the above request, confirms and establishes safe operational envelope parameters.
3. If safe operational parameters are confirmed by the VLCS SEAPA Committee for *Royal Princess* to allow port calls to Ketchikan, strict adherence to operational envelope guidelines is recommended particularly in regard to rerouting arrivals via the Guard Island Pilot Station. See, Figure 6:Operational Envelope –
4. Guidelines for the Operational Envelope are intended as a baseline for operational limits between SEAPA pilots and Masters of the *Royal Princess* for the 2019 cruise season. The intent is to actively monitor and revise the proposed guidelines as appropriate for safe operations. Additionally, the Committee intends to apply feedback from the actual *Royal Princess* to more completely tune the hydrodynamic model, if warranted.
5. A debrief with SEAPA and Princess Cruises/Holland America Group, should be conducted following the initial 2019 season to reevaluate and edit the Operational Envelope guidelines based on the actual operation data from Southeast Alaska transits and maneuvers.

Addendum to Recommendations

The VLCS committee submitted feedback on recommendations directly to PCL via teleconference and email in early February, prior to the completion of the final report. This feedback specifically addressed concerns related to the VLCS committee's study recommendations, which advised against 'any entry for the port of Ketchikan'. This recommendation as a result of study findings indicating poor handling characteristics at low speeds in the approaches to the harbor. The SEAPA President and VLCS Lead met with PCL/HAG at the Fleet Operation Center (FOC) in Seattle in mid-March to review Neptune data from two actual ship transits, one for a transit to the port of Oslo, and the other to the port of Stockholm. These two runs, reviewed at the FOC, failed to provide conclusive data within the parameters requested to confirm safe operational limits for the port of Ketchikan. HAG/PCL provided further data the final week of March to SEAPA, which the VLCS Committee reviewed. Although a majority of this data also failed to fall within the requested range (beam winds of 15+ knots, ship speed 7 knots or less, etc.), nor could all equipment parameters be evaluated, one data set fell within the requested parameters. Captain Tim Stringer was able to run a 'drift test' with the Regal Princess along with the resultant table of data provided in figure 5 below. During the course of the final week of March, the VLCS Committee was able to compare with drift angles/swept path observed during the Royal Princess ship ride, simulation study runs, and the 'drift study' results provided by Captain Stringer to confirm study conclusions for recommending safe operational envelope limits.

Figure 5 - Drift Test results from Regal Princess

Time (local)	SOG (kts)	Heading	COG	Drift Angle	Wind Direction	Wide Speed (kts)
17:31	6.3	192°	201°	9°	130°	16.4
17:41	6.2	212°	220°	8°	126°	17.6
17:56	6.0	235°	241°	6°	121°	12.3
18:08	7.9	171°	178°	7°	083°	13.4
18:18	8.3	196°	202°	6°	091°	13.6
18:25	8.1	216°	220°	4°	083°	11.4
18:34	8.0	239°	241°	2°	091°	7.6

The reported 8º to 9º drift angles in the wind range of 15 knots was found to comport well with study findings. This is backed up by Captain Stringer's reported experience that this class of vessel exhibits 8º swept path in 15 knots beam wind. Using the swept path table provided in the pilot card for Royal Princess, this concludes at 8º the effective beam width is 84.3m. Maximum clearance for the channel between California and Idaho Rocks in Tongass Narrows East Channel is ~ 154m. This yields a resultant (70m/2=35m) 35 meters clearance to the grounding line from bow and stern with ship centered precisely mid-channel during transit. Accounting for residual swept path due to 'slide' from the approach turn at South Pennock Island presumed swept path is expected to be ~ 100m thus reducing clearance to ~ 27m on each side during transit. Port of Ketchikan operational limits were thus revised by the VLCS Committee as shown in figure 6 – Operational Envelope for 2019 Season – *Royal Princess*, maximum 15 knots wind. These limits will be jointly reevaluated in a meeting to be scheduled following initial visits to Ketchikan based on experience gained from these transits, and data collected from actual transits in region. In separate correspondence, SEAPA has requested initial port call transits for both entry and departure be made via N. Tongass Narrows with pilot boarding at Guard Island. Additional request has been made to USCG Captain of the Port for various measures to reduce single point failure distractions to ship navigation crew and pilots to mitigate risk for safety of transit.

SEAPA Operational Envelope – Guidelines for 2019 Season

Figure 6:Operational Envelope – 2019

Holland America Group and Southeast Alaska Pilots Association

Operational Envelope for M/V *Royal Princess*

2019 Cruise Season

"**What We Can Do Without Compromising Safety**"

General Considerations	**The Master and Pilot will jointly assess the current, wind speed & direction, visibility, navigational hazards (e.g., channel limitations, density of ice, anchored vesseks) to agree on an abort point or to proceed. For port calls where the winds are forecast to exceed 45 knots for any time during the port call the Master and Pilot will jointly address the port capabilities to include at a minimum: berth limitations (e.g., bollard strength, number and arrangements of bollards); ship's mooring limitations (e.g., max number of lines, line strength); port resources (e.g., tug availability and horsepower) in consideration of port cancellation.**		
	AREA	**WIND**	**CURRENT**
Ketchikan Area	**Tongass Narrows East Channel (California and Idaho Rocks)**	**15 Knots**	**minimal current**
		15 Knots	**N/A**
	Ketchikan Berth 4 Docking	**15 Knots**	**N/A**
	Ketchikan Berth 4 Undocking	**15 Knots**	**N/A**
	Tongass Narrows Ketchikan Harbor to Lewis Reef (Airport / Drydock Area)	**15 Knots**	**N/A**
		15 Knots	**N/A**
Ice Areas	**Yakutat Bay/Disenchantment Bay (Hubbard Glacier)**	**For Evolutions where actual or forecast winds are 25 knots or greater, the Master and Pilot will jointly assess the current, wind direction, visibility, waterway limitations (including size & density of ice, marine mammals, etc.), and presence of other vessels to agree on an abort point or to proceed.**	
	Glacier Bay		
	Endicott Arm	**For Evolutions where actual or forecast winds are 25 knots or greater, the Master and Pilot will jointly assess the current, wind direction, visibility, waterway limitations (including size & density of ice, marine mammals, etc.), and presence of other vessels to agree on an abort point or to proceed.**	
	Tracy Arm	**Advise against any entry into Tracy Arm**	
Juneau Area	**Juneau FKL Docking**	**20 Knots**	**1 Knot of current same direction as wind**
		25 Knots	**minimal current**
	Juneau FKL Undocking	**20 Knots**	**1 Knot of current same direction as wind**
		25 Knots	**minimal current**
Skagway Area	**Skagway RRA/RRF Docking**	**25 Knots**	**N/A**
	Skagway RRA/RRF Undocking	**25 Knots**	**N/A**

Analysis of Simulations by Port Area

Ketchikan Area Simulations

Figure 7: Ketchikan Area Chart

Description of Ketchikan Area

Ketchikan is a major port area for Southeast Alaska. It is accessed from sea via Revillagigedo Channel or Clarence Strait thence Nichols Passage or Tongass Narrows that provides three entrances to the port. The Port of Ketchikan has free tidal stream communication from the Northwest and Southeast of the port areas via the Tongass Narrows. The Eastern approaches in Tongass Narrows are termed the "East Channel", the Northern approaches are termed the "North Channel". West Channel is not used by large vessels. Simulations were conducted for the port of Ketchikan in both Tongass Narrows approach channels and in the harbor area for docking scenarios.

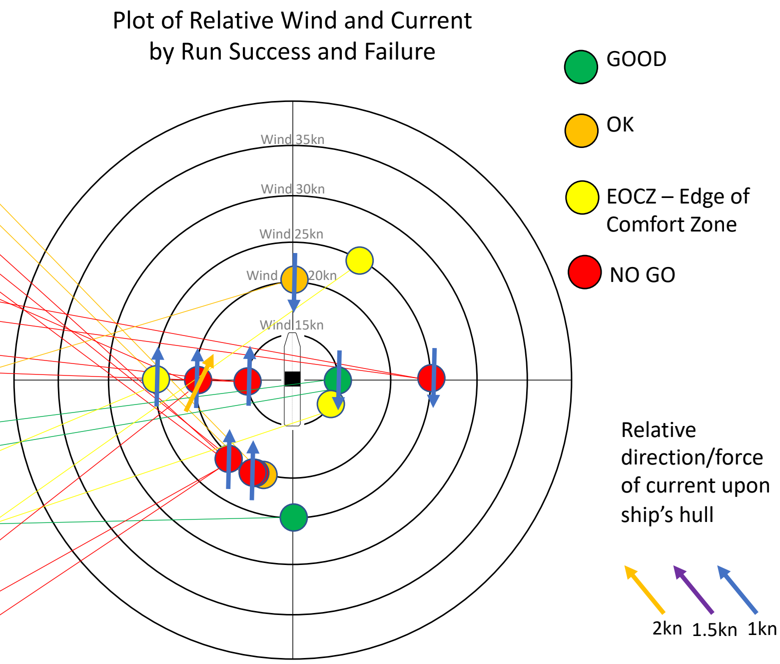
Three areas of concern were highlighted in the Ketchikan simulations. The first concern noted (and primary in the study) was the 150m wide passage in the Tongass Narrows between California and Idaho rocks. Second concern was the constricted channel between the (Revillagigedo Island) shipyard and (Gravina Island) airport, and slower speed transits of the Ketchikan harbor area given high winds and adverse currents resulting in significant swept path.

The transit scenarios in the Ketchikan area correlate well to similar areas of Southeast Alaska waters for critical analysis of overall performance by the *Royal* class throughout. Time limitations did not allow for study of all ports and channel transits.

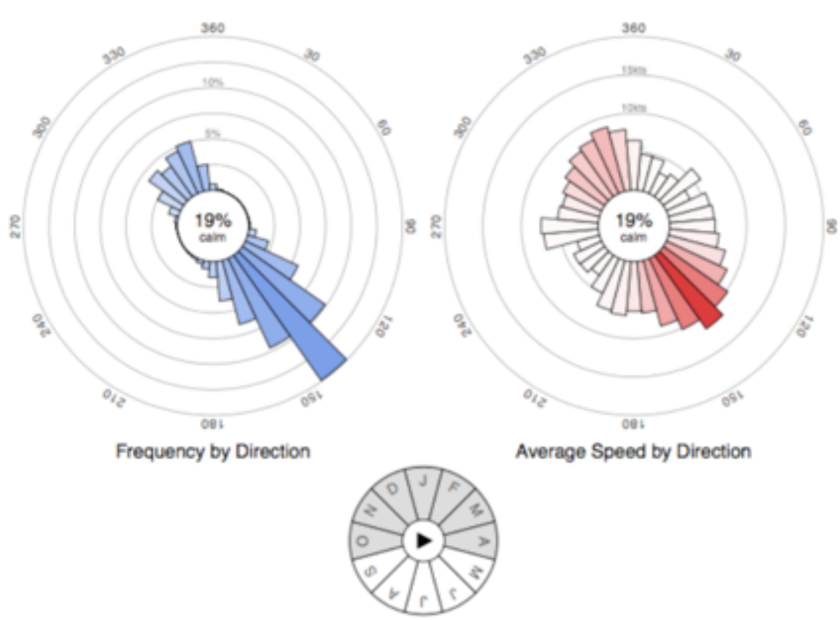
Figure 8: Ketchikan – Analysis of Vessel Relative Wind and Current Conditions per Simulation Run

Area: Ketchikan

Run #	Location of Interest	Wind Relative	Wind Speed	Current Relative	Current Velocity	Eval Color
1.2A	KTN inbound E Chan.	190	20	0	0	O
1.2B	KTN inbound E Chan.	200	20	0	0	O
1.3A	KTN inbound E Chan.	200	20	0	0	R
1.3B	KTN inbound Berth 4	225	20	0	0	R
1.4A	KTN inbound E Chan.	225	20	180	1	R
1.4B	KTN inbound Berth 4	270	20	180	1	R
1.5A	KTN inbound E Chan.	90	25	0	1	R
1.5B	KTN inbound Berth 4	90	25	0	1	R
2.39	KTN inbound E Chan.	270	15	180	1	R
2.4	KTN inbound E Chan.	270	15	180	1	R
1.6	N. Tongass to KTN B4	0	20	180	0	O
1.7	N. Tongass to KTN B4	90	15	0	1	G
1.7B	N. Tongass to KTN B4	90	15	0	1	G
1.8	N. Tongass to KTN B4	270	25	180	1	Y
1.9	N. Tongass to KTN B4	0	25	180	1	G
1.10	KTN Dep S. via E. Chan	135	15	0	1	Y
2.13	KTN Dep N. via N. Tongass	30	25	0	1	Y
2.14	KTN Dep N. via N. Tongass	270	20	200	2	R
4.42	E. Chan. Approach KTN	240	20	180	1	R
4.44	E. Chan. Approach KTN	240	20	180	1	R



PAKT: Ketchikan International Airport



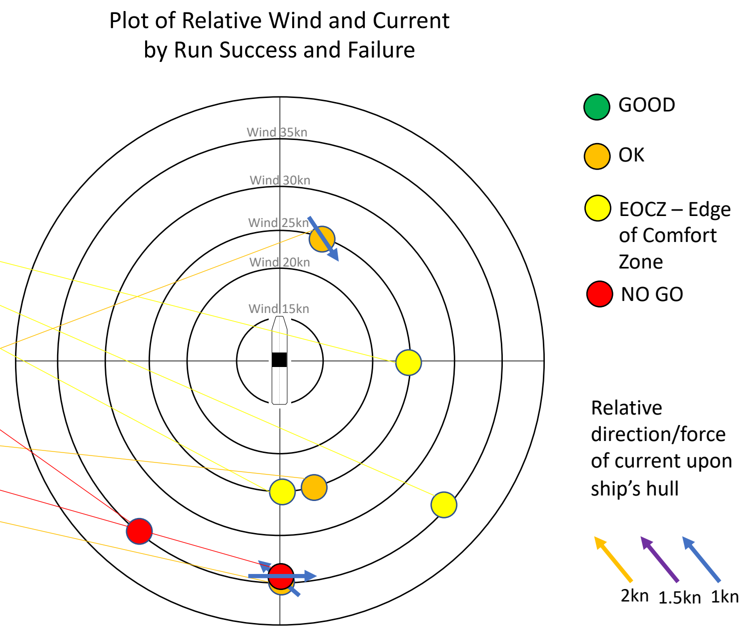
Skagway Area Simulations

For the Skagway area simulations, loss of positive control of the vessel and hazardous maneuvering occurred when the prevailing wind and current was high, (particularly at or above 30knots) and in the astern quadrants with following or crossing currents. The vessel was generally easier to control with head wind and current conditions.

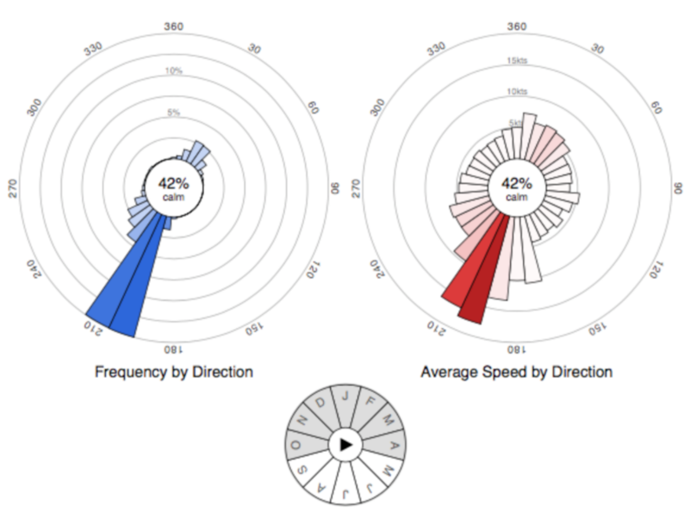
Figure 9: Skagway - Plot of Relative Wind and Current per Simulation Runs

Area: Skagway

Run #	Location of Interest	Wind Relative	Wind Speed	Current Relative	Current Velocity	Eval Color
3.26	Skagway Arrival	90	25	0	0	Y
3.27	Skagway Arrival	160	35	0	0	Y
3.27	Skagway Arrival	180	25	0	0	Y
4.29	Skagway Arrival	20	25	330	1	O
4.41	Skagway Arrival	240	35	0	0	R
4.3	Skagway Departure	170	25	0	0	O
4.31	Skagway Departure	300	35	270	1	R
4.32	Skagway Departure	180	35	150	1	O



PAGY: Skagway Airport



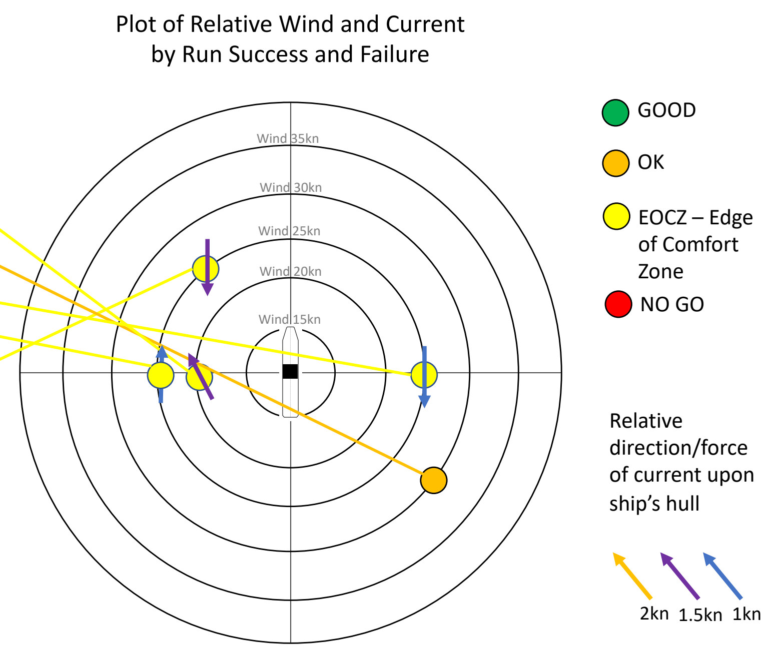
Juneau Area Simulations

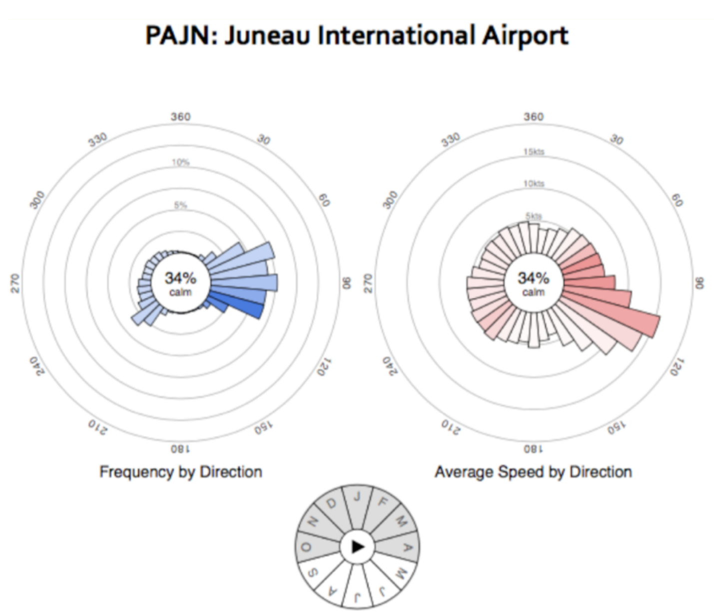
For the Juneau area simulations, the vessel was found to be in the "edge of the comfort zone" for the testing pilots given ahead wind conditions and all-around currents. The only example of a satisfactory simulation outcome is when the vessel was maneuvered in zero current conditions.

Figure 10: Juneau - Plot of Relative Wind and Current Per Simulation Runs

Area: Juneau

Run #	Location of Interest	Wind Relative	Wind Speed	Current Relative	Current Velocity	Eval Color
2.16	Arrival Juneau	270	20	160	1.5	Y
2.17	Arrival Juneau	160	30	0	0	O
2.18	Arrival Juneau	90	25	0	1	Y
2.19	Juneau Depart	270	25	180	1	Y
3.21	Juneau Depart	330	25	0	1.5	Y





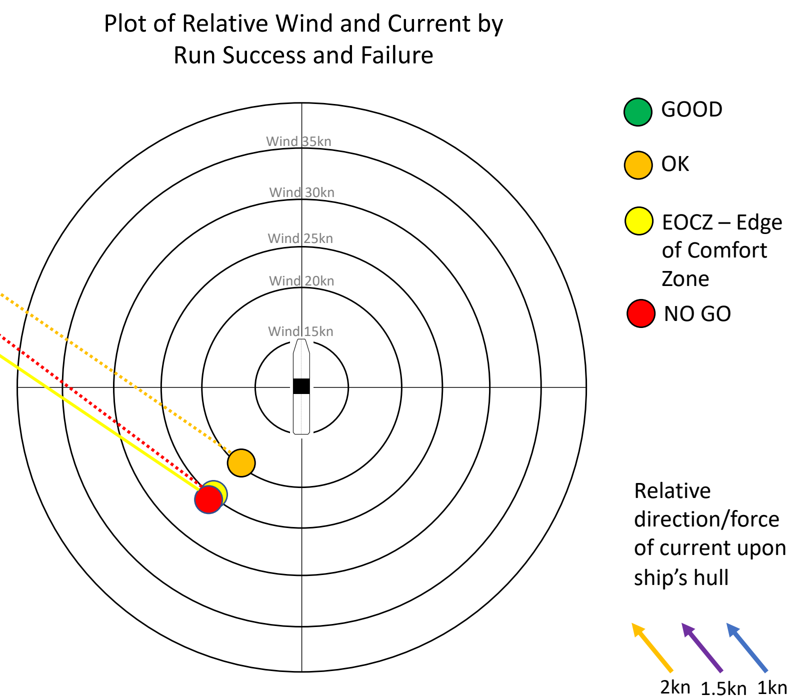
Tracy Arm Area Simulations

Three Tracy Arm area simulations – to simulate ice area transits (Endicott Arm, Glacier Bay, and Yakutat Bay) resulted in data demonstrating unsatisfactory vessel controllability with high winds on the port quarter. Currents were not factored into the Tracy Arm simulations.

Figure 11: Tracy Arm - Plot of Relative Wind and Current by Simulation Runs

Area: Tracy Arm

Run #	Location of Interest	Wind Relative	Wind Speed	Current Relative	Current Velocity	Eval Color Code
3.23	Tracy Arm	225	20	0	0	O
3.25	Tracy Arm	225	30	0	0	R
1.38	Tracy Arm	225	30	0	0	Y



Simulation Run Log

Figure 12: Simulation Run Log

ROYAL PRINCESS - Run Log						
Run	Run-Loc-dir-Day.Tot	Run?	Port/Berth/Area	Wind	Current	Location
12/9	2-ECH-arr-1.2	▯	Arr Ketchikan/4/S	SE 20	none	Mtn Point
12/9	3-ECH-arr-1.3	▯	Arr Ketchikan/4/S	SE 25	none	Mtn Point
12/9	4-ECH-arr-1.4	▯	Arr Ketchikan/4/S	SW 20	Flood 1kt	Mtn Point
12/12	**42-ECH-arr-4.42**	▯	**Arr Ketchikan/4/S**	**SW 20**	**Flood 1kt**	**Mtn Point**
12/12	**42-ECH-arr-4.44**	▯	**Arr Ketchikan/4/S**	**SW 20**	**NONE**	**Mtn Point**
12/10	5-ECH-arr-1.5	▯	Arr Ketchikan/4/S	NE 25	Ebb 1kt	Mtn Point
12/10	**39-ECH-arr-2.39**	▯	**Arr Ketchikan/4/S**	**SW 15**	**Flood 1kt**	Mtn Point
12/10	**40-ECH-arr-2.40**	▯	**Arr Ketchikan/4/S**	**SW 15**	**Flood 1kt**	Mtn Point
12/10	6-KTN-arr-1.6	▯	Arr Ketchikan/4/N	SE 20	Ebb 1kt	Channel Is
12/10	**7-KTN-arr-1.7B**	▯	**Arr Ketchikan/4/N**	**SW 15**	**Flood 1kt**	**Lewis Rf**
12/11	8-KTN-arr-1.8	▯	Arr Ketchikan/4/N	**NE 25**	**Ebb 1kt**	Lewis Rf
12/11	9-KTN-arr-1.9	▯	Arr Ketchikan/4/N	**SE 25**	**Ebb 1kt**	Lewis Rf
12/11	10-ECH-dep-1.10	▯	Dep Ketchikan/4/S	**SW 15**	**Flood 1kt**	Berth 4
12/11	13-KTN-dep-2.13	▯	Dep Ketchikan/4/N	**SE 25**	**Flood 1kt**	Berth 4
12/11	14-KTN-dep-2.14	▯	Dep Ketchikan/4/N	SW 20	Flood 2kt	Berth 4
12/11	16-JNU-arr-2.16	▯	Arr Juneau/FKL-AS	SE 20	**Flood 1.5kt**	JNU ISL
12/11	17-JNU-arr-2.17	▯	Arr Juneau/FKL-AS	SE 30	none	JNU ISL
12/11	18-JNU-arr-2.18	▯	Arr Juneau/FKL-AS	NE 25	Ebb 1kt	JNU ISL
12/11	19-JNU-dep-2.19	▯	Dep Juneau/FKL-AS	NE 25	Ebb 1kt	FKL
12/11	21-JNU-dep-3.21	▯	Dep Juneau/FKL-AS	SE 25	**Flood 1.5kt**	FKL
12/9	22-END-IB-3.22	▯	Endicott Arm Bar	none	Ebb 2 kts	Bar approach
12/9	**37-END-IB-1.37**	▯	**Endicott Arm Bar**	**None**	**Ebb 4 kts**	**Bar approach**
12/9	23-END-OB-3.23	▯	Endicott Arm Bar	SE 20	Ebb 4 kts	Bar approach
12/9	24-TAS-OB-3.24	▯	Tracy Arm S-turns	20kt	none	S-turns OB
12/9	25-TAS-OB-3.25	▯	Tracy Arm S-turns	30kts	none	S-turns OB
12/9	**38-TAS-OB-1.38**	▯	**Tracy Arm S-turns**	**30kts**	**none**	**S-turns OB**
12/12	26-SKG-arr-3.26	▯	Arr Skagway/RRF	SE 25	none	Taiya Inlet
12/12	27-SKG-arr-3.27	▯	Arr Skagway/RRF	SE 35	none	Taiya Inlet
12/12	28-SKG-arr-3.28	▯	Arr Skagway/RRF	SW 25	none	Taiya Inlet
12/12	29-SKG-arr-4.29	▯	Arr Skagway/RRF	NE 25	Ebb 0.5kts	Taiya Inlet
12/12	**41-SKG-arr-4.41**	▯	**Arr Skagway/RRF**	**SW 35**		Taiya Inlet
12/12	30-SKG-dep-4.30	▯	Dep Skagway RRF	SE 25	none	RRF
12/12	31-SKG-dep-4.31	▯	Dep Skagway RRF	NE 35	Ebb 1kt	RRF
12/12	32-SKG-dep-4.32	▯	Dep Skagway RRF	SW 35	Flood 1kt	RRF
12/8	34-SP-NB-4.34	▯	Snow Pass N/B	none	Flood 3.5 kts	Nesbitt Rf
12/8	35-SP-SB-4.35	▯	Snow Pass S/B	SW 25	Flood 3.5 kts	Round Is
12/8	36-SP-SB-4.36	▯	Snow Pass S/B	SE 25	Ebb 2 kts	Round Is
				1 - NO GO	12	
				2 - EOCZ	12	
				3 - OK	10	
	Total Simulations:	37		4 - GOOD	3	

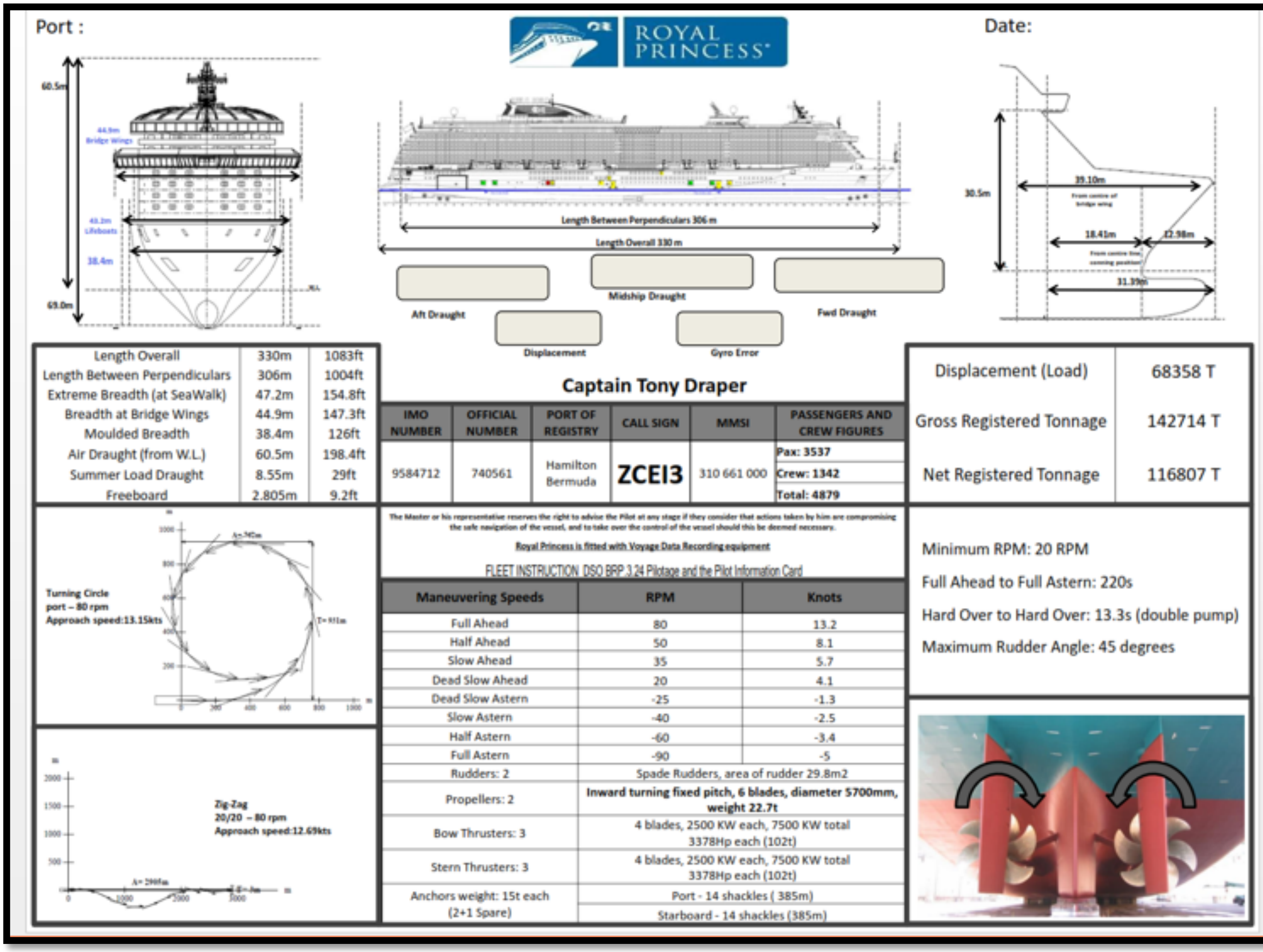
Note for Simulation Run Log Ratings: Ratings 3 & 4 are operationally manageable risk, 2 is at or beyond the upper limit of risk, and 1 is unacceptable risk. Edge of Comfort Zone (EOCZ is rating 2) is defined as: ‘the environmental and operational parameters at which undesirable incidents began to happen’.

Simulation Criteria

#	Item	Standard
1	Ketchikan – Mt Point to Saxman	12 knots by Southeast Alaska Vessel Waterway Guide (VWG)
2	Ketchikan – Saxman to Channel Island	7 knots by CFR reference
3	Ketchikan - Harbor	5 knots by Tongass Waterway Guide and VWG
4	Juneau – Dupont to Sheep Creek	14 knots - VWG
5	Juneau – Sheep Creek to Juneau Isle	10 knots - VWG
6	Juneau – Juneau Isle to Rock Dump	7 knots - VWG
7	Juneau - Harbor	5 knots - VWG
8	Maximum drift angle passing through California and Idaho Rocks	7 degrees
9	Thrusters use for vessel control during channel transits (vessel not maneuvering near berth areas)	Thruster use not a common practice for channel transit
10	Tug use	Evaluated in concurrent study

Pilot Card: Royal Princess[8]

Figure 13: Pilot Card, Royal Princess (page 1 of 3)



Port :

Date:

Aft Draught | Midship Draught | Fwd Draught | Displacement | Gyro Error

Length Overall	330m	1083ft
Length Between Perpendiculars	306m	1004ft
Extreme Breadth (at SeaWalk)	47.2m	154.8ft
Breadth at Bridge Wings	44.9m	147.3ft
Moulded Breadth	38.4m	126ft
Air Draught (from W.L.)	60.5m	198.4ft
Summer Load Draught	8.55m	29ft
Freeboard	2.805m	9.2ft

Captain Tony Draper

IMO NUMBER	OFFICIAL NUMBER	PORT OF REGISTRY	CALL SIGN	MMSI	PASSENGERS AND CREW FIGURES
9584712	740561	Hamilton Bermuda	ZCEI3	310 661 000	Pax: 3537 Crew: 1342 Total: 4879

Displacement (Load)	68358 T
Gross Registered Tonnage	142714 T
Net Registered Tonnage	116807 T

The Master or his representative reserves the right to advise the Pilot at any stage if they consider that actions taken by him are compromising the safe navigation of the vessel, and to take over the control of the vessel should this be deemed necessary.

Royal Princess is fitted with Voyage Data Recording equipment

FLEET INSTRUCTION DSO BRP 3.24 Pilotage and the Pilot Information Card

Maneuvering Speeds	RPM	Knots
Full Ahead	80	13.2
Half Ahead	50	8.1
Slow Ahead	35	5.7
Dead Slow Ahead	20	4.1
Dead Slow Astern	-25	-1.3
Slow Astern	-40	-2.5
Half Astern	-60	-3.4
Full Astern	-90	-5
Rudders: 2	Spade Rudders, area of rudder 29.8m2	
Propellers: 2	Inward turning fixed pitch, 6 blades, diameter 5700mm, weight 22.7t	
Bow Thrusters: 3	4 blades, 2500 KW each, 7500 KW total 3378Hp each (102t)	
Stern Thrusters: 3	4 blades, 2500 KW each, 7500 KW total 3378Hp each (102t)	
Anchors weight: 15t each (2+1 Spare)	Port - 14 shackles (385m) Starboard - 14 shackles (385m)	

Minimum RPM: 20 RPM

Full Ahead to Full Astern: 220s

Hard Over to Hard Over: 13.3s (double pump)

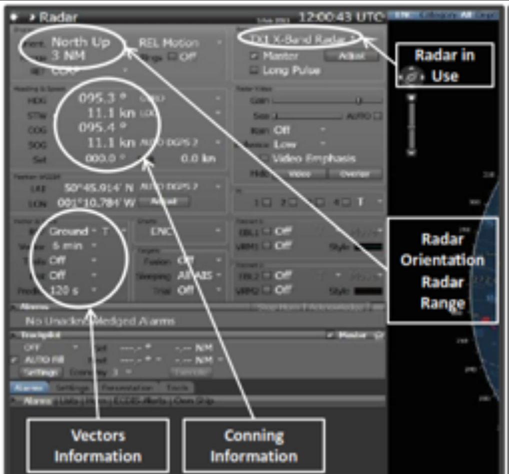
Maximum Rudder Angle: 45 degrees

Turning Circle
port – 80 rpm
Approach speed:13.15kts

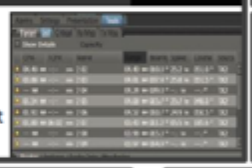
Zig-Zag
20/20 – 80 rpm
Approach speed:12.69kts

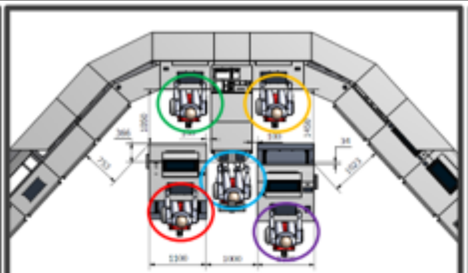
[8] Pilot Card Data Provided by Princess Cruise Lines

Figure 14: Pilot Card, Royal Princess (page 2 of 3)



Target List: Open with Tools>Target>List. Click on column title to sort rows. The line for the selected target (click on tracked target on MFD) is highlighted.





CLOSED LOOP COMMUNICATION

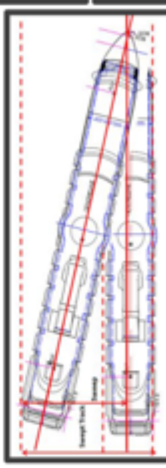
ORDER GIVEN (SENDER) → ORDER REPEATED (RECEIVER) → YES or NO (SENDER)

RATE OF TURN (degrees/minute)

Radius	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00
Speed	ROT	ROT	ROT	ROT	ROT	ROT	ROT	ROT	ROT	ROT
3	11	6	4	3	2	1	1	1	1	1
4	15	8	5	4	3	2	2	1	1	1
5	19	10	6	5	3	2	2	2	1	1
6	23	11	8	6	4	3	2	2	2	1
7	27	13	9	7	4	3	3	2	2	2
8	31	15	10	8	5	4	3	3	2	2
9	34	17	11	9	6	4	3	3	2	2
10	38	19	13	10	6	5	4	3	3	2
11	42	21	14	11	7	5	4	4	3	3
12	46	23	15	11	8	6	5	4	3	3
13	50	25	17	12	8	6	5	4	4	3
14	53	27	18	13	9	7	5	4	4	3
15	57	29	19	14	10	7	6	5	4	4
16	61	31	20	15	10	8	6	5	4	4
17	65	32	22	16	11	8	6	5	5	4
18	69	34	23	17	11	9	7	6	5	4
19	73	36	24	18	12	9	7	6	5	5
20	76	38	25	19	13	10	8	6	5	5
21	80	40	27	20	13	10	8	7	6	5
22	84	42	28	21	14	11	8	7	6	5
23	88	44	29	22	15	11	9	7	6	5

INCREASE OF DRAUGHT DUE TO HEEL

Heel	Increase of draught
0.5	0.14
1	0.28
1.5	0.42
2	0.56
2.5	0.71
3	0.84
3.5	0.98
4	1.12
4.5	1.26
5	1.41
5.5	1.54
6	1.68
6.5	1.82
7	1.96



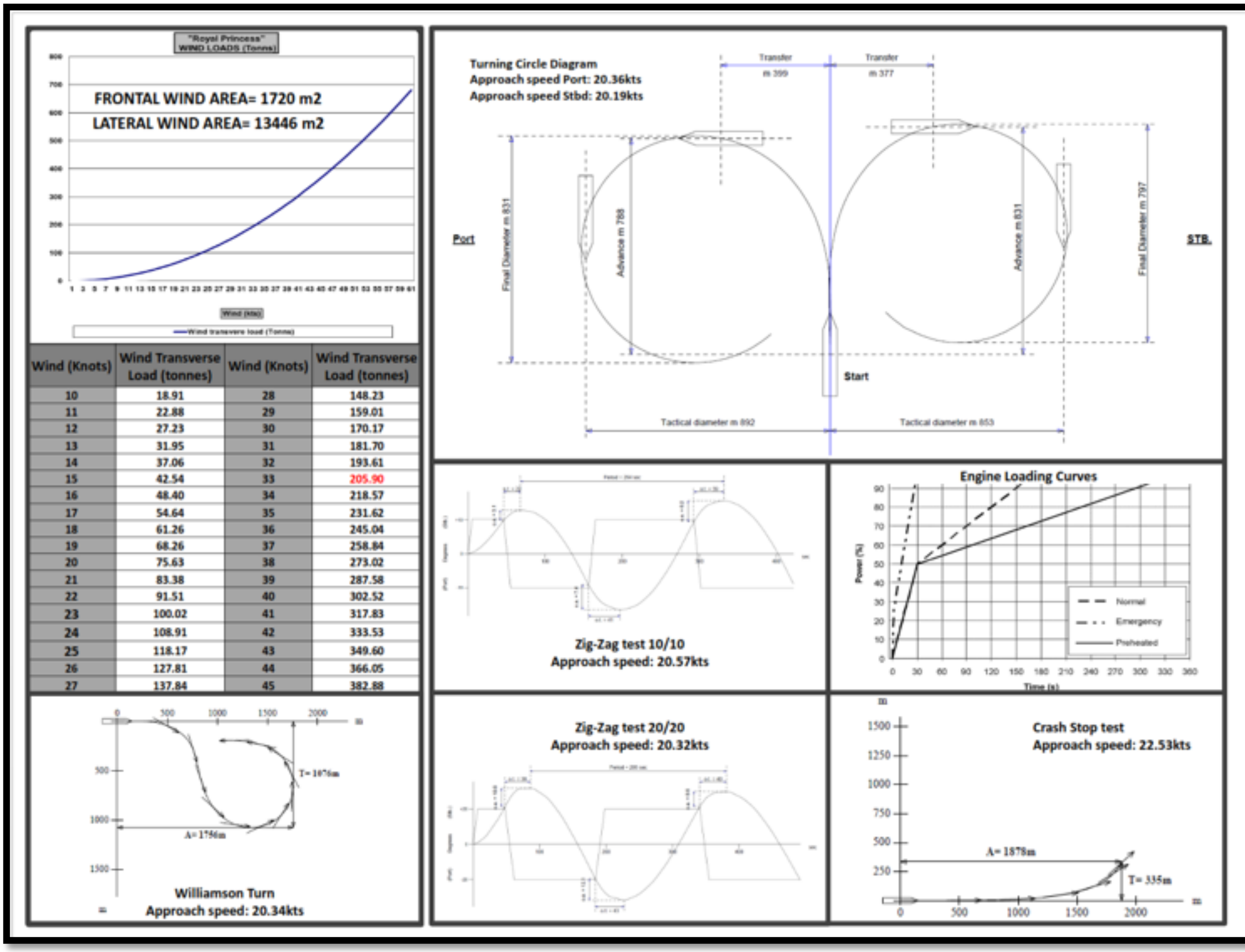
SWEPT PATH

Drift	Swept Path
1	44.2
2	49.9
3	55.7
4	61.4
5	67.2
6	72.9
7	78.9
8	84.3
9	90.1
10	95.7
11	101.4
12	107.1
13	112.6
14	118.2
15	123.8

SQUAT EFFECT

Speed	Confined waters	Open waters
5	0.34	0.17
6	0.49	0.25
7	0.67	0.34
8	0.88	0.44
9	1.11	0.56
10	1.37	0.69
11	1.66	0.83
12	1.98	0.99
13	2.32	1.16
14	2.69	1.35
15	3.09	1.55
16	3.52	1.76
17	3.97	1.99
18	4.45	2.23
19	4.96	2.48
20	5.5	2.75
21	6.06	3.03
22	6.65	3.33

Figure 15: Pilot Card, Royal Princess (page 3 of 3)



Wind (Knots)	Wind Transverse Load (tonnes)	Wind (Knots)	Wind Transverse Load (tonnes)
10	18.91	28	148.23
11	22.88	29	159.01
12	27.23	30	170.17
13	31.95	31	181.70
14	37.06	32	193.61
15	42.54	33	205.90
16	48.40	34	218.57
17	54.64	35	231.62
18	61.26	36	245.04
19	68.26	37	258.84
20	75.63	38	273.02
21	83.38	39	287.58
22	91.51	40	302.52
23	100.02	41	317.83
24	108.91	42	333.53
25	118.17	43	349.60
26	127.81	44	366.05
27	137.84	45	382.88

Wheelhouse Poster, Royal Princess[9]

Figure 16: Wheelhouse Poster, Royal Princess

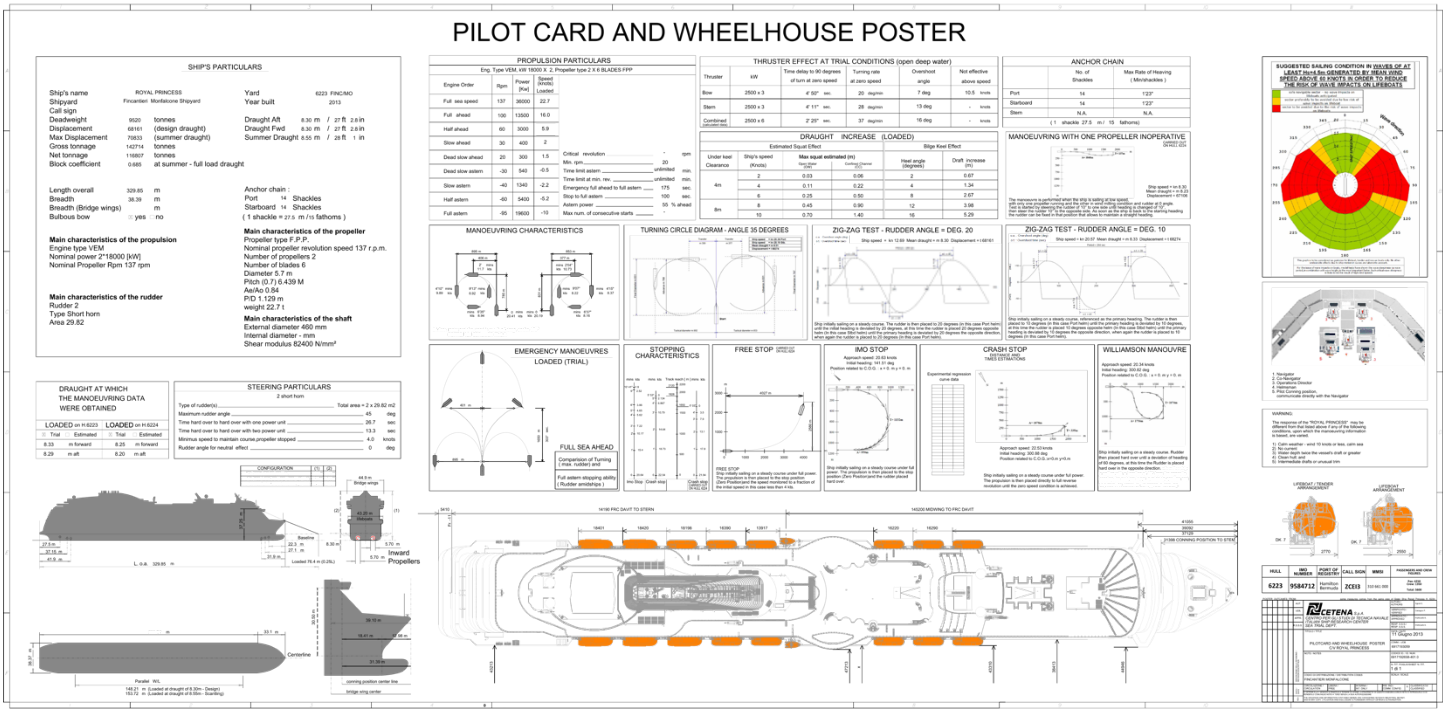


Figure 17: Royal Princess, Alongside at Night

[9] Wheelhouse Poster data provided by Princess Cruise Lines

Notes Regarding Simulation Vessel Model and Behavior

The ship simulator was programmed with a hydrodynamic model of the *Royal Princess* developed from two data sources. The first data source used was information provided by Princess Cruises/Holland America Group, including the vessel pilot card, maneuvering booklet and data regarding propellers and static stability figures noted in reports provided. The second source of information was gathered during a 9-day observation ride aboard Royal Princess arranged courtesy of HAG and conducted by SEAPA pilots. *Royal Princess's* actual operating behaviors were observed and recorded, in close coordination with the onboard ship's master and officers and by the two SEAPA pilots during all dockings and un-dockings and ship maneuvers. During this effort the vessel's conning screen was video-captured by time lapse photos to record engine, steering, thruster particulars, and environmental data and the pilots concurrently recorded the navigation data using their portable piloting software. This data was then collated and transcribed into spreadsheets for later vetting use in the simulator. The pilots also interviewed the Captain, Staff Captain and senior officers, thus collecting notes based on their expertise for tuning the model behavior. The model was tuned using a Kongsberg full mission ship simulator and its behavior was vetted and reconfirmed with onsite vetting at AVTEC prior to the simulations using data points from both actual information gathered on board, and that found in studies, ship documents, and notes.

The model behavior vetted to within 5% of the stated values on the pilot card, including the turn circle, zig-zag and windage values. The model, in the full mission ship simulator, was then tuned to replicate acceleration/deceleration and turn maneuvers recorded by the pilots aboard the actual ship. The final tuning item was thruster power which was tuned by adjusting the efficiency of the thruster coefficients in order balance the thruster force against 25-27kn of beam wind while the vessel is dead in the water.

Comments during simulations from the attending Master of the Regal Princess (sister ship to the Royal Princess) were that the model is overall "good", and a bit "conservative", being more difficult to pilot than the actual ship. He believed that the model did not lose inertia and slow as fast as the actual ship. Thus, in his opinion, the model carried her way farther, made turns slower and generally reacted slower than the actual ship. The attending pilots noted this assessment by the Master and agreed that the model is likely conservative in behavior, concluding that these minor differences did not impair their use of the model as a tool for the purpose of this simulation effort.

Pilot Card, Simulation Vessel, Royal Princess

Figure 18: Pilot Card, Kongsberg Model, Ship Simulator

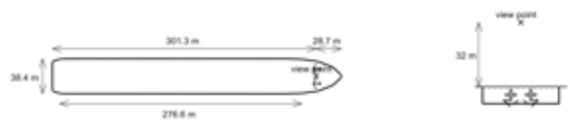
PILOT CARD

MROYALF
Version 1

Ship's name: Royal Princess   Date: ____
Call Sign: ____   Deadweight: 0 tonnes   Year built: 2013
Draught aft: 8.55 m / 28 ft 1 in   Forward: 8.55 m / 28 ft 1 in   Displacement: 68358 tonnes

SHIP'S PARTICULARS

Length overall: 330 m   Anchor chain: Port: 14.0 shackles   Starboard: 14.0 shackles
Breadth: 38.4 m   Stern: ____ shackles
Bulbous bow: Yes   (1 shackle = 27.432 m = 15 fathoms)



PROPULSION PARTICULARS

Type of engine: Electric   Maximum power: 37462 kW (50934 hp)

Manoeuvring engine order		RPM	Pitch	Speed (knots) Loaded	Speed (knots) Ballast
Full sea speed	1	140.4		22.2	
Full Ahead	0.8	80.0		13.2	
Half Ahead	0.5	50.0		8.1	
Slow Ahead	0.25	35.0		5.7	
Dead Slow Ahead	0.125	20.0		4.1	
Dead Slow Astern	-0.125	-25.0			
Slow Astern	-0.25	-40.0			
Half Astern	-0.5	-60.0			
Full Astern	-1	-90.0			

Time limit astern ____ min:sec
Full ahead to full astern ____ min:sec
Max. No. of consecutive starts ____
Minimum RPM ____ ____ knots
Astern power ____ % ahead

STEERING PARTICULARS

Type of rudder: Normal   Maximum angle: 45 °
Hard-over to hard-over: 13.3 s
Rudder angle for neutral effect: 0 °
Thruster: Bow 7455 kW (10136 hp)   Stern 7455 kW (10136 hp)

CHECKED IF ABOARD AND READY

Anchors ☐
Whistle ☐
Radar ☐ 3 cm ☐ 10 cm
ARPA ☐
Speed log ☐ Doppler: Yes / No
Water speed ☐
Ground speed ☐
Dual-axis ☐
Engine telegraphs ☐
Steering gear ☐
Number of power units operating ☐

Indicators: ☐
Rudder ☐
Rpm/pitch ☐
Rate of turn ☐
Compass system ☐
Constant gyro error ± ____ °
VHF ☐
Elec. pos. fix. system ☐
Type ____

OTHER INFORMATION:

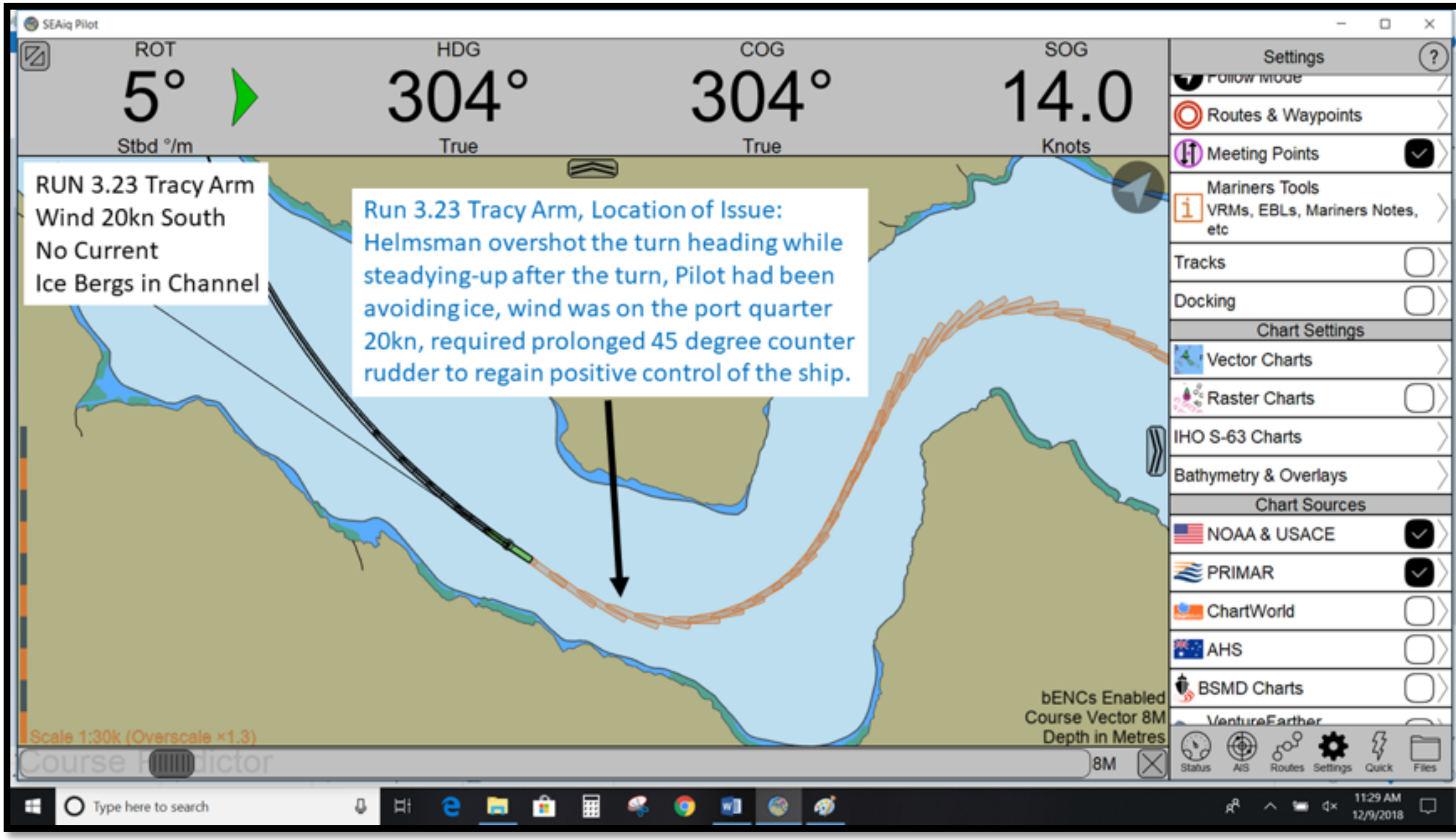
Appendix A:

Simulation Run Screenshots

Screenshots (SEAiq Pilot – PPU) were collected during simulations as means for discussion/debrief for the VLCS study group. They are provided herein as a visual record of the simulation work.

Run 3.23: Tracy Arm

(Moderate ice not shown on this PPU screenshot)



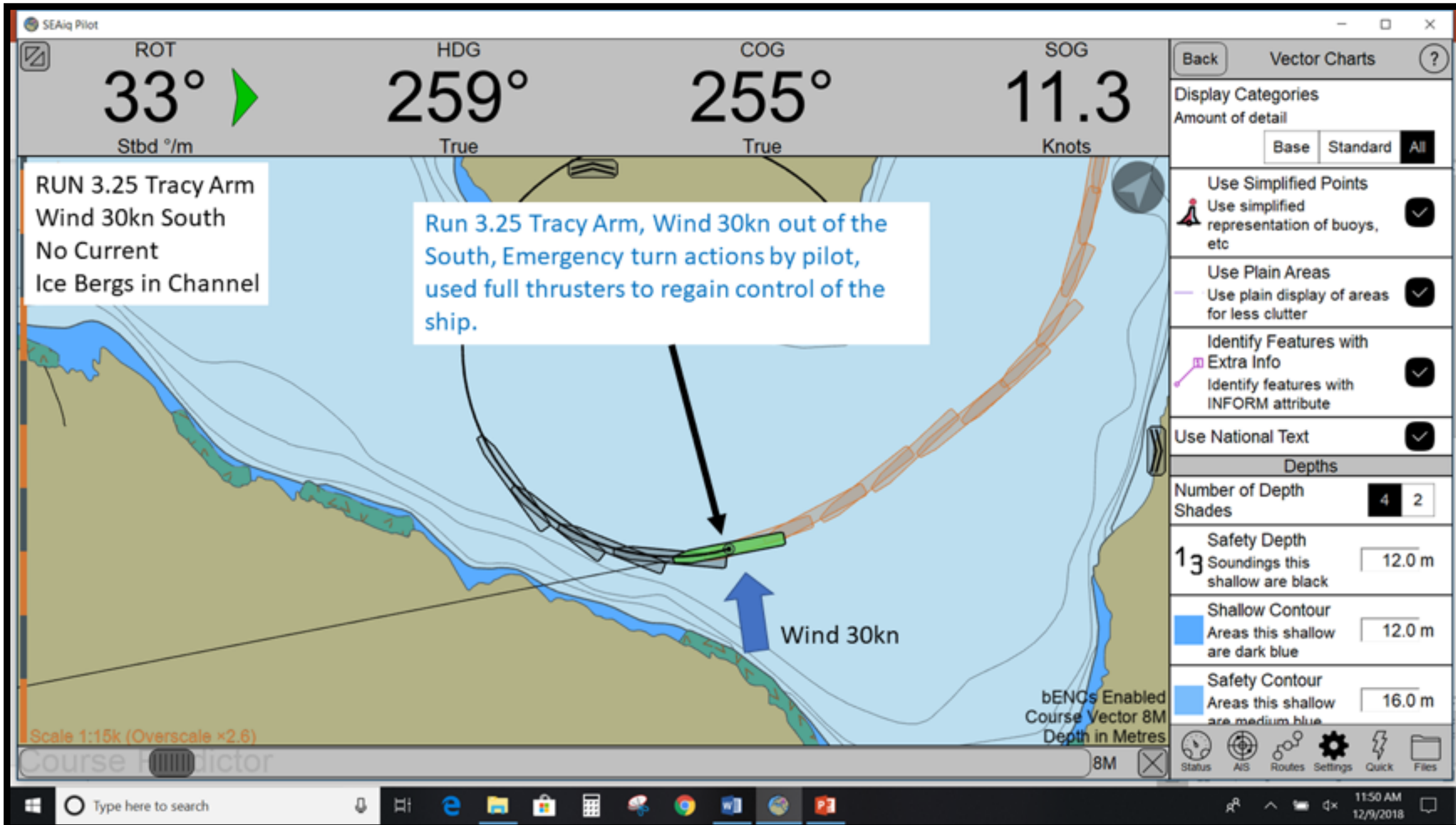
Run 3.25: Tracy Arm

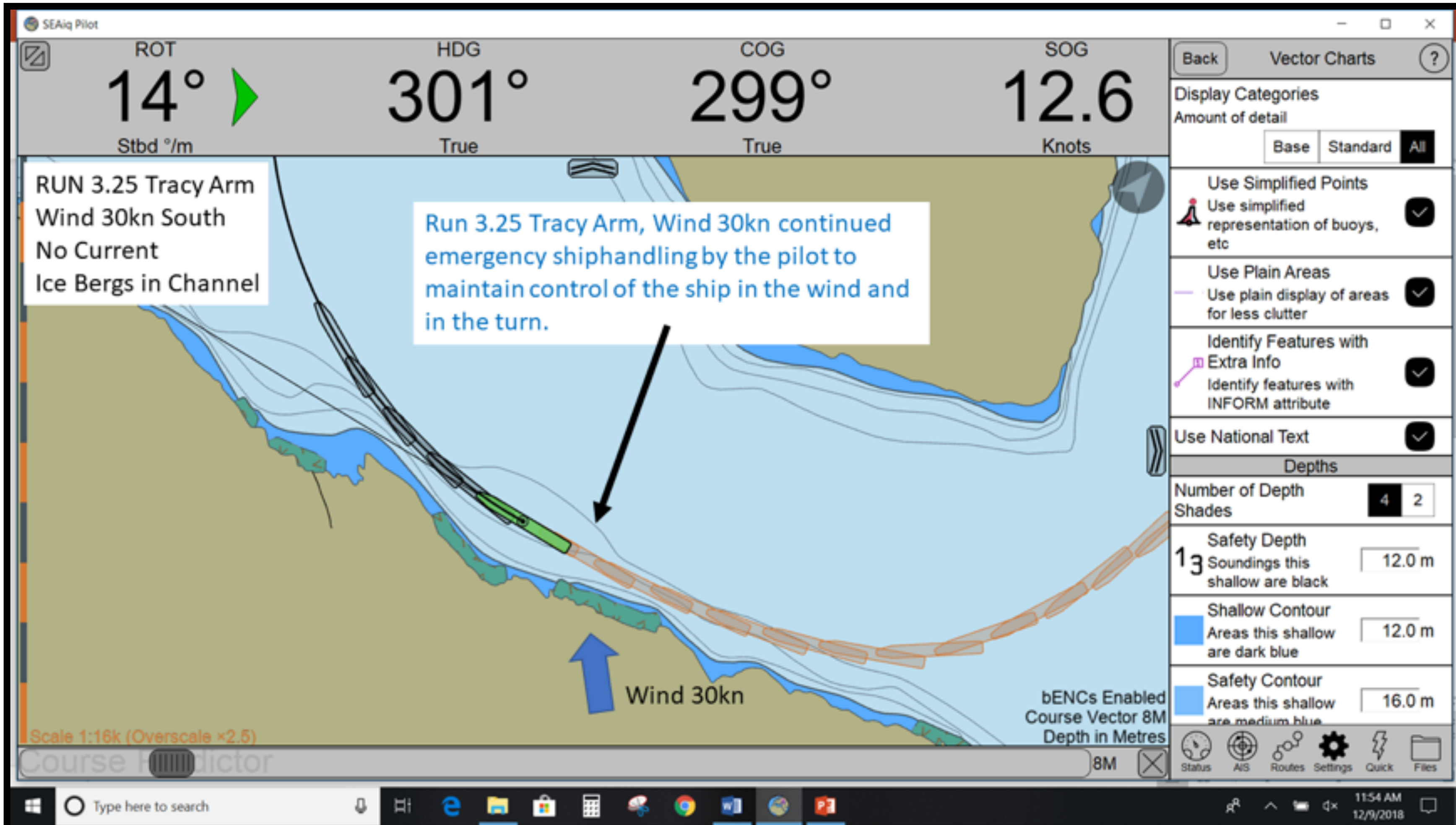
3.25 Tracy Arm, 30kn

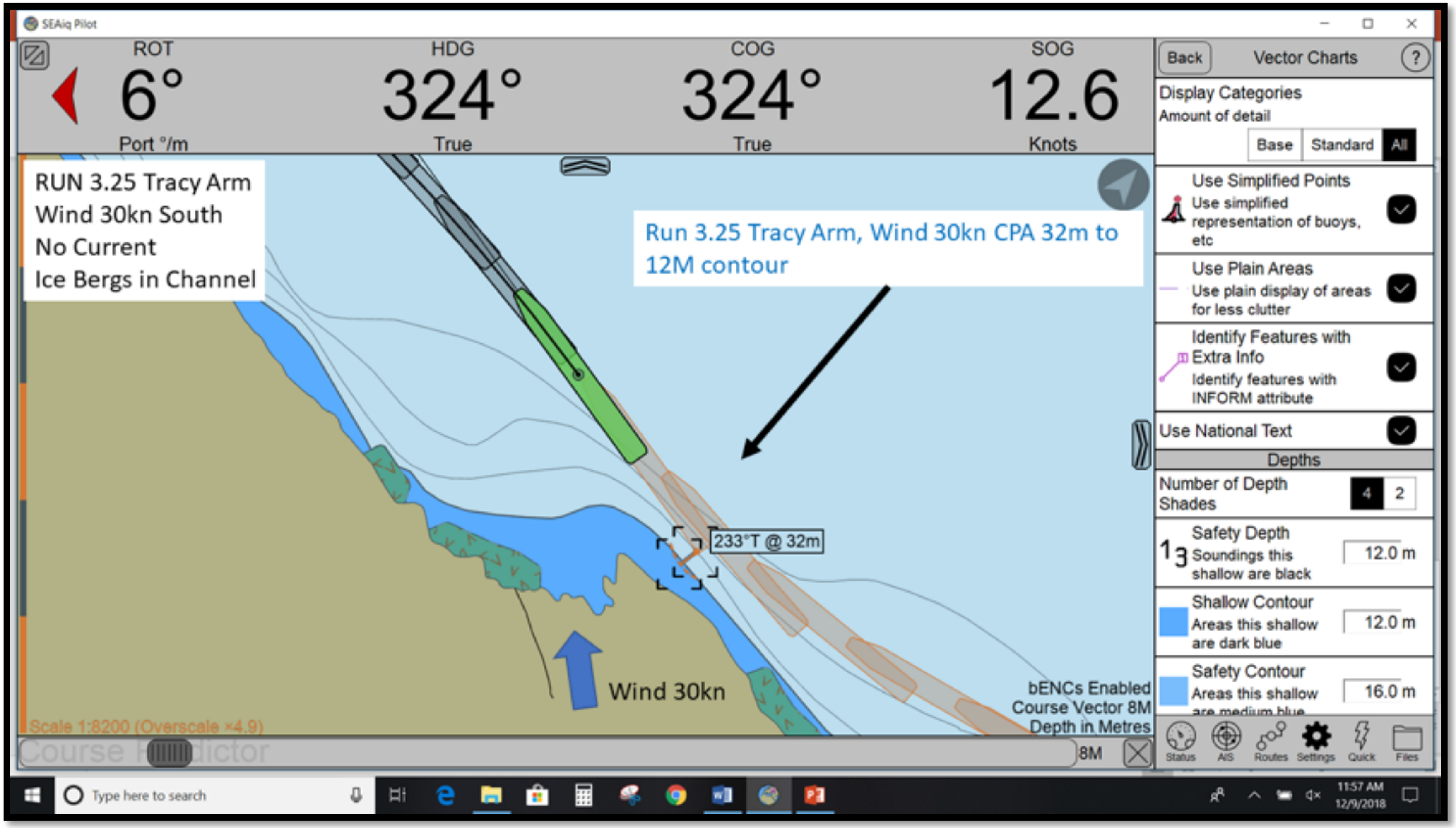
Sunday 12/9/2018

2nd run

Run 3.25: Tracy Arm




SEAiq Pilot
ROT
14°
Stbd °/m
HDG
301°
True
COG
299°
True
SOG
12.6
Knots
RUN 3.25 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Run 3.25 Tracy Arm, Wind 30kn continued emergency shiphandling by the pilot to maintain control of the ship in the wind and in the turn.
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:16k (Overscale ×2.5)
8M
Back
Vector Charts
Display Categories
Amount of detail
Base
Standard
All
Use Simplified Points
Use simplified representation of buoys, etc
Use Plain Areas
Use plain display of areas for less clutter
Identify Features with Extra Info
Identify features with INFORM attribute
Use National Text
Depths
Number of Depth Shades
4
2
Safety Depth
Soundings this shallow are black
12.0 m
Shallow Contour
Areas this shallow are dark blue
12.0 m
Safety Contour
Areas this shallow
16.0 m
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:54 AM
12/9/2018



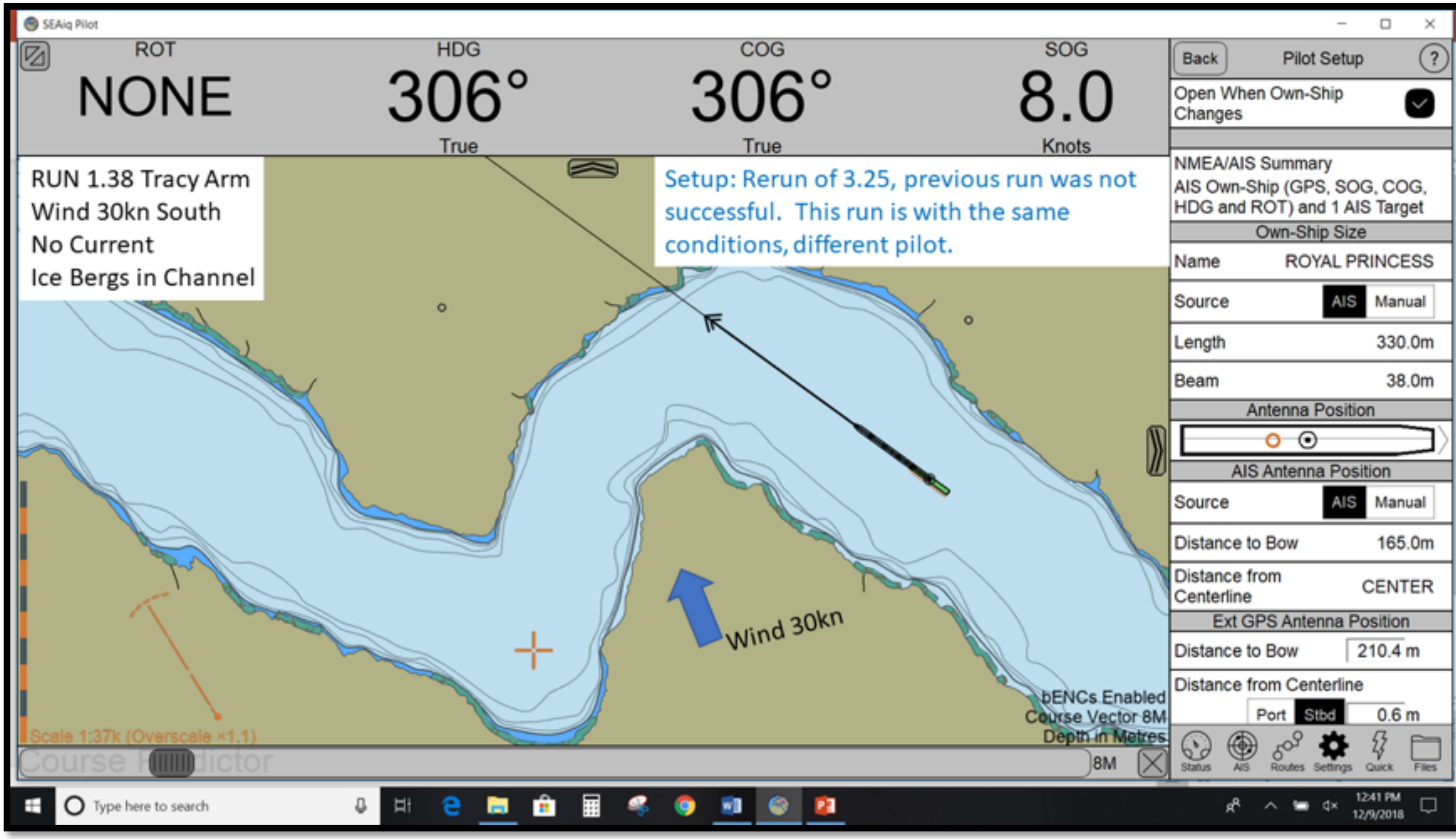
SEAiq Pilot
ROT
6°
Port °/m
HDG
324°
True
COG
324°
True
SOG
12.6
Knots
Back
Vector Charts
Display Categories
Amount of detail
Base
Standard
All
Use Simplified Points
Use simplified representation of buoys, etc
Use Plain Areas
Use plain display of areas for less clutter
Identify Features with Extra Info
Identify features with INFORM attribute
Use National Text
Depths
Number of Depth Shades
4
2
Safety Depth
Soundings this shallow are black
12.0 m
Shallow Contour
Areas this shallow are dark blue
12.0 m
Safety Contour
Areas this shallow are medium blue
16.0 m
RUN 3.25 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Run 3.25 Tracy Arm, Wind 30kn CPA 32m to 12M contour
233°T @ 32m
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:8200 (Overscale ×4.9)
8M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:57 AM
12/9/2018

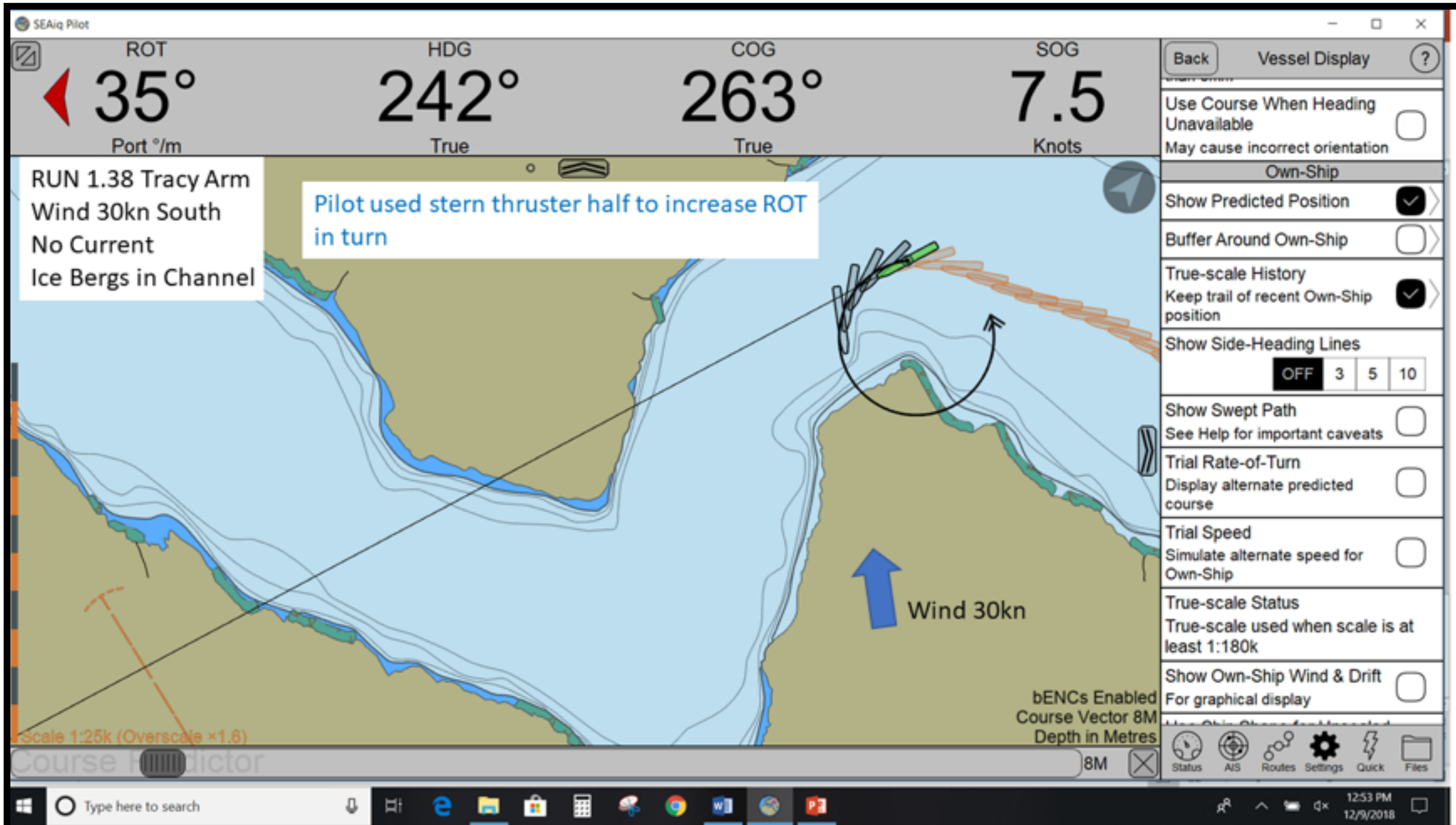
Run 1.38: Tracy Arm

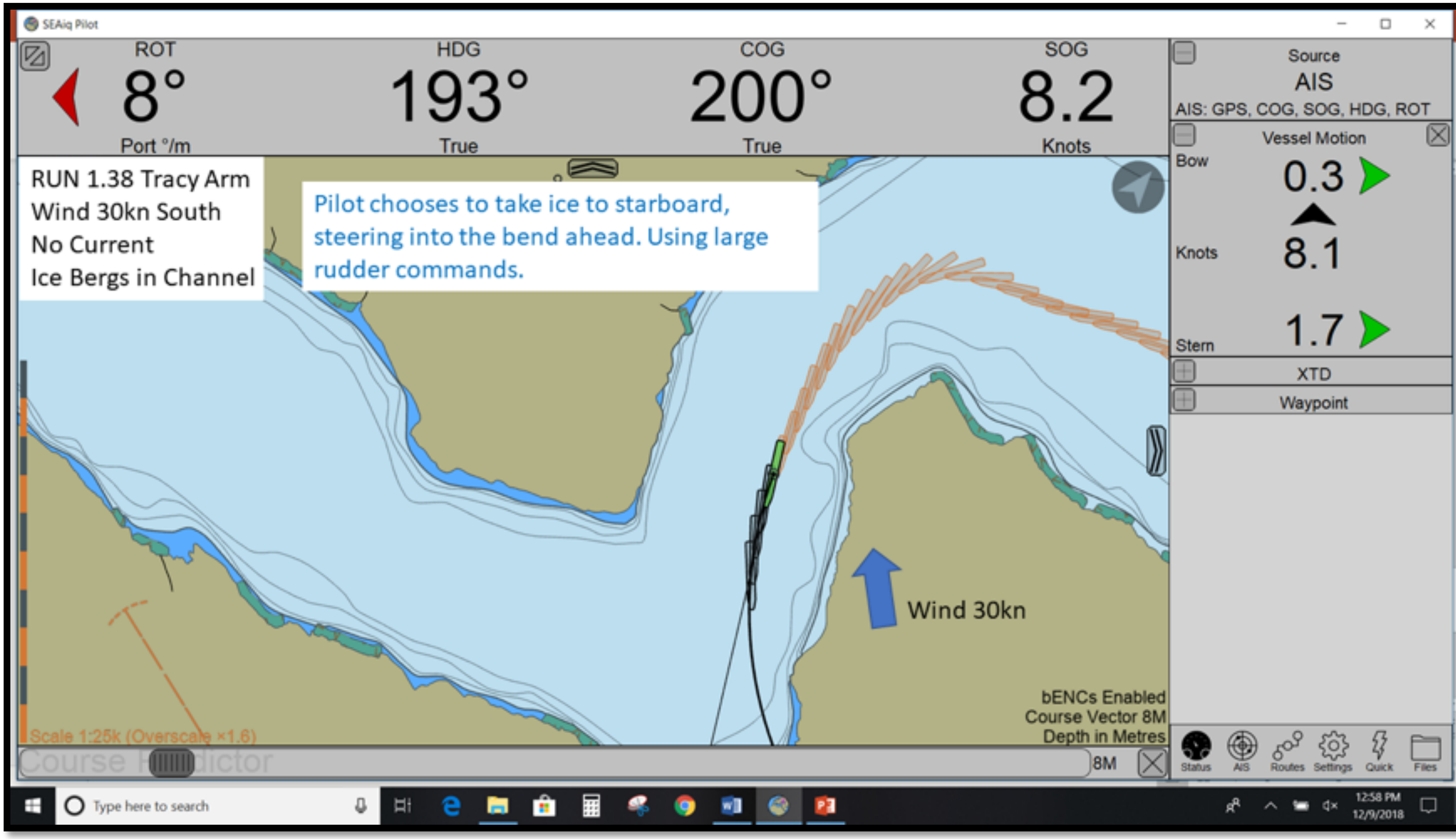
1.38 Rerun of Tracy Arm 30kn

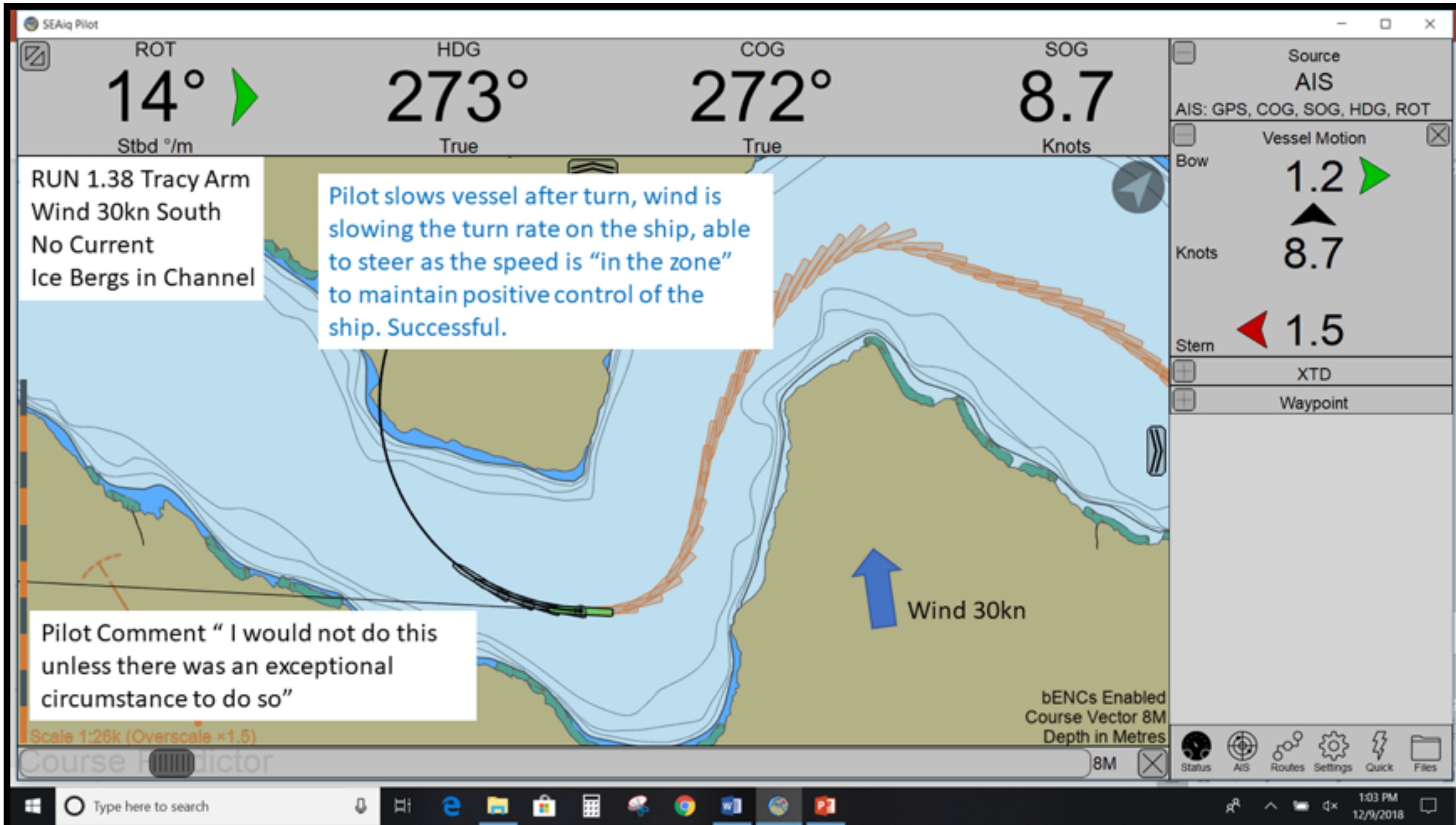
Sunday 12/9/2018

3rd run

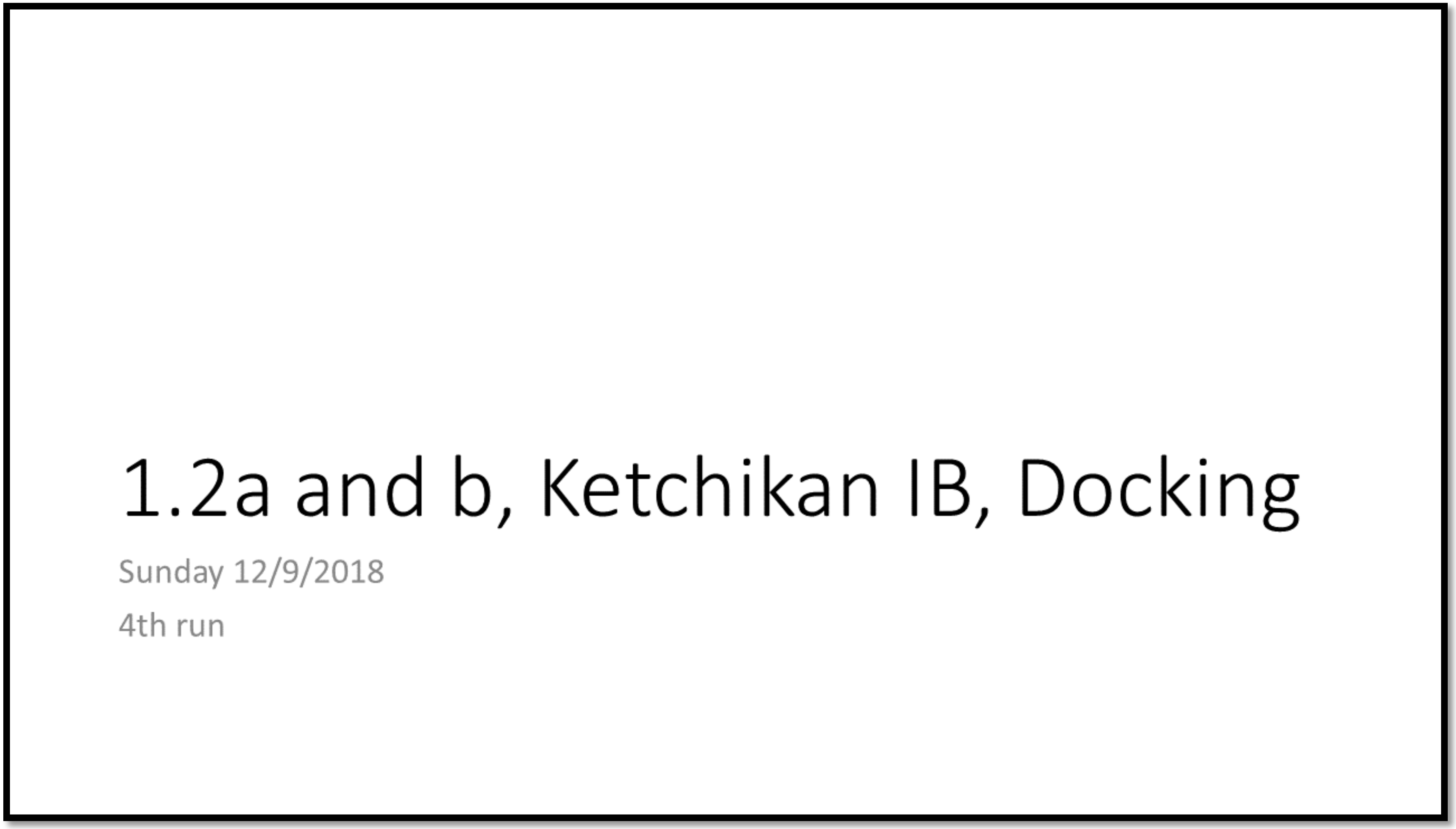

SEAiq Pilot
ROT
NONE
HDG
306°
True
COG
306°
True
SOG
8.0
Knots
RUN 1.38 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Setup: Rerun of 3.25, previous run was not successful. This run is with the same conditions, different pilot.
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:37k (Overscale ×1.1)
8M
Back
Pilot Setup
Open When Own-Ship Changes
NMEA/AIS Summary
AIS Own-Ship (GPS, SOG, COG, HDG and ROT) and 1 AIS Target
Own-Ship Size
Name ROYAL PRINCESS
Source AIS Manual
Length 330.0m
Beam 38.0m
Antenna Position
AIS Antenna Position
Source AIS Manual
Distance to Bow 165.0m
Distance from Centerline CENTER
Ext GPS Antenna Position
Distance to Bow 210.4 m
Distance from Centerline
Port Stbd 0.6 m
Status
AIS
Routes
Settings
Quick
Files
Type here to search
12:41 PM
12/9/2018

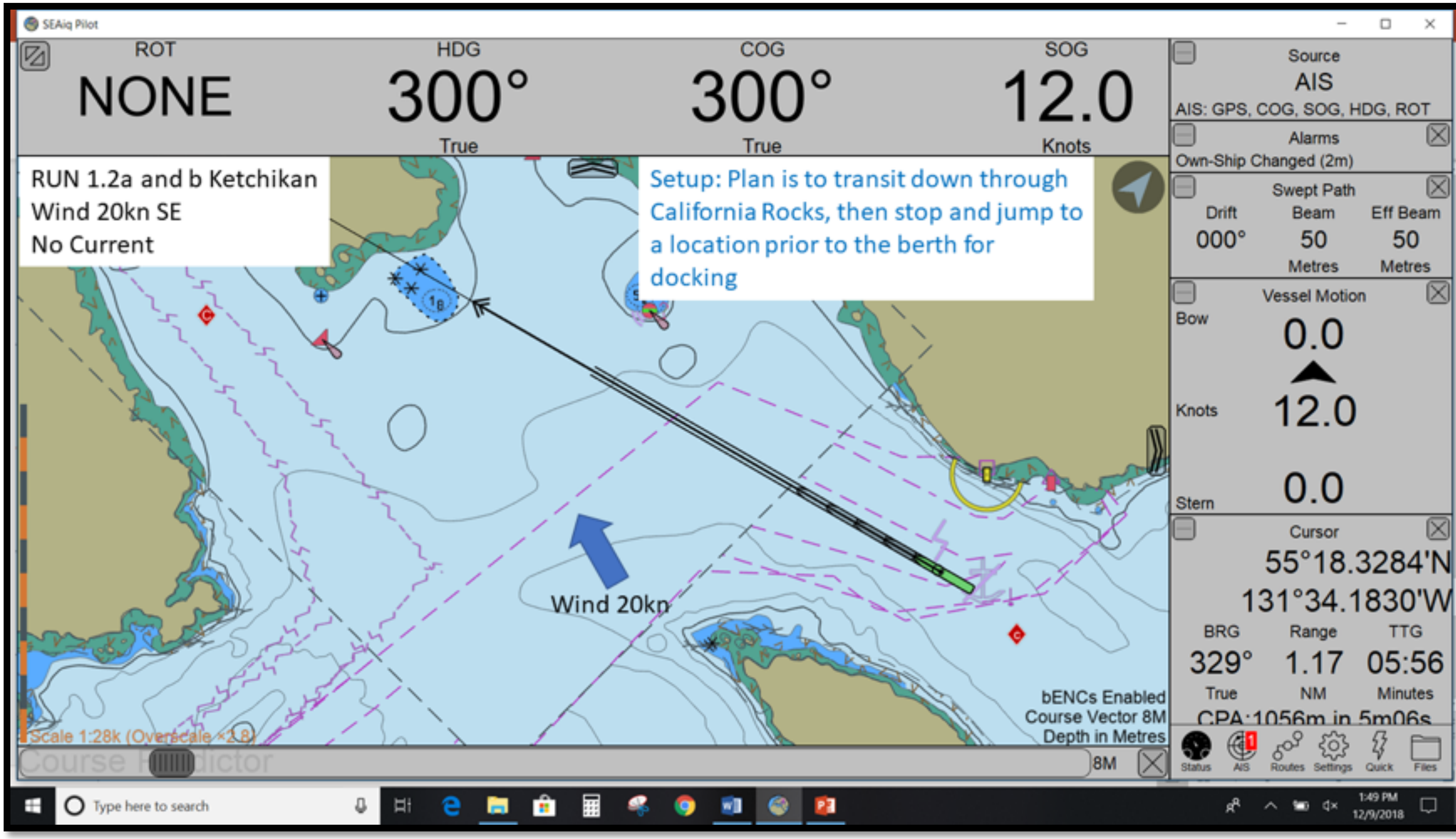

SEAiq Pilot
ROT
35°
Port °/m
HDG
242°
True
COG
263°
True
SOG
7.5
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
RUN 1.38 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Pilot used stern thruster half to increase ROT in turn
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:25k (Overscale ×1.6)
Course Predictor
8M
Status AIS Routes Settings Quick Files
Type here to search
12:53 PM
12/9/2018

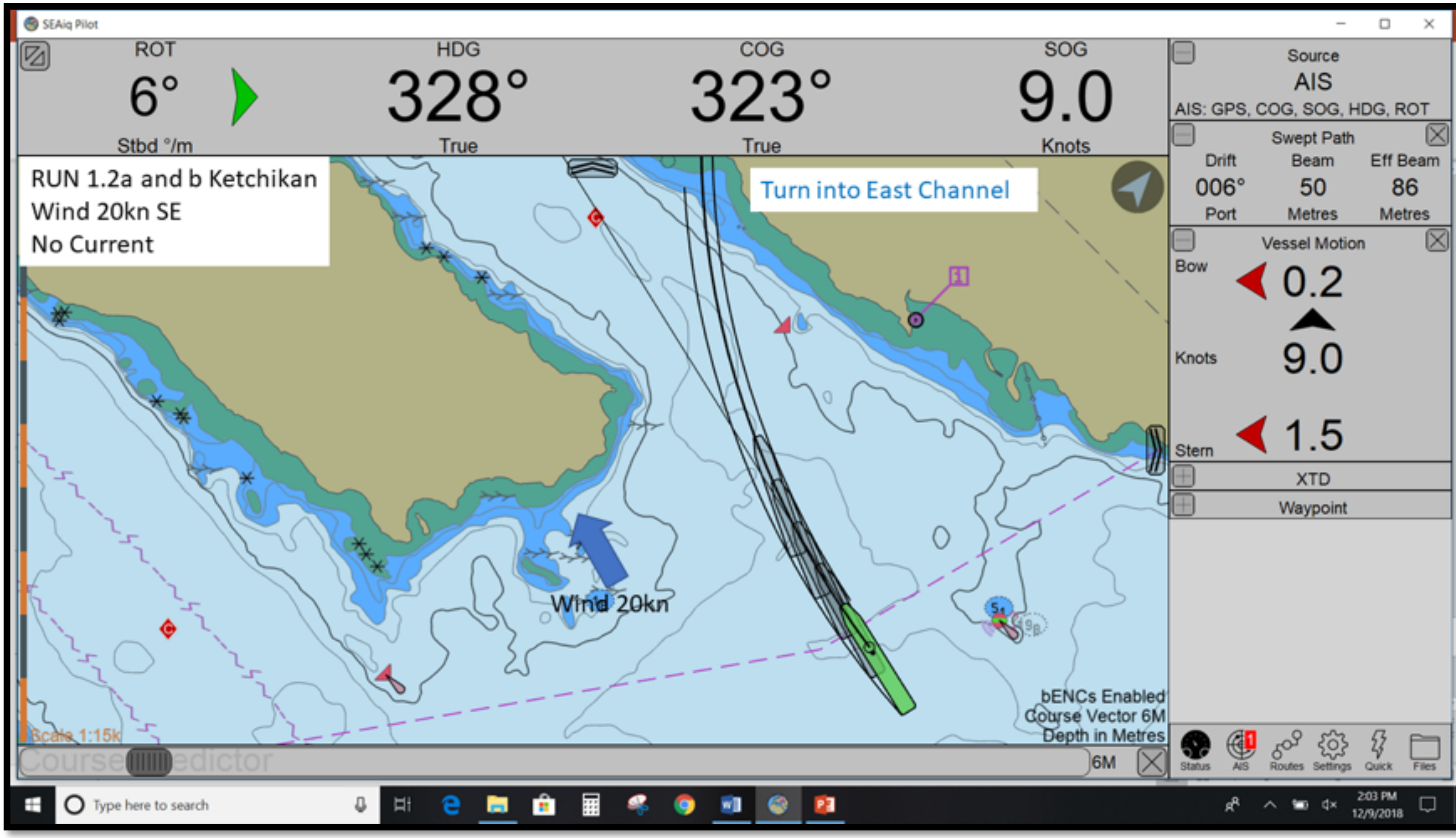

SEAiq Pilot
ROT
8°
Port °/m
HDG
193°
True
COG
200°
True
SOG
8.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Vessel Motion
Bow
0.3
Knots
8.1
Stern
1.7
XTD
Waypoint
RUN 1.38 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Pilot chooses to take ice to starboard, steering into the bend ahead. Using large rudder commands.
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:25k (Overscale ×1.6)
8M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
12:58 PM
12/9/2018

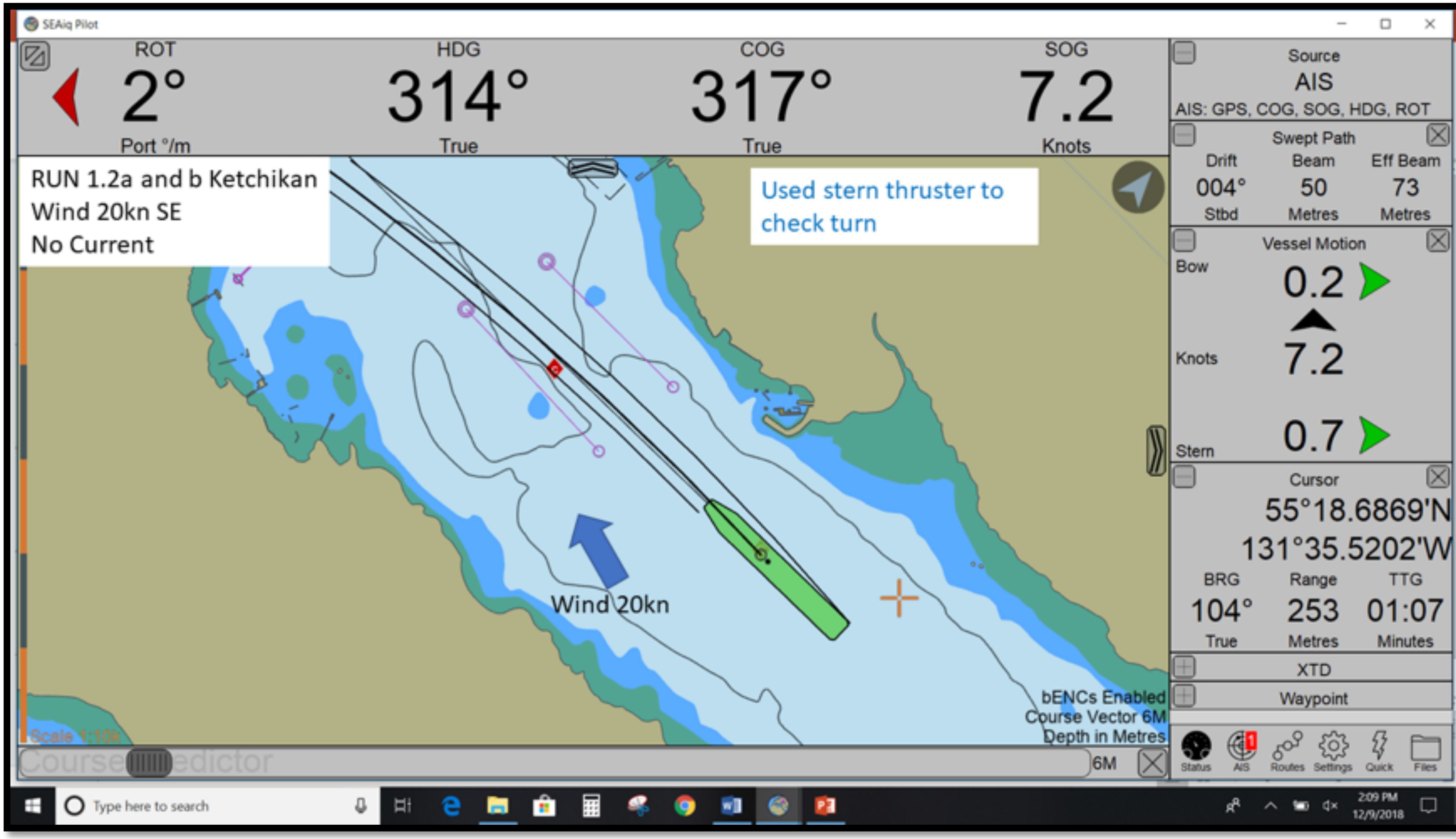

SEAiq Pilot
ROT
14°
Stbd °/m
HDG
273°
True
COG
272°
True
SOG
8.7
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Vessel Motion
Bow
1.2
Knots
8.7
Stern
1.5
XTD
Waypoint
RUN 1.38 Tracy Arm
Wind 30kn South
No Current
Ice Bergs in Channel
Pilot slows vessel after turn, wind is slowing the turn rate on the ship, able to steer as the speed is "in the zone" to maintain positive control of the ship. Successful.
Pilot Comment " I would not do this unless there was an exceptional circumstance to do so"
Wind 30kn
bENCs Enabled
Course Vector 8M
Depth in Metres
Scale 1:26k (Overscale ×1.5)
8M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:03 PM
12/9/2018

Run 1.2 A-B Ketchikan IB

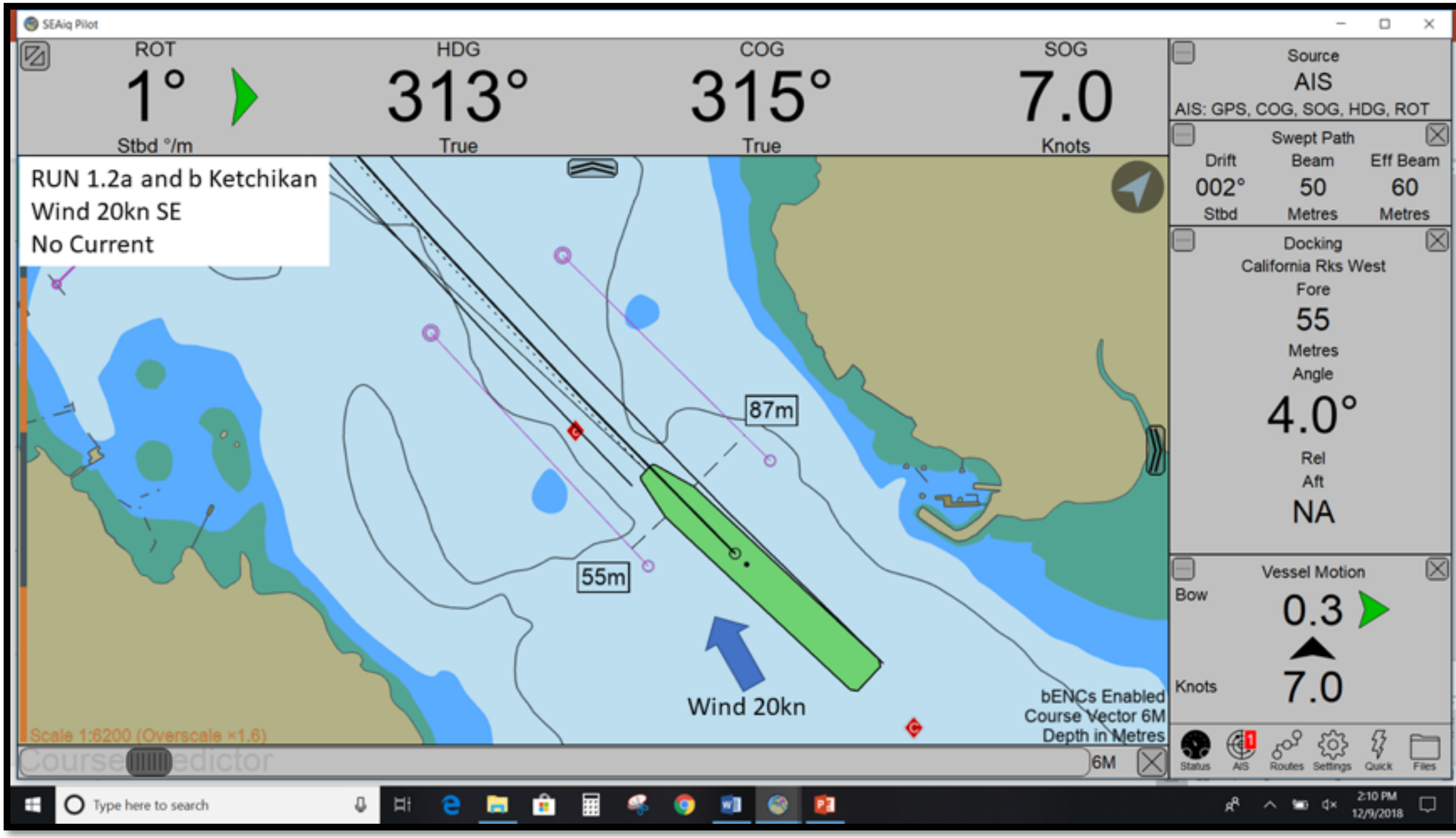



SEAiq Pilot
ROT
NONE
HDG
300°
True
COG
300°
True
SOG
12.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Alarms
Own-Ship Changed (2m)
Swept Path
Drift
000°
Beam
50
Metres
Eff Beam
50
Metres
Vessel Motion
Bow
0.0
Knots
12.0
Stern
0.0
Cursor
55°18.3284'N
131°34.1830'W
BRG
329°
True
Range
1.17
NM
TTG
05:56
Minutes
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Setup: Plan is to transit down through California Rocks, then stop and jump to a location prior to the berth for docking
Wind 20kn
bENCs Enabled
Course Vector 8M
Depth in Metres
8M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:49 PM
12/9/2018


SEAiq Pilot
ROT
6°
Stbd °/m
HDG
328°
True
COG
323°
True
SOG
9.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
006°
Port
Beam
50
Metres
Eff Beam
86
Metres
Vessel Motion
Bow
0.2
Knots
9.0
Stern
1.5
XTD
Waypoint
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Turn into East Channel
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:15k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:03 PM
12/9/2018

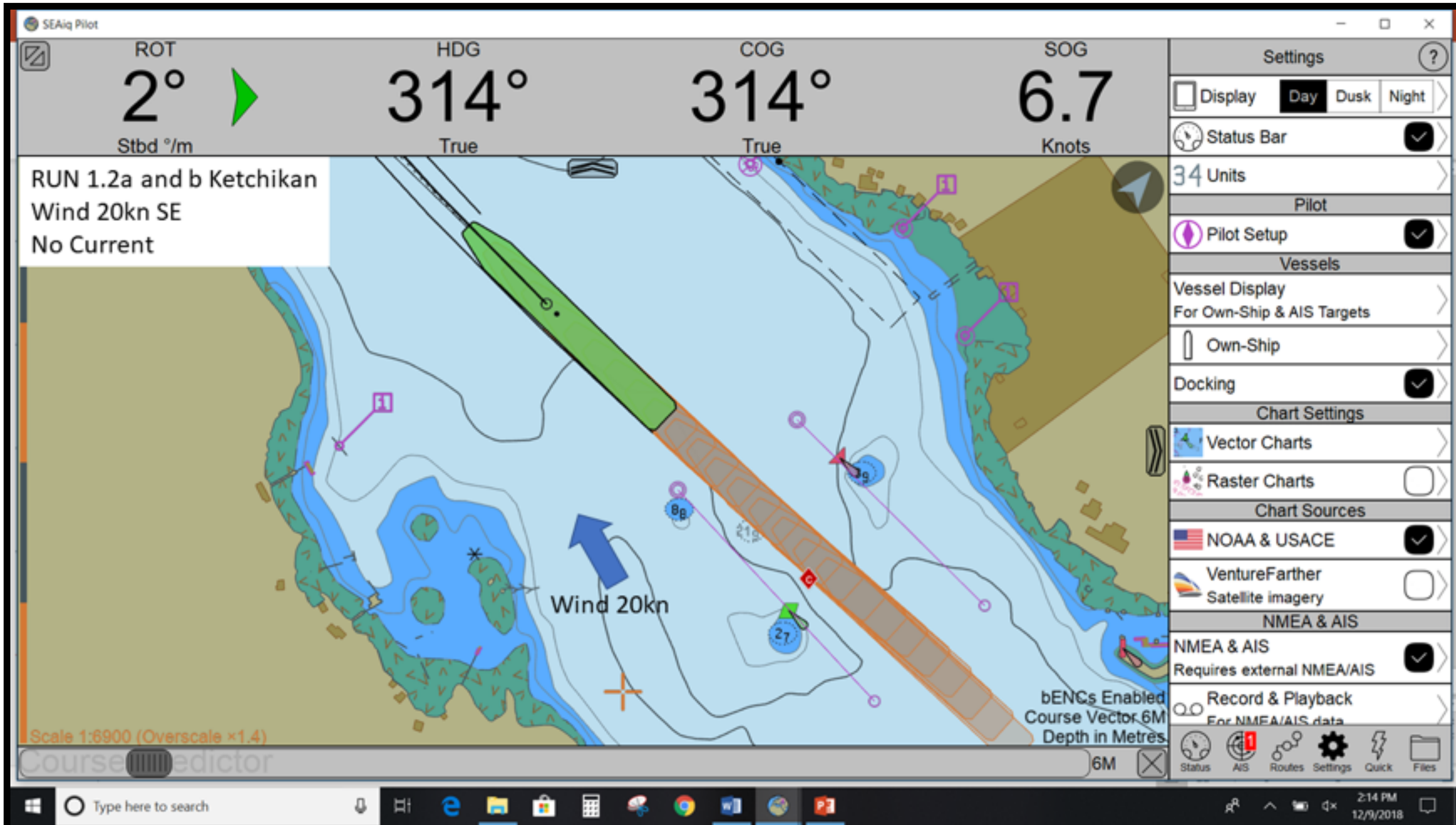


SEAiq Pilot
ROT
2°
Port °/m
HDG
314°
True
COG
317°
True
SOG
7.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
004°
Stbd
Beam
50
Metres
Eff Beam
73
Metres
Vessel Motion
Bow
0.2
Knots
7.2
Stern
0.7
Cursor
55°18.6869'N
131°35.5202'W
BRG
104°
True
Range
253
Metres
TTG
01:07
Minutes
XTD
Waypoint
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Used stern thruster to check turn
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:09 PM
12/9/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
313°
True
COG
315°
True
SOG
7.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
002°
Stbd
Beam
50
Metres
Eff Beam
60
Metres
Docking
California Rks West
Fore
55
Metres
Angle
4.0°
Rel
Aft
NA
Vessel Motion
Bow
0.3
Knots
7.0
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
87m
55m
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6200 (Overscale ×1.6)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:10 PM
12/9/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
311°
True
COG
312°
True
SOG
6.8
Knots
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
95m
35m
78m
62m
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6200 (Overscale ×1.6)
Course Predictor
6M
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:12 PM
12/9/2018


SEAiq Pilot
ROT
0°
°/m
HDG
313°
True
COG
314°
True
SOG
6.7
Knots
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Wind 20kn
36m
Scale 1:6200 (Overscale ×1.6)
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
For NMEA/AIS data
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:13 PM
12/9/2018

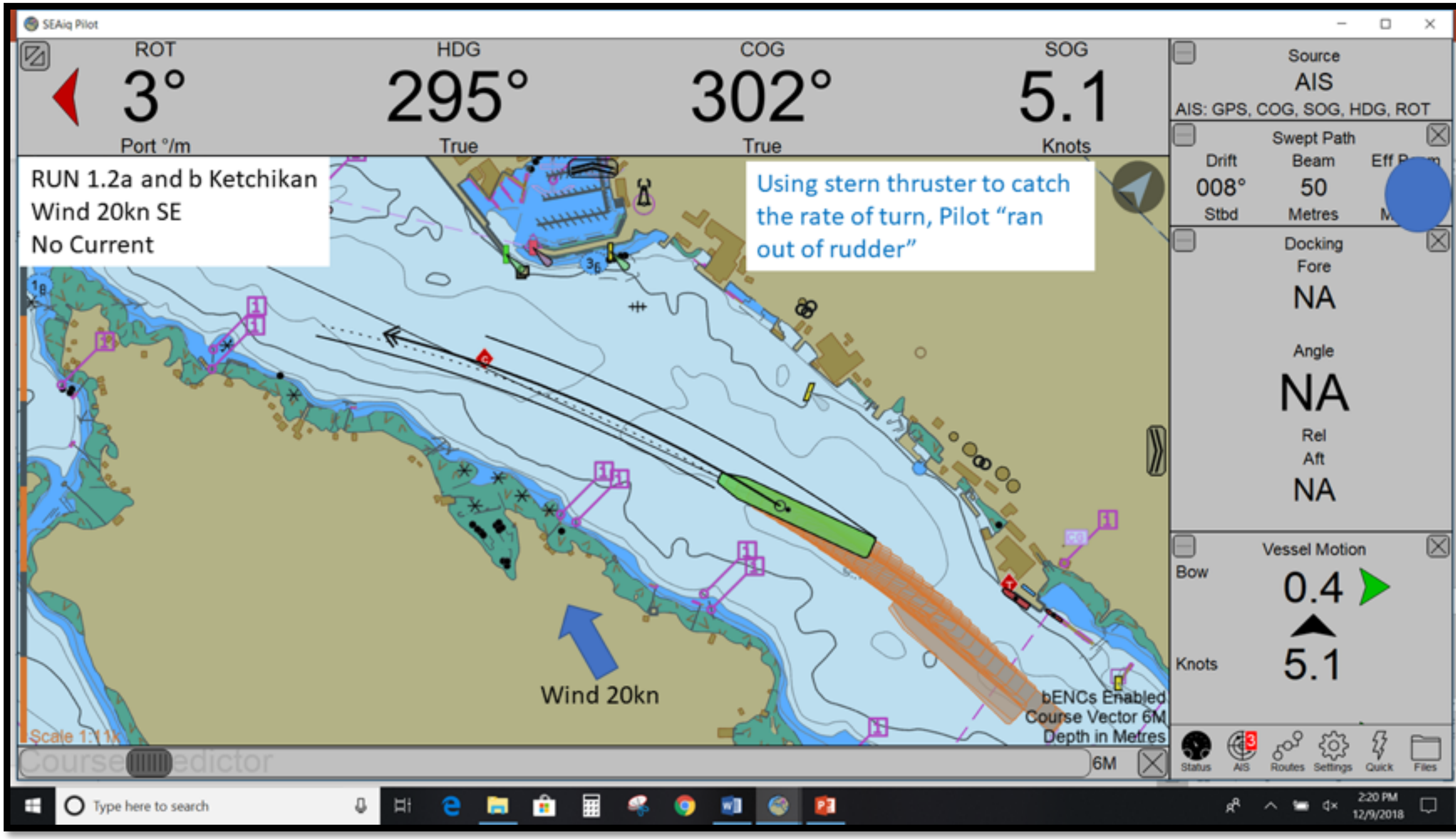

SEAiq Pilot
ROT
2°
Stbd °/m
HDG
314°
True
COG
314°
True
SOG
6.7
Knots
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6900 (Overscale ×1.4)
Course Predictor
6M
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:14 PM
12/9/2018

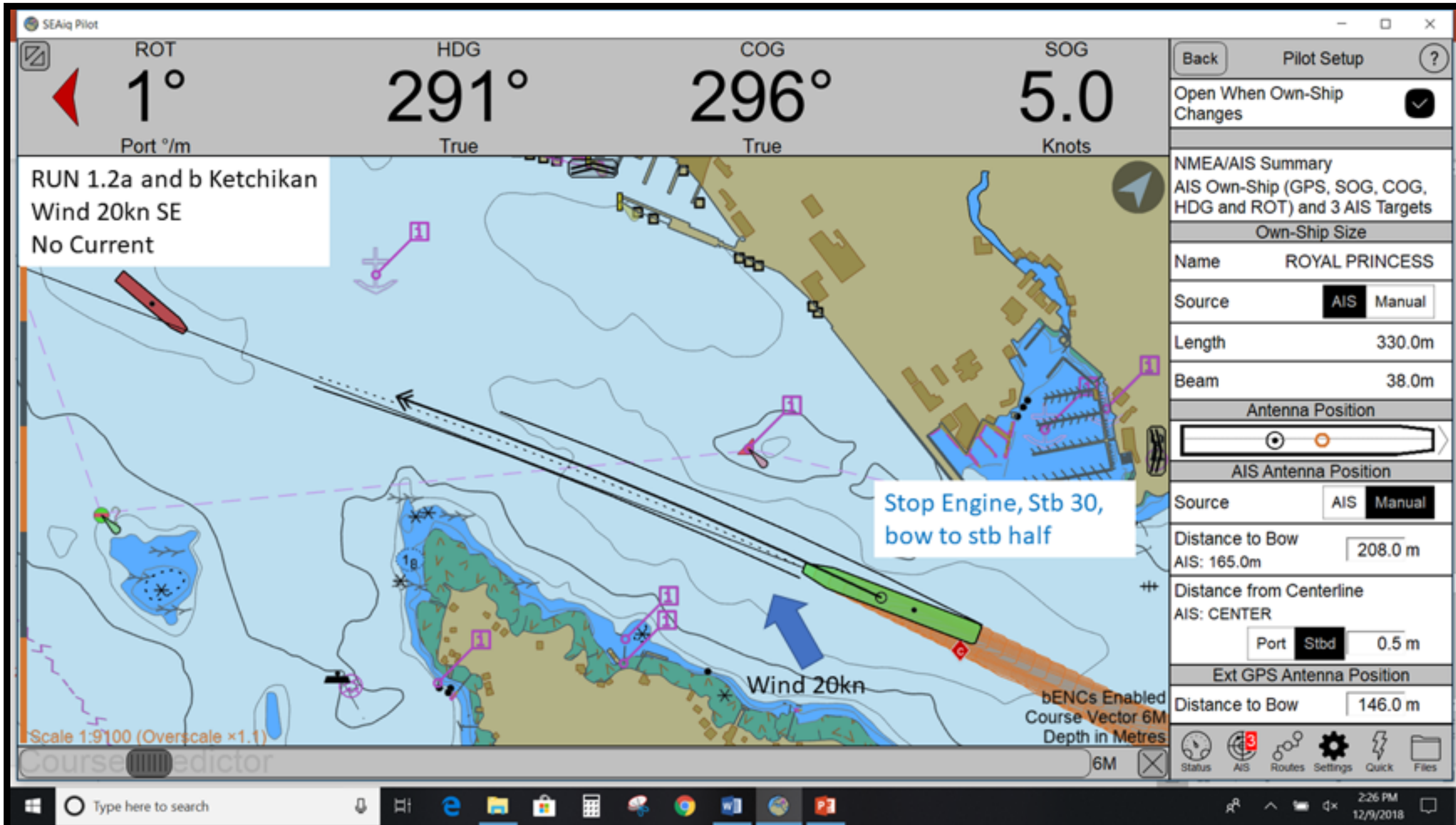
Run 1.2 A-B Ketchikan IB Part B

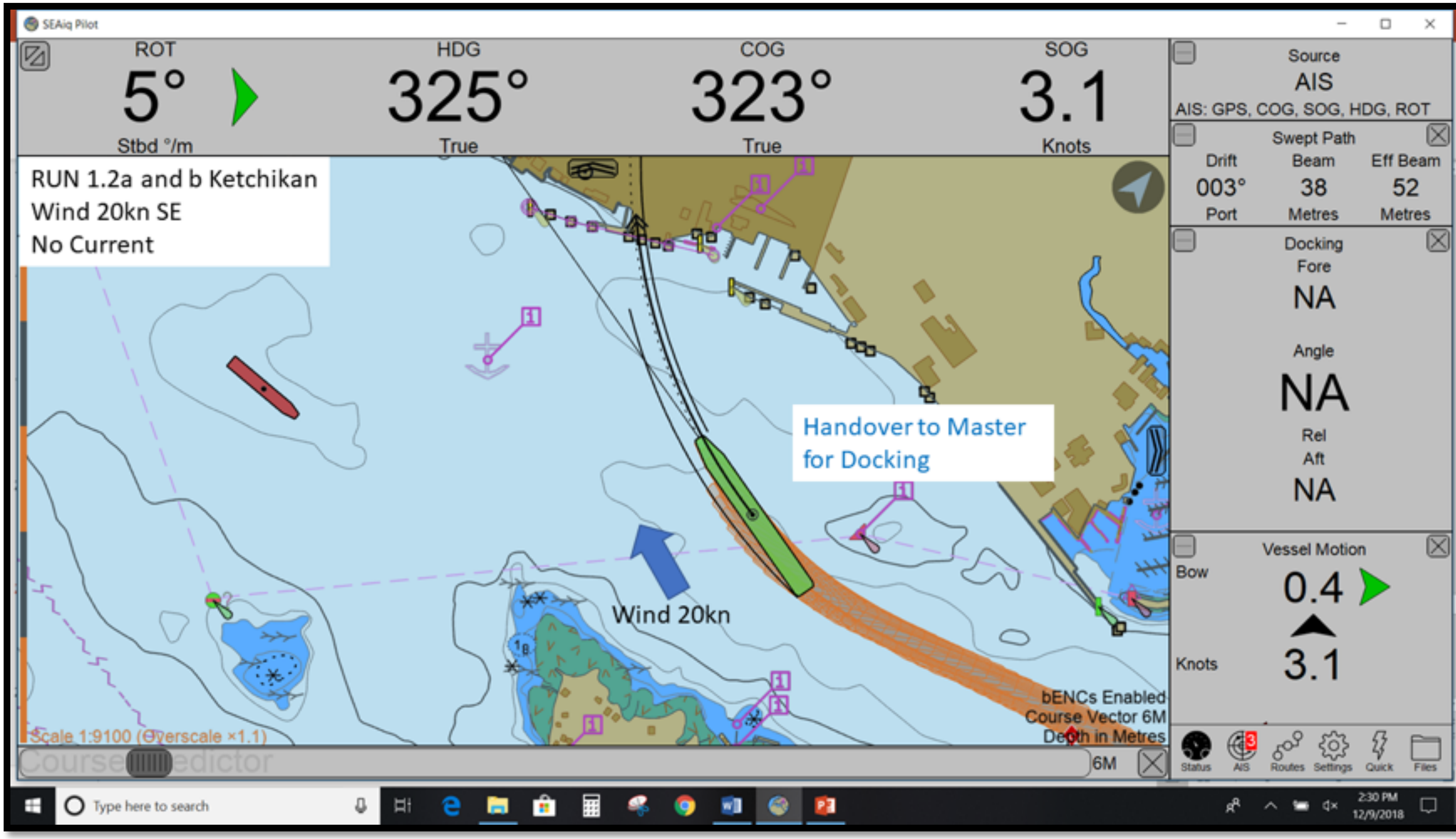
1.2b, Jump from CA Rocks to Dock Area

Sunday 12/9/2018

5th run


SEAiq Pilot
ROT
3°
Port °/m
HDG
295°
True
COG
302°
True
SOG
5.1
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
008°
Stbd
Beam
50
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
0.4
Knots
5.1
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Using stern thruster to catch the rate of turn, Pilot "ran out of rudder"
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:20 PM
12/9/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
291°
True
COG
296°
True
SOG
5.0
Knots
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Stop Engine, Stb 30,
bow to stb half
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:9100 (Overscale ×1.1)
Course Predictor
6M
Back
Pilot Setup
Open When Own-Ship Changes
NMEA/AIS Summary
AIS Own-Ship (GPS, SOG, COG, HDG and ROT) and 3 AIS Targets
Own-Ship Size
Name ROYAL PRINCESS
Source AIS Manual
Length 330.0m
Beam 38.0m
Antenna Position
AIS Antenna Position
Source AIS Manual
Distance to Bow 208.0 m
AIS: 165.0m
Distance from Centerline
AIS: CENTER
Port Stbd 0.5 m
Ext GPS Antenna Position
Distance to Bow 146.0 m
Status AIS Routes Settings Quick Files
Type here to search
2:26 PM
12/9/2018


SEAiq Pilot
ROT
5°
Stbd °/m
HDG
325°
True
COG
323°
True
SOG
3.1
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
003°
Port
Beam
38
Metres
Eff Beam
52
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
0.4
Knots
3.1
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
Handover to Master for Docking
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:9100 (Overscale ×1.1)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:30 PM
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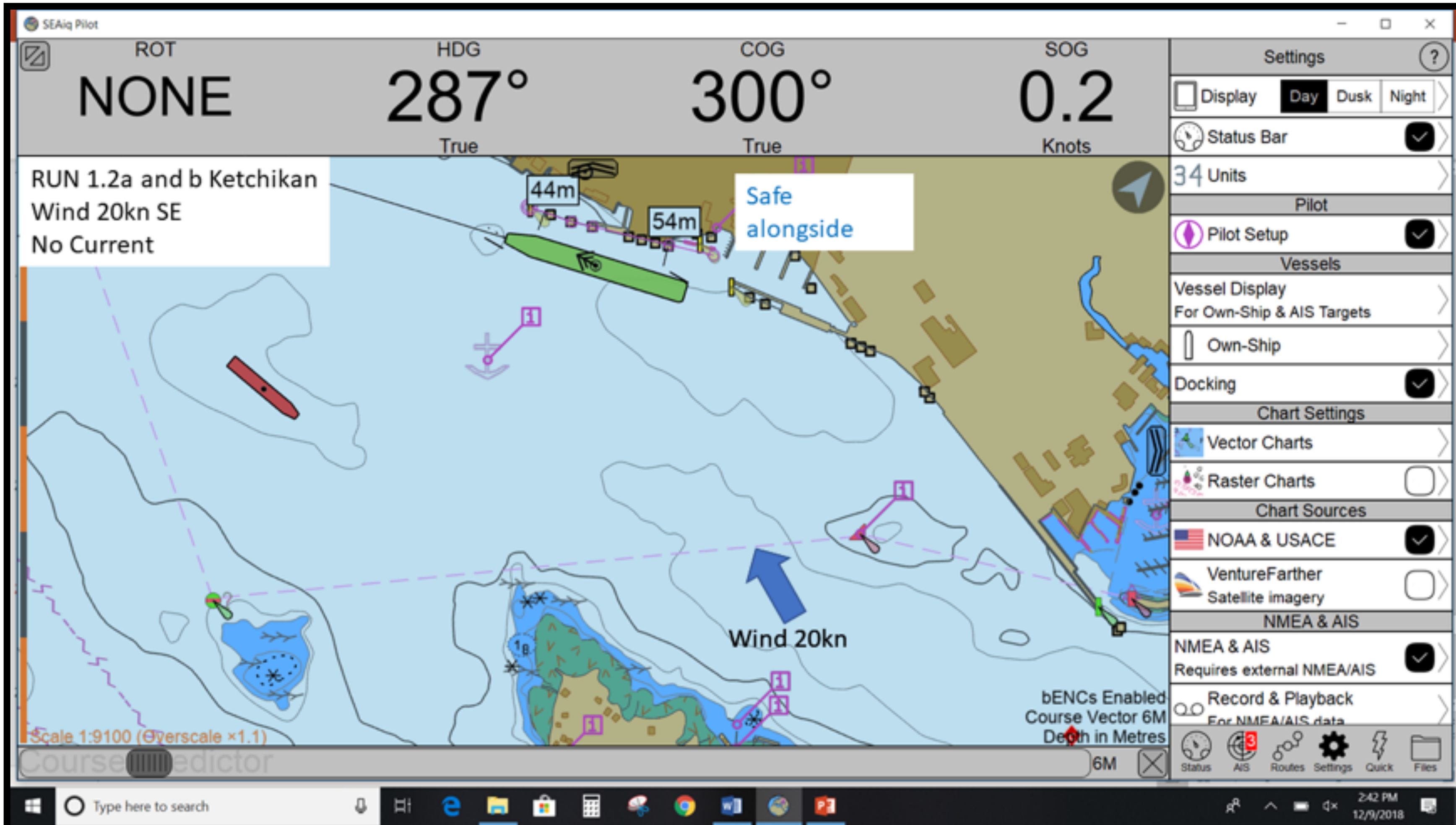
SEAiq Pilot
ROT
NONE
HDG
287°
True
COG
300°
True
SOG
0.2
Knots
RUN 1.2a and b Ketchikan
Wind 20kn SE
No Current
44m
54m
Safe
alongside
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:9100 (Overscale ×1.1)
Course Predictor
6M
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:42 PM
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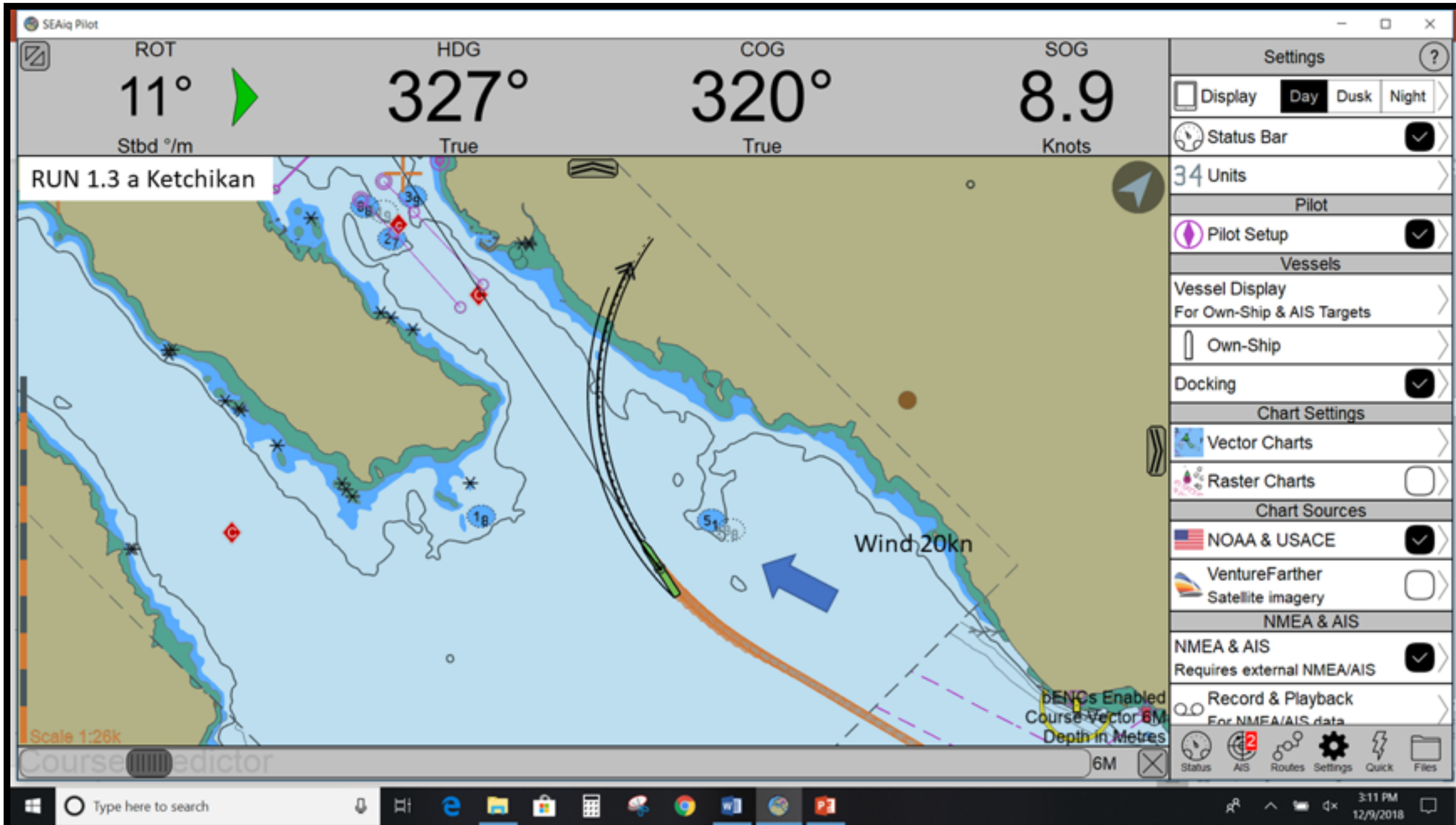
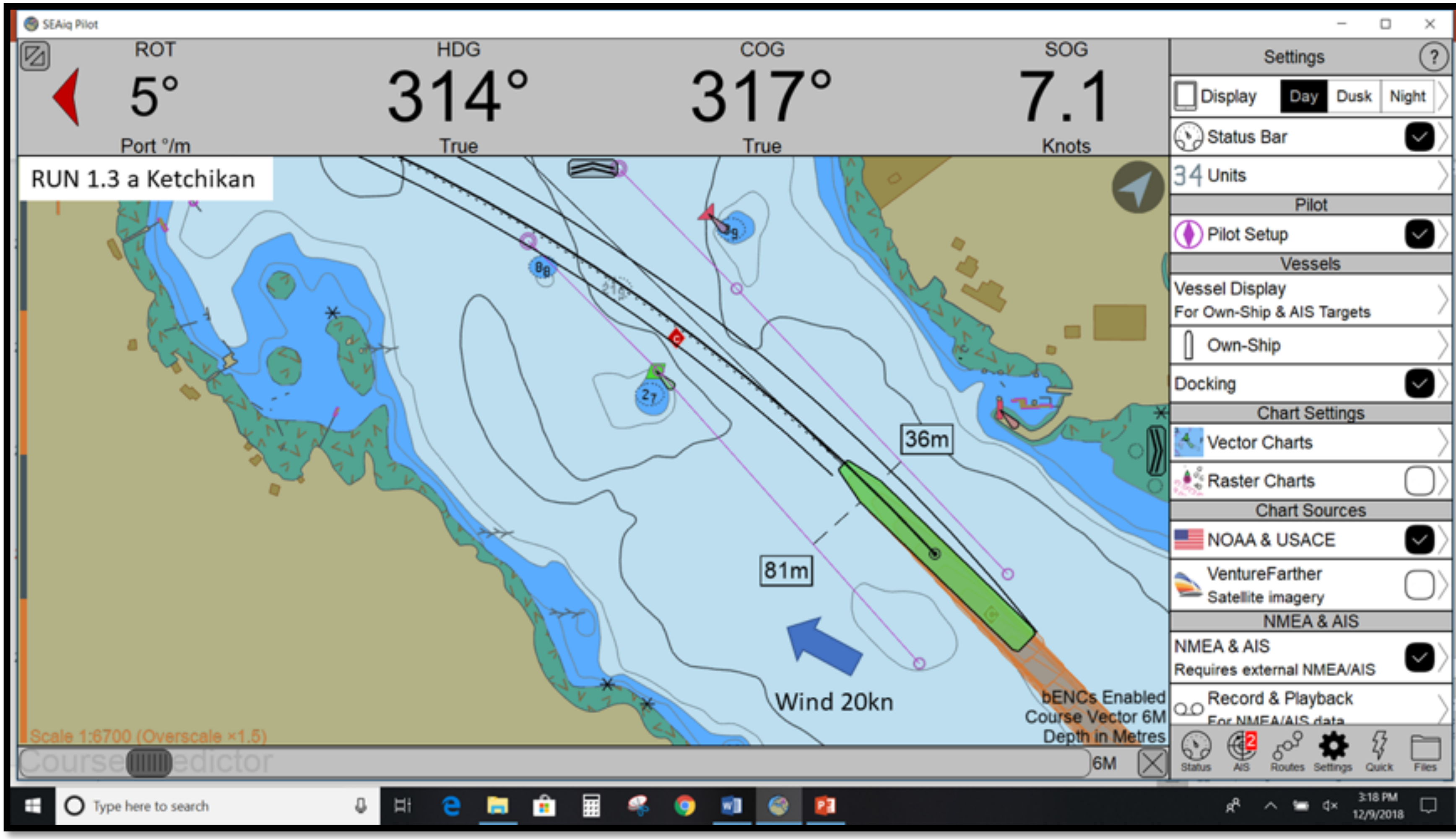
Run 1.3 SE 25 Ketchikan IB

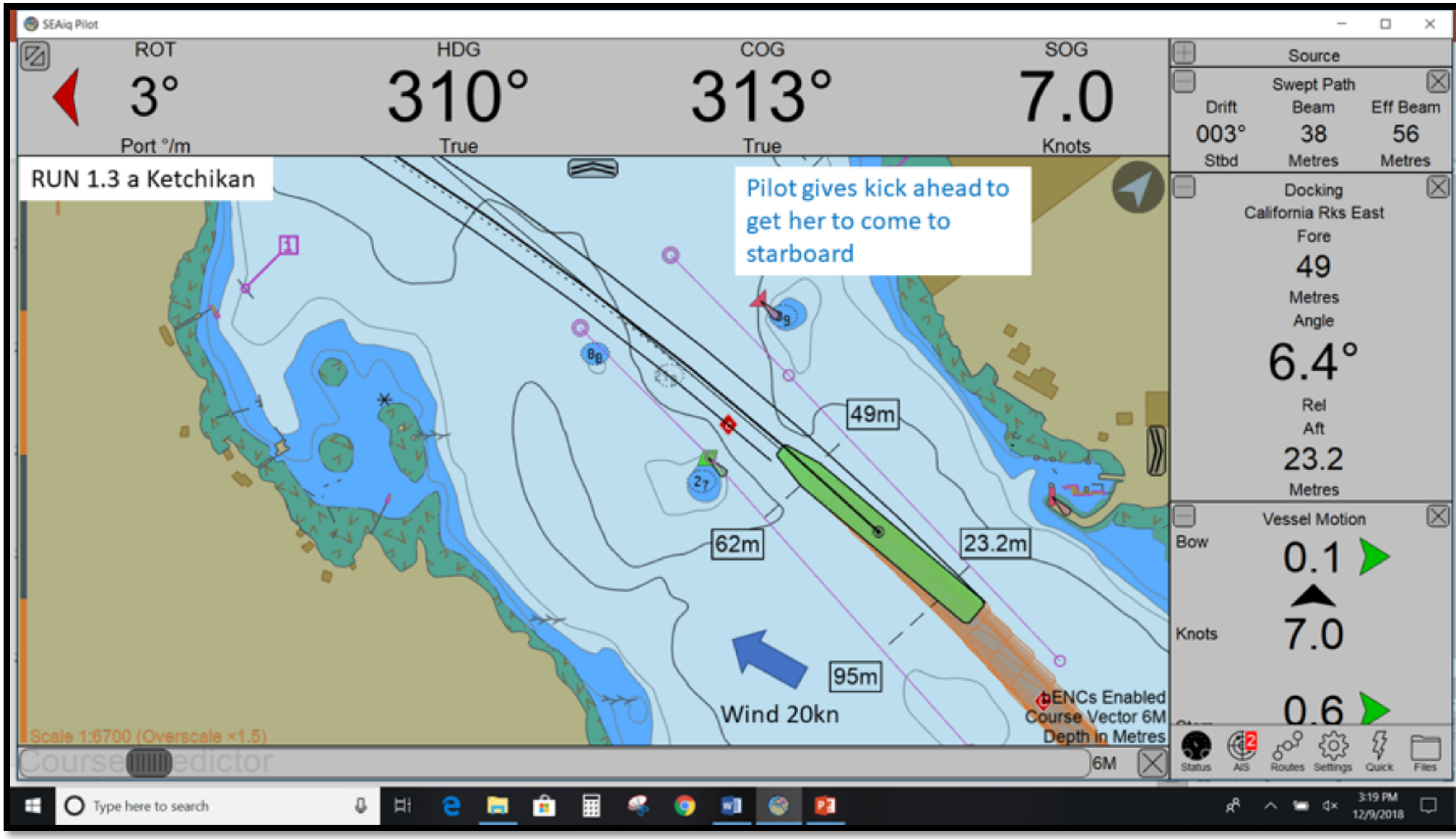
1.3 SE 25 No Current, Ketchikan

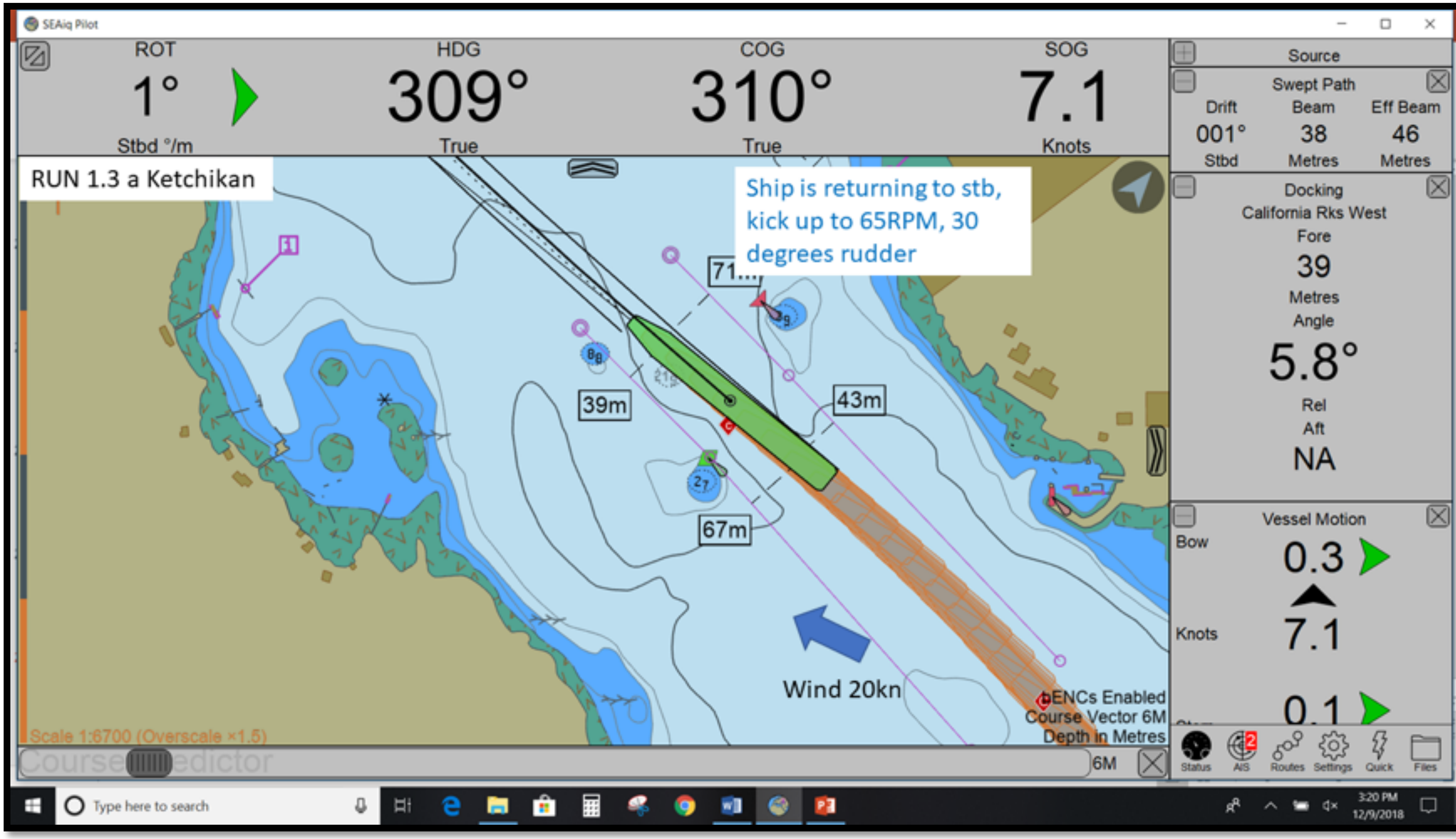
Sunday 12/9/2018

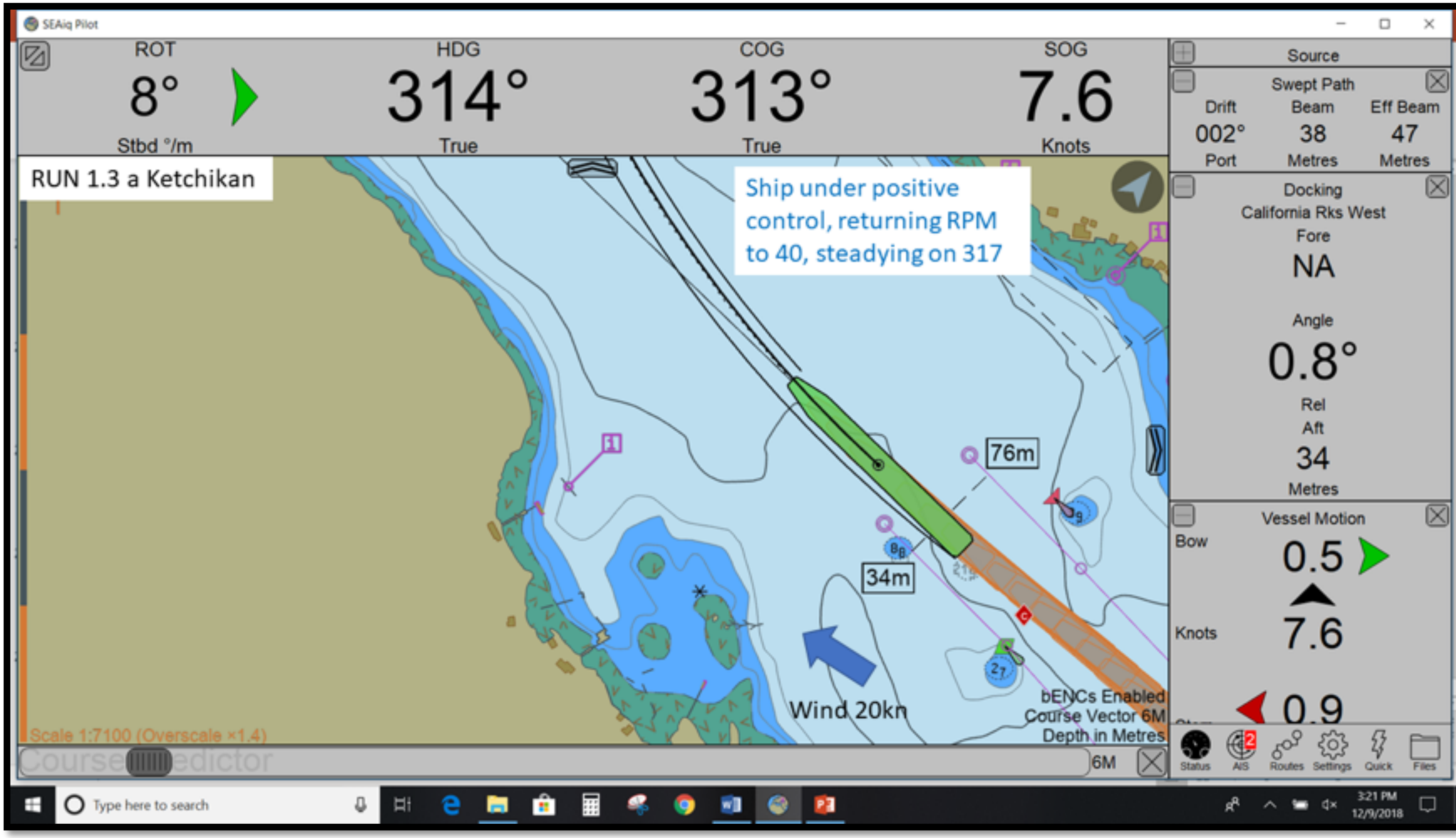
6th Run

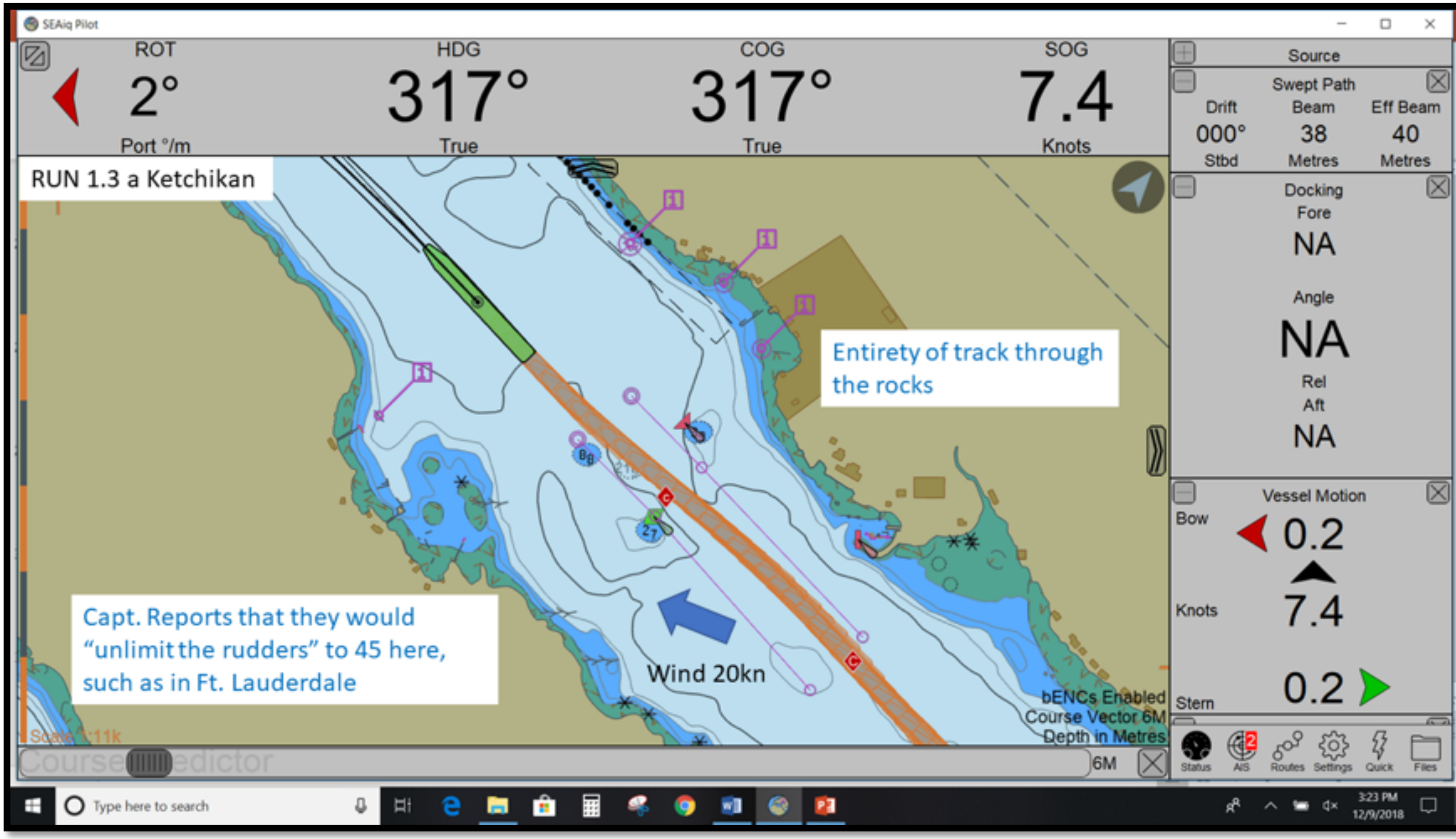

SEAiq Pilot
ROT
11°
Stbd °/m
HDG
327°
True
COG
320°
True
SOG
8.9
Knots
RUN 1.3 a Ketchikan
Wind 20kn
Scale 1:26k
Course Predictor
ENCs Enabled
Course Vector 6M
Depth in Metres
6M
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:11 PM
12/9/2018


SEAiq Pilot
ROT
5°
Port °/m
HDG
314°
True
COG
317°
True
SOG
7.1
Knots
RUN 1.3 a Ketchikan
36m
81m
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6700 (Overscale ×1.5)
Course Predictor
6M
Settings
Display
Day
Dusk
Night
Status Bar
34 Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:18 PM
12/9/2018


SEAiq Pilot
ROT
3°
Port °/m
HDG
310°
True
COG
313°
True
SOG
7.0
Knots
Source
Swept Path
Drift
003°
Stbd
Beam
38
Metres
Eff Beam
56
Metres
Docking
California Rks East
Fore
49
Metres
Angle
6.4°
Rel
Aft
23.2
Metres
Vessel Motion
Bow
0.1
Knots
7.0
0.6
RUN 1.3 a Ketchikan
Pilot gives kick ahead to get her to come to starboard
49m
62m
23.2m
95m
Wind 20kn
eENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6700 (Overscale ×1.5)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:19 PM
12/9/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
309°
True
COG
310°
True
SOG
7.1
Knots
Source
Swept Path
Drift
001°
Stbd
Beam
38
Metres
Eff Beam
46
Metres
Docking
California Rks West
Fore
39
Metres
Angle
5.8°
Rel
Aft
NA
Vessel Motion
Bow
0.3
Knots
7.1
0.1
RUN 1.3 a Ketchikan
Ship is returning to stb, kick up to 65RPM, 30 degrees rudder
39m
43m
67m
Wind 20kn
ENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6700 (Overscale ×1.5)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:20 PM
12/9/2018


SEAiq Pilot
ROT
8°
Stbd °/m
HDG
314°
True
COG
313°
True
SOG
7.6
Knots
Source
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
47
Metres
Docking
California Rks West
Fore
NA
Angle
0.8°
Rel
Aft
34
Metres
Vessel Motion
Bow
0.5
Knots
7.6
0.9
RUN 1.3 a Ketchikan
Ship under positive control, returning RPM to 40, steadying on 317
76m
34m
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:7100 (Overscale ×1.4)
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:21 PM
12/9/2018

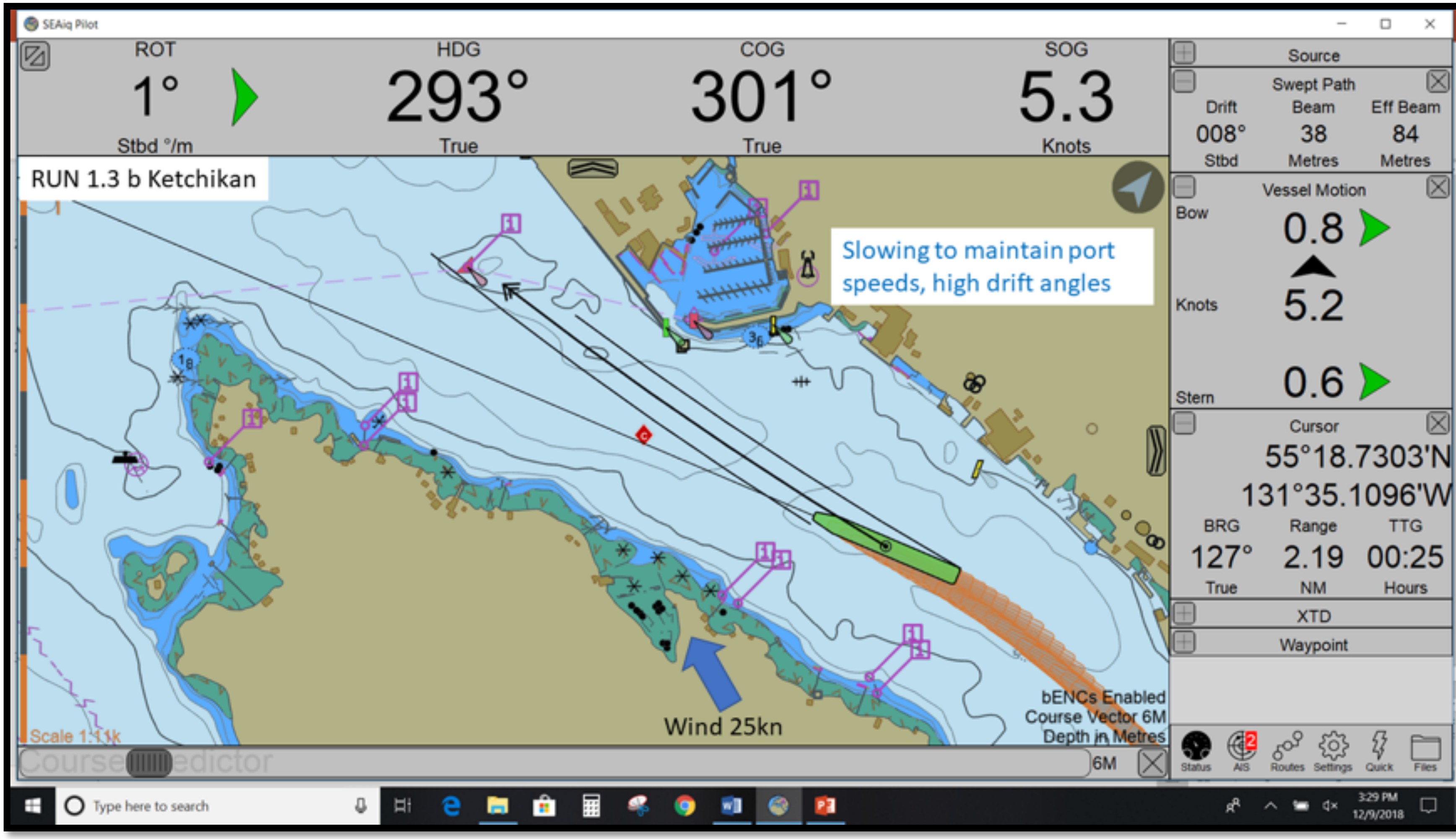

SEAiq Pilot
ROT
2°
Port °/m
HDG
317°
True
COG
317°
True
SOG
7.4
Knots
Source
Swept Path
Drift
000°
Stbd
Beam
38
Metres
Eff Beam
40
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
0.2
Knots
7.4
Stern
0.2
RUN 1.3 a Ketchikan
Entirety of track through the rocks
Capt. Reports that they would "unlimit the rudders" to 45 here, such as in Ft. Lauderdale
Wind 20kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:23 PM
12/9/2018

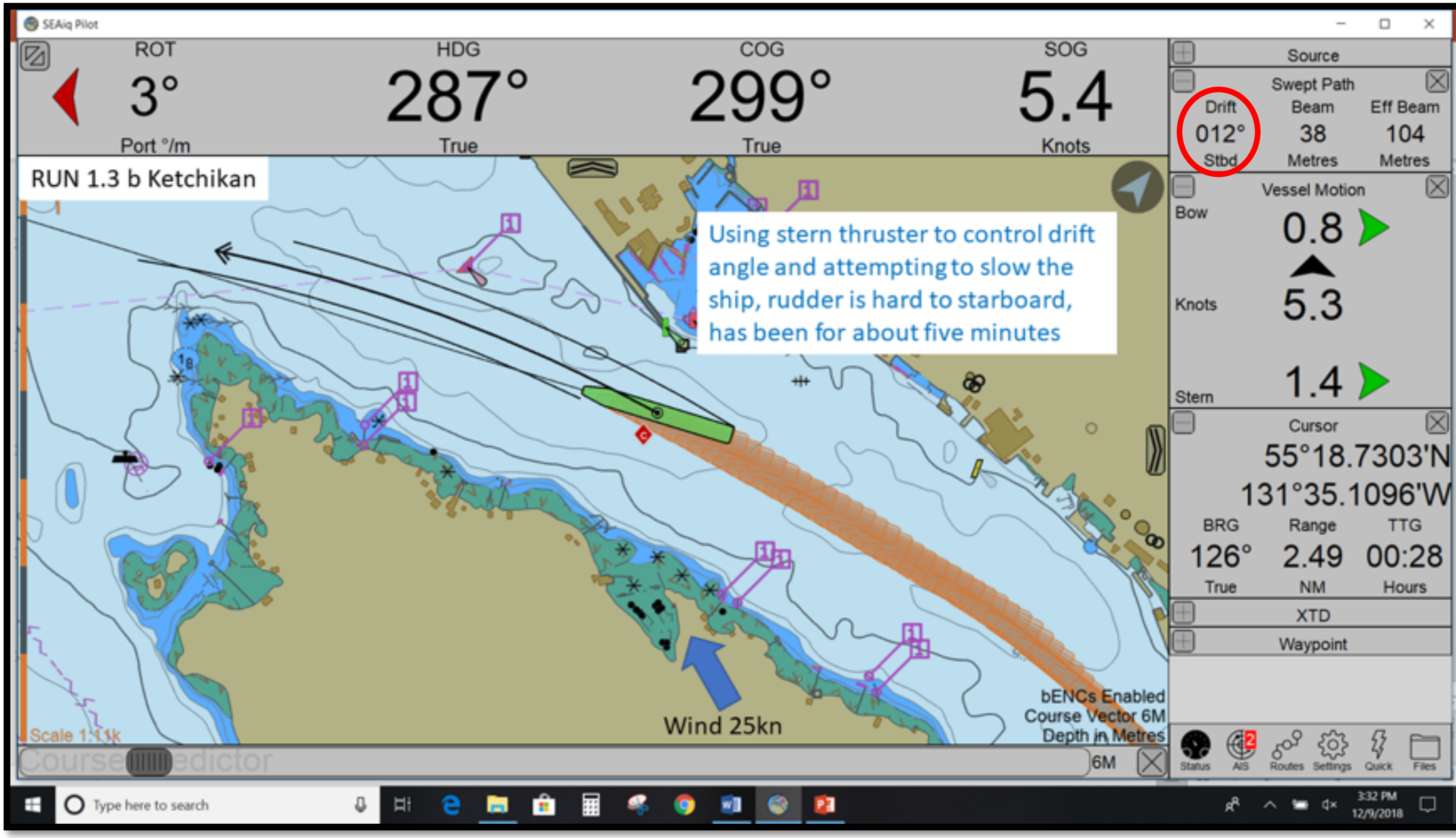
Run 1.3B, Ketchikan IB, 20kn SSE

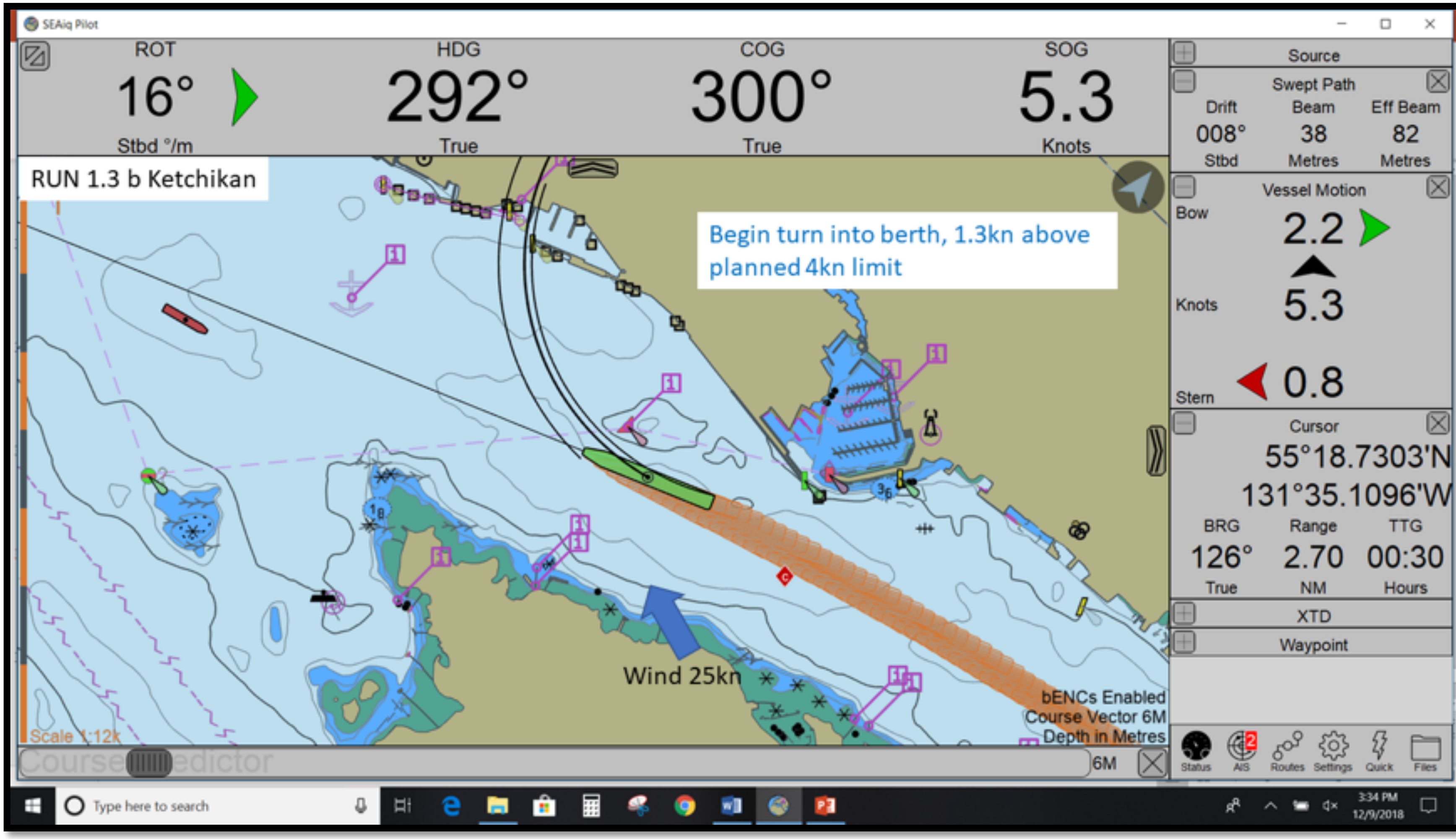
1.3b, Jump from CA Rocks to Dock Area, 20 kn SSE

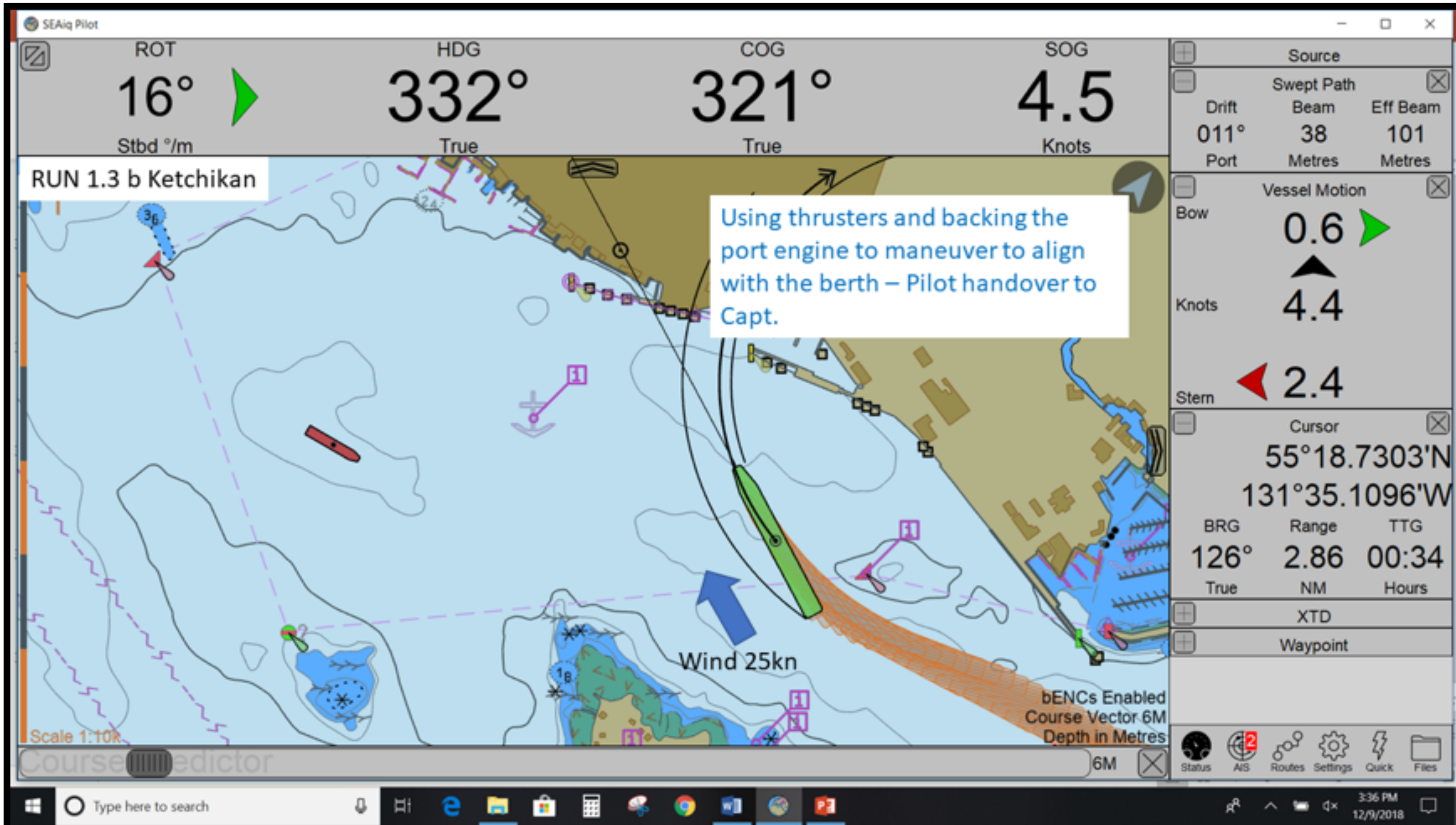
Sunday 12/9/2018

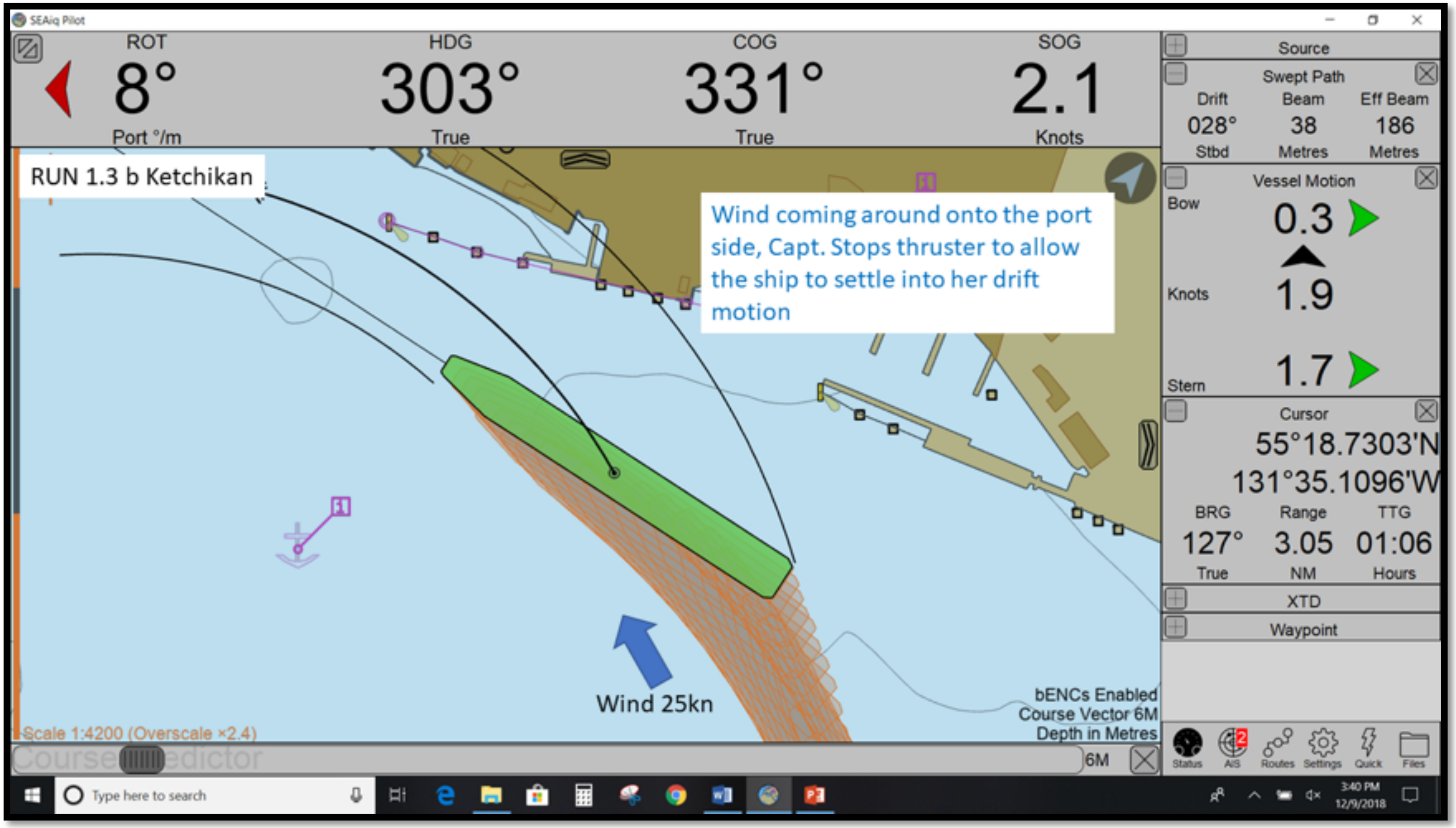
7th run

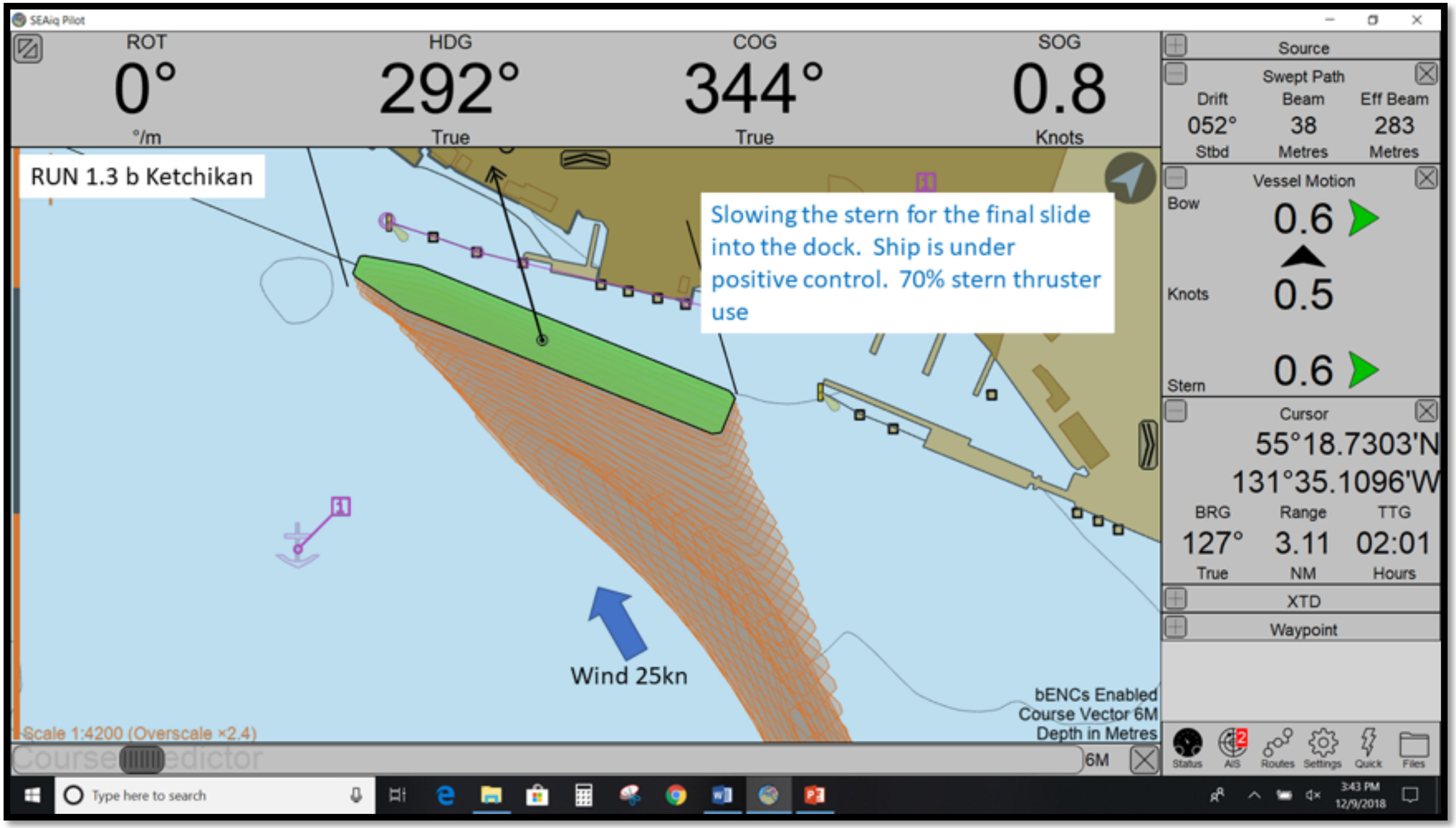

SEAiq Pilot
ROT
1°
Stbd °/m
HDG
293°
True
COG
301°
True
SOG
5.3
Knots
Source
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
84
Metres
Vessel Motion
Bow
0.8
Knots
5.2
Stern
0.6
Cursor
55°18.7303'N
131°35.1096'W
BRG
127°
True
Range
2.19
NM
TTG
00:25
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Slowing to maintain port speeds, high drift angles
Wind 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:11k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:29 PM
12/9/2018


SEAiq Pilot
ROT
3°
Port °/m
HDG
287°
True
COG
299°
True
SOG
5.4
Knots
Source
Swept Path
Drift
012°
Stbd
Beam
38
Metres
Eff Beam
104
Metres
Vessel Motion
Bow
0.8
Knots
5.3
Stern
1.4
Cursor
55°18.7303'N
131°35.1096'W
BRG
126°
True
Range
2.49
NM
TTG
00:28
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Using stern thruster to control drift angle and attempting to slow the ship, rudder is hard to starboard, has been for about five minutes
Wind 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:11k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:32 PM
12/9/2018


SEAiq Pilot
ROT
16°
Stbd °/m
HDG
292°
True
COG
300°
True
SOG
5.3
Knots
Source
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
82
Metres
Vessel Motion
Bow
2.2
Knots
5.3
Stern
0.8
Cursor
55°18.7303'N
131°35.1096'W
BRG
126°
True
Range
2.70
NM
TTG
00:30
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Begin turn into berth, 1.3kn above planned 4kn limit
Wind 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:12k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:34 PM
12/9/2018


SEAiq Pilot
ROT
16°
Stbd °/m
HDG
332°
True
COG
321°
True
SOG
4.5
Knots
Source
Swept Path
Drift
011°
Port
Beam
38
Metres
Eff Beam
101
Metres
Vessel Motion
Bow
0.6
Knots
4.4
Stern
2.4
Cursor
55°18.7303'N
131°35.1096'W
BRG
126°
True
Range
2.86
NM
TTG
00:34
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Using thrusters and backing the port engine to maneuver to align with the berth – Pilot handover to Capt.
Wind 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:10k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:36 PM
12/9/2018


SEAiq Pilot
ROT
8°
Port °/m
HDG
303°
True
COG
331°
True
SOG
2.1
Knots
Source
Swept Path
Drift
028°
Stbd
Beam
38
Metres
Eff Beam
186
Metres
Vessel Motion
Bow
0.3
Knots
1.9
Stern
1.7
Cursor
55°18.7303'N
131°35.1096'W
BRG
127°
True
Range
3.05
NM
TTG
01:06
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Wind coming around onto the port side, Capt. Stops thruster to allow the ship to settle into her drift motion
Wind 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:4200 (Overscale ×2.4)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:40 PM
12/9/2018

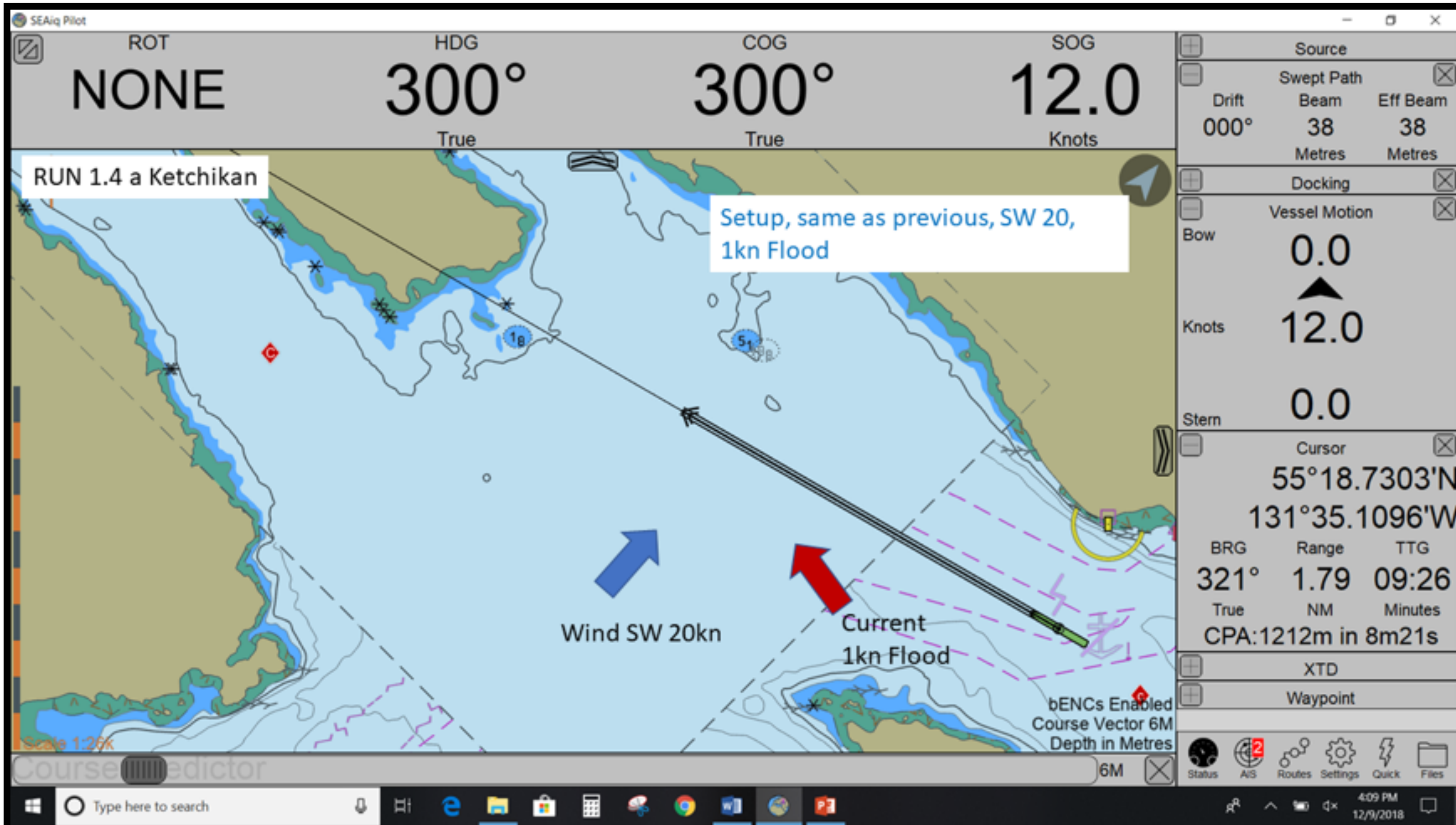

SEAiq Pilot
ROT
0°
°/m
HDG
292°
True
COG
344°
True
SOG
0.8
Knots
Source
Swept Path
Drift
052°
Stbd
Beam
38
Metres
Eff Beam
283
Metres
Vessel Motion
Bow
0.6
0.5
Knots
Stern
0.6
Cursor
55°18.7303'N
131°35.1096'W
BRG
127°
True
Range
3.11
NM
TTG
02:01
Hours
XTD
Waypoint
RUN 1.3 b Ketchikan
Slowing the stern for the final slide into the dock. Ship is under positive control. 70% stern thruster use
Wind 25kn
Scale 1:4200 (Overscale ×2.4)
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:43 PM
12/9/2018

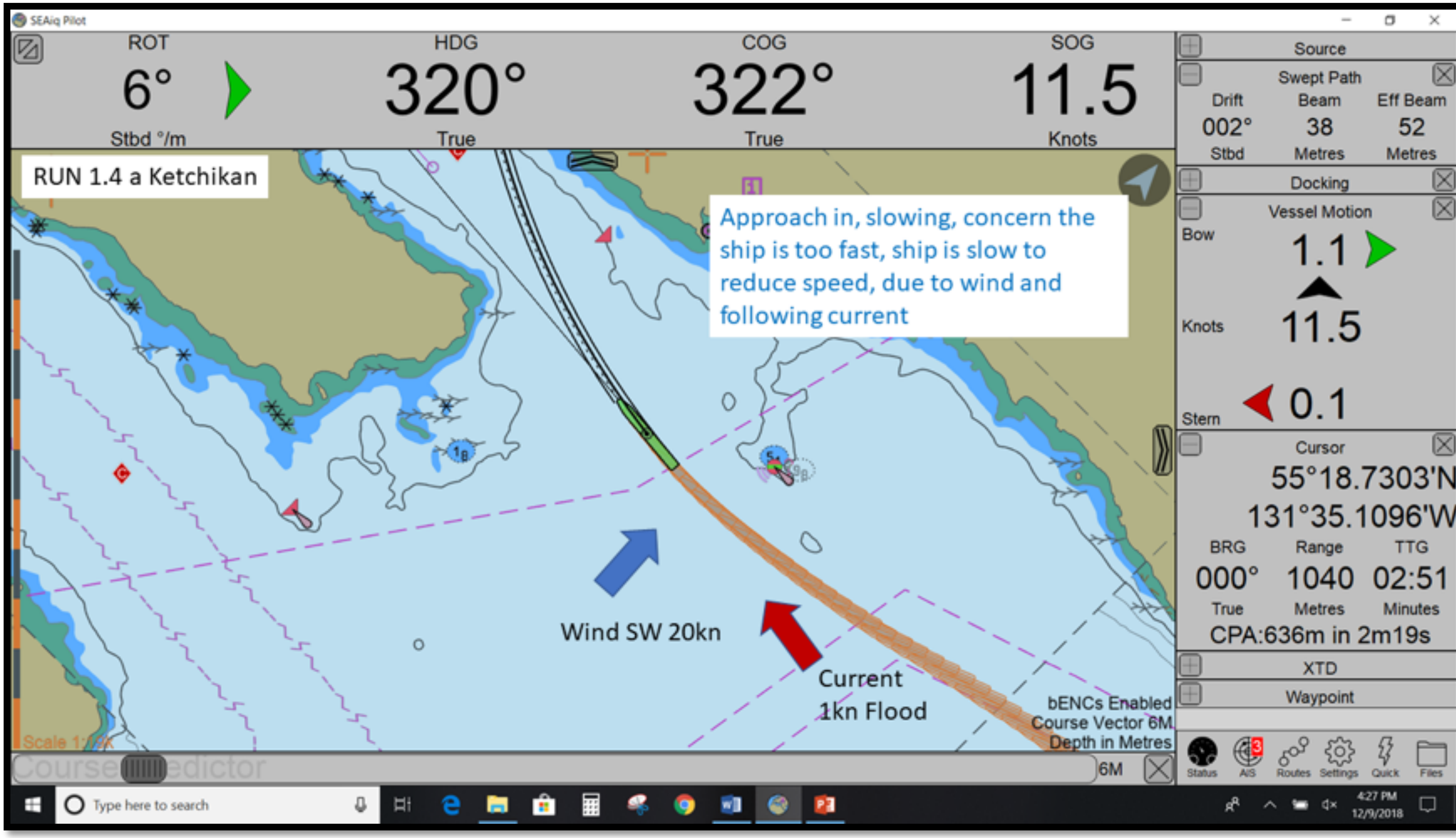
Run 1.4 A-B Ketchikan, SW20 1kn Flood

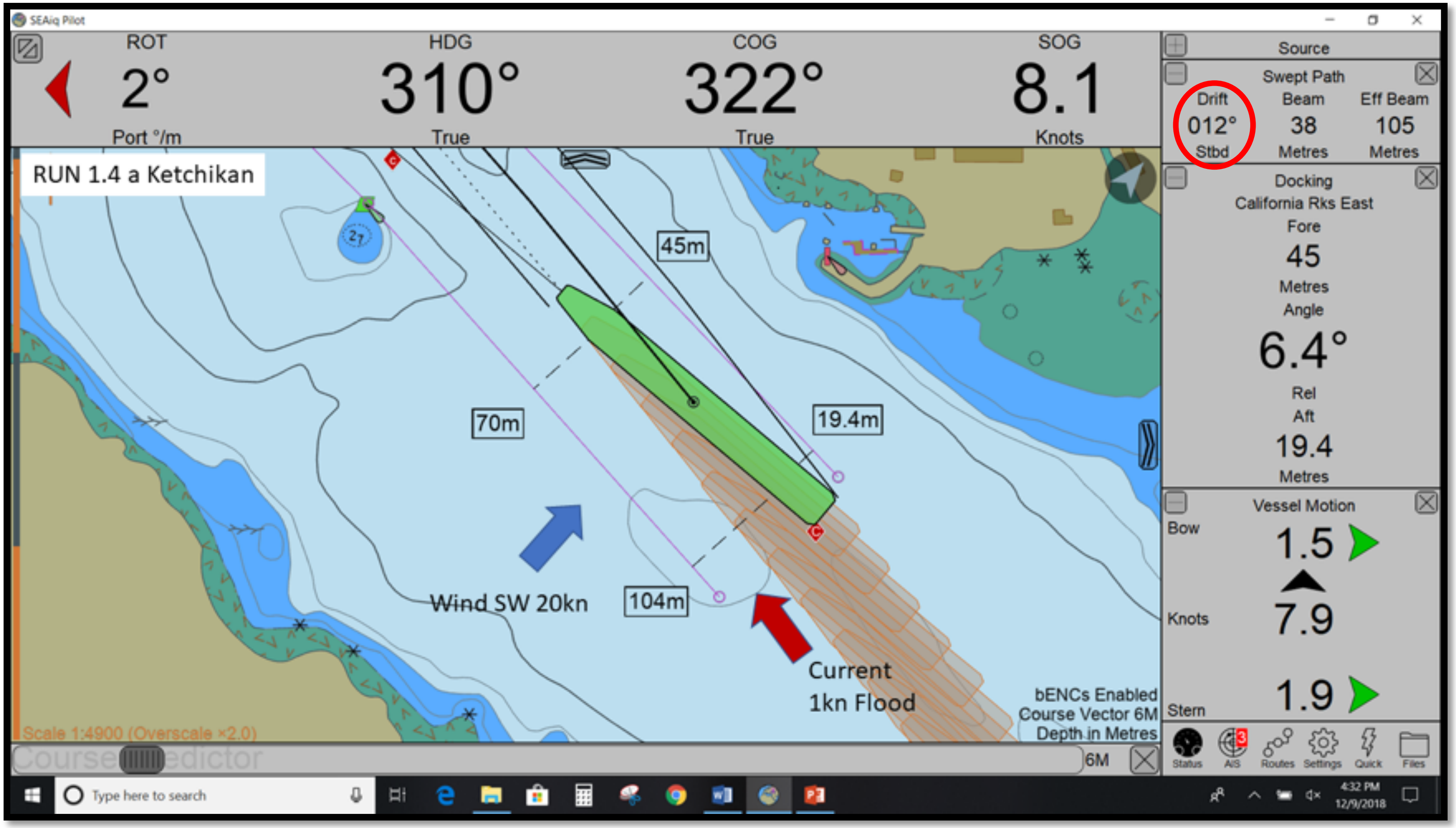
1.4a-b SW 20, 1kn Flood, Ketchikan

Sunday 12/9/2018

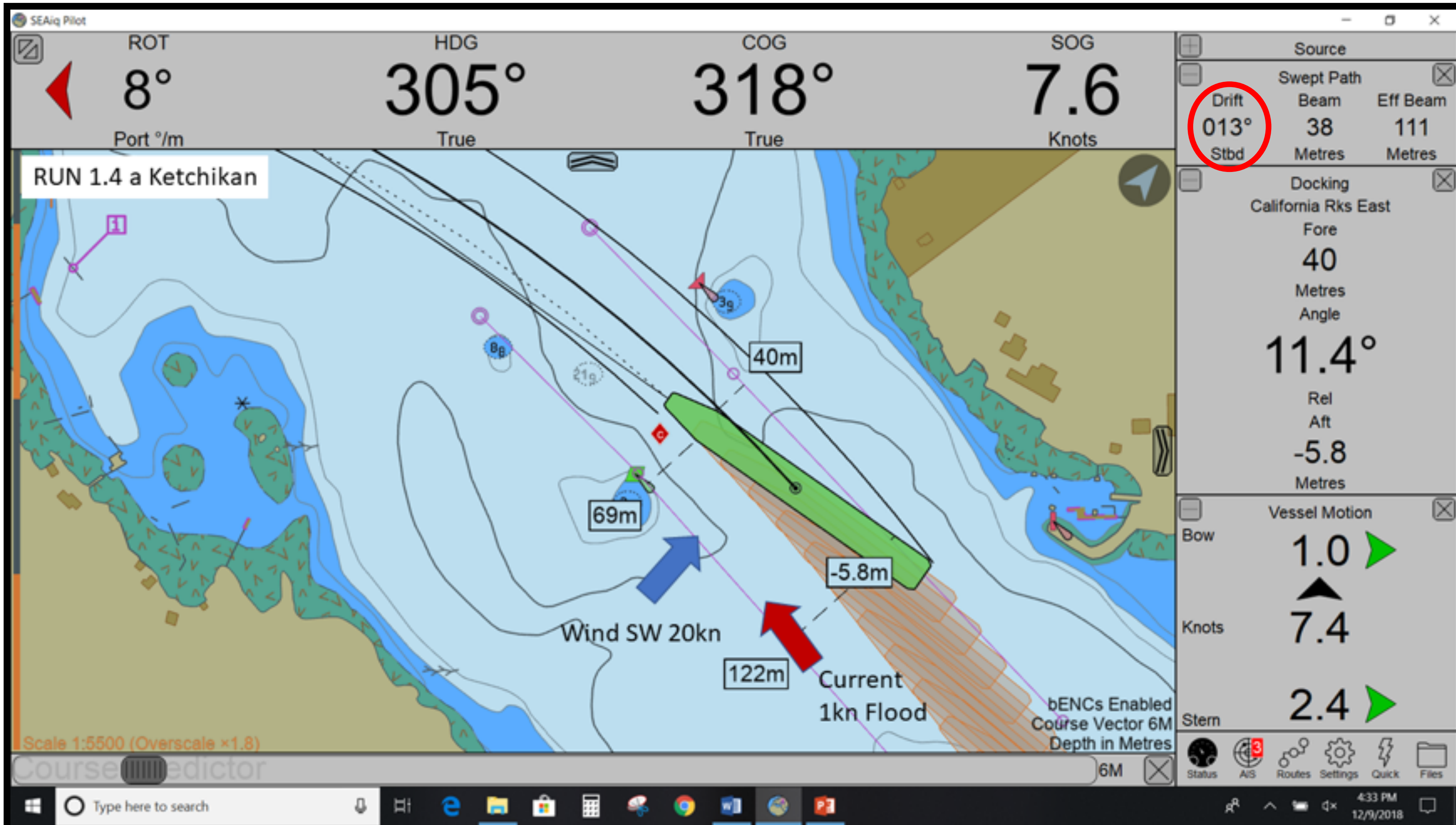
8th Run

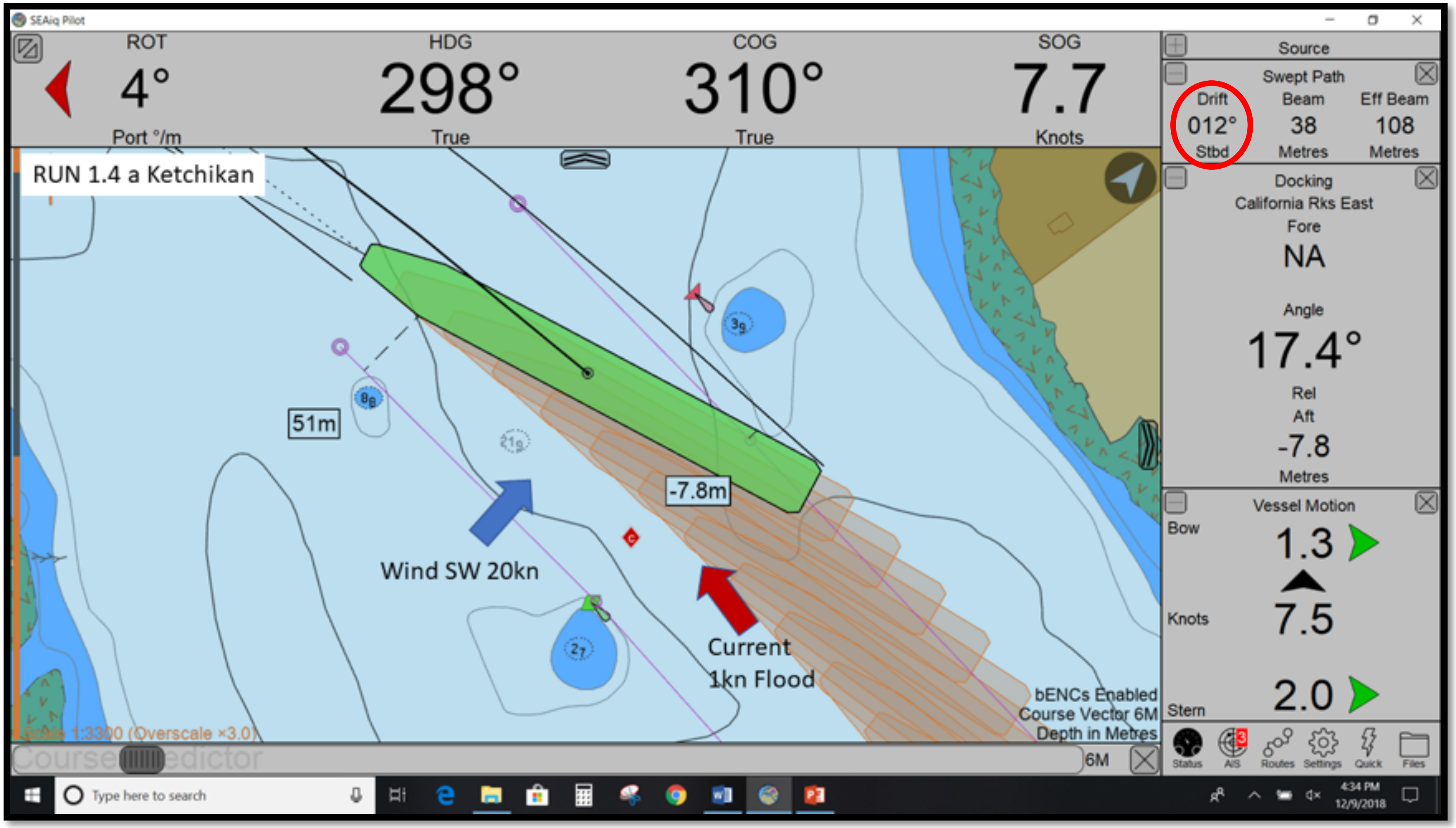

SEAiq Pilot
ROT
NONE
HDG
300°
True
COG
300°
True
SOG
12.0
Knots
Source
Swept Path
Drift
000°
Beam
38
Metres
Eff Beam
38
Metres
Docking
Vessel Motion
Bow
0.0
Knots
12.0
Stern
0.0
Cursor
55°18.7303'N
131°35.1096'W
BRG
321°
True
Range
1.79
NM
TTG
09:26
Minutes
CPA:1212m in 8m21s
XTD
Waypoint
RUN 1.4 a Ketchikan
Setup, same as previous, SW 20, 1kn Flood
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:09 PM
12/9/2018

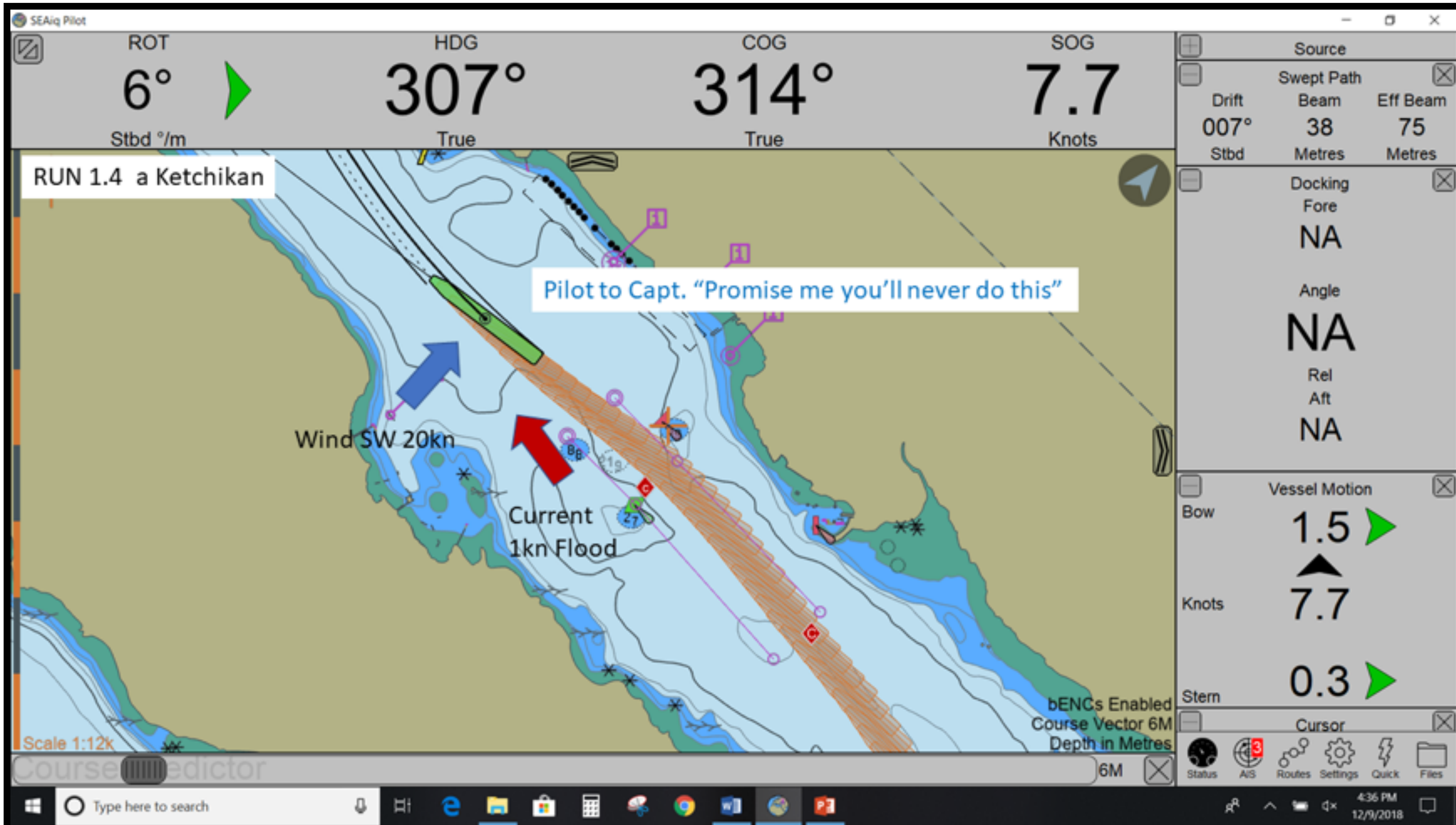

SEAiq Pilot
ROT
6°
Stbd °/m
HDG
320°
True
COG
322°
True
SOG
11.5
Knots
Source
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
52
Metres
Docking
Vessel Motion
Bow
1.1
Knots
11.5
Stern
0.1
Cursor
55°18.7303'N
131°35.1096'W
BRG
000°
True
Range
1040
Metres
TTG
02:51
Minutes
CPA:636m in 2m19s
XTD
Waypoint
RUN 1.4 a Ketchikan
Approach in, slowing, concern the ship is too fast, ship is slow to reduce speed, due to wind and following current
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:27 PM
12/9/2018



SEAiq Pilot
ROT
2°
Port °/m
HDG
310°
True
COG
322°
True
SOG
8.1
Knots
Source
Swept Path
Drift
012°
Stbd
Beam
38
Metres
Eff Beam
105
Metres
Docking
California Rks East
Fore
45
Metres
Angle
6.4°
Rel
Aft
19.4
Metres
Vessel Motion
Bow
1.5
Knots
7.9
Stern
1.9
RUN 1.4 a Ketchikan
45m
70m
19.4m
104m
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:4900 (Overscale ×2.0)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:32 PM
12/9/2018


SEAiq Pilot
ROT
8°
Port °/m
HDG
305°
True
COG
318°
True
SOG
7.6
Knots
Source
Swept Path
Drift
013°
Stbd
Beam
38
Metres
Eff Beam
111
Metres
Docking
California Rks East
Fore
40
Metres
Angle
11.4°
Rel
Aft
-5.8
Metres
Vessel Motion
Bow
1.0
Knots
7.4
Stern
2.4
RUN 1.4 a Ketchikan
40m
69m
-5.8m
122m
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:5500 (Overscale ×1.8)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:33 PM
12/9/2018


SEAiq Pilot
ROT
4°
Port °/m
HDG
298°
True
COG
310°
True
SOG
7.7
Knots
Source
Swept Path
Drift
012°
Stbd
Beam
38
Metres
Eff Beam
108
Metres
Docking
California Rks East
Fore
NA
Angle
17.4°
Rel
Aft
-7.8
Metres
Vessel Motion
Bow
1.3
Knots
7.5
Stern
2.0
RUN 1.4 a Ketchikan
51m
-7.8m
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:3300 (Overscale ×3.0)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:34 PM
12/9/2018



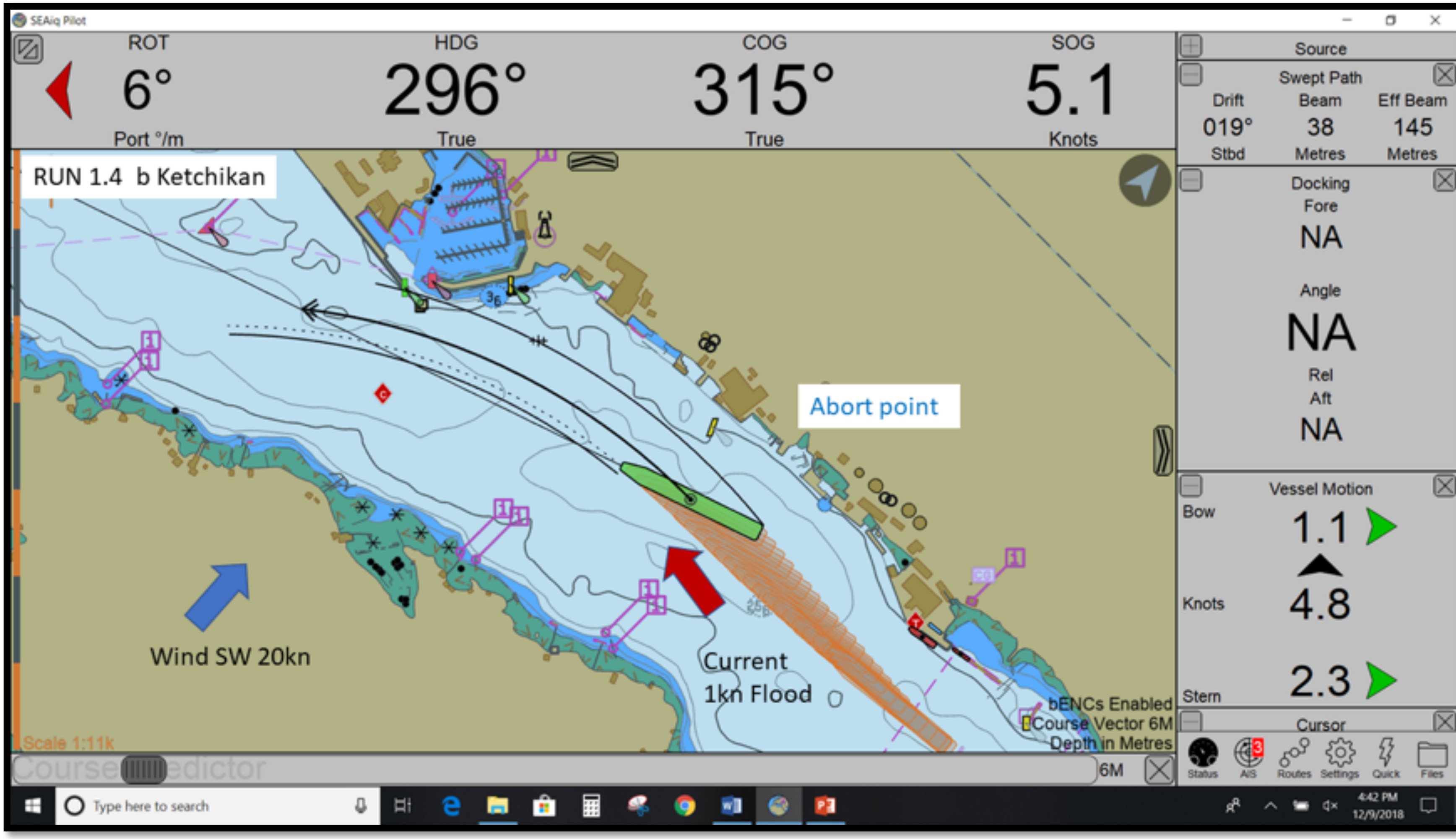
SEAiq Pilot
ROT
6°
Stbd °/m
HDG
307°
True
COG
314°
True
SOG
7.7
Knots
Source
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
75
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.5
Knots
7.7
Stern
0.3
Cursor
RUN 1.4 a Ketchikan
Pilot to Capt. "Promise me you'll never do this"
Wind SW 20kn
Current
1kn Flood
Scale 1:12k
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:36 PM
12/9/2018

Run 1.4-B Ketchikan IB

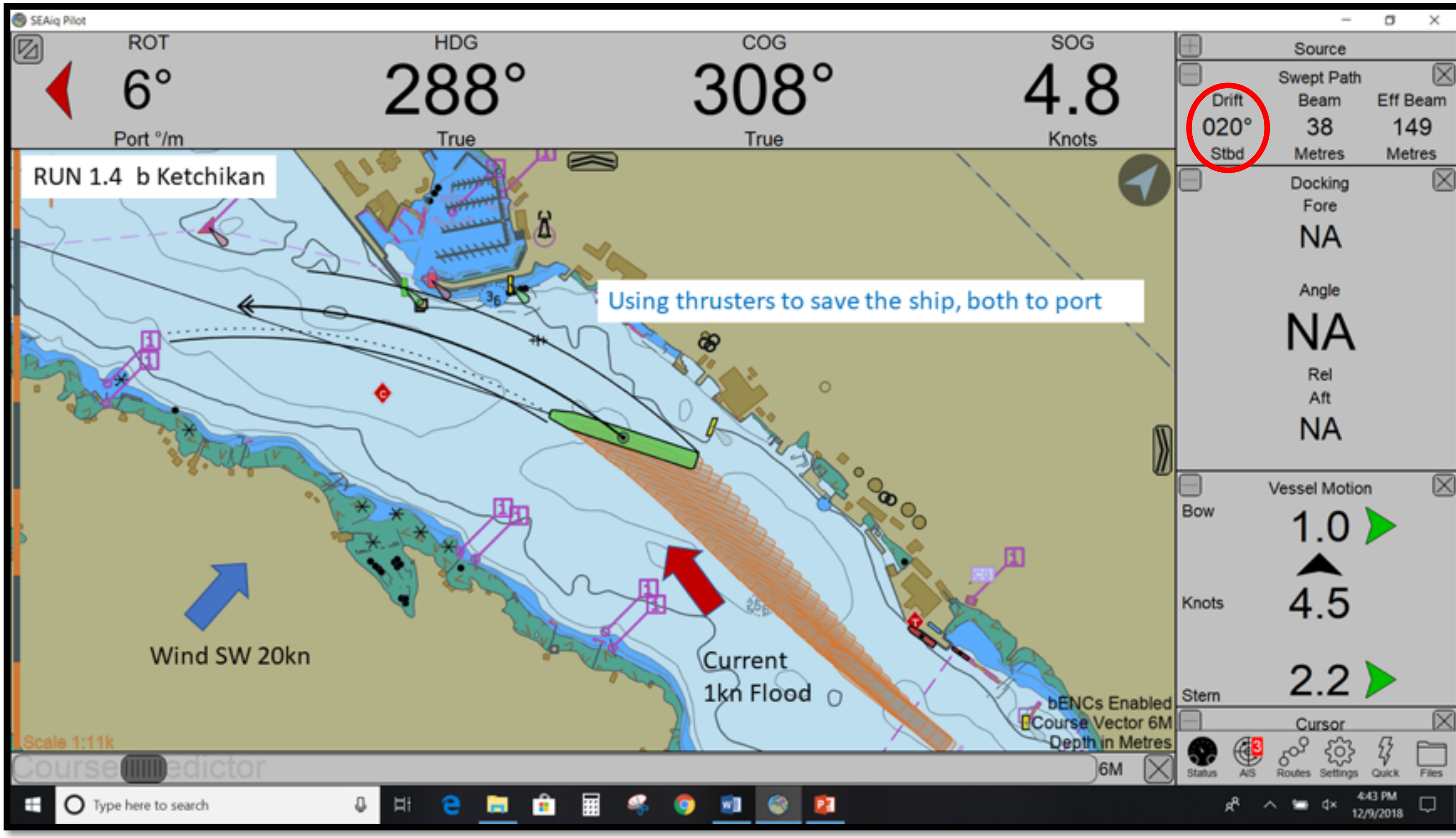
1.4b, Jump from CA Rocks to Dock Area, 20 kn SSE

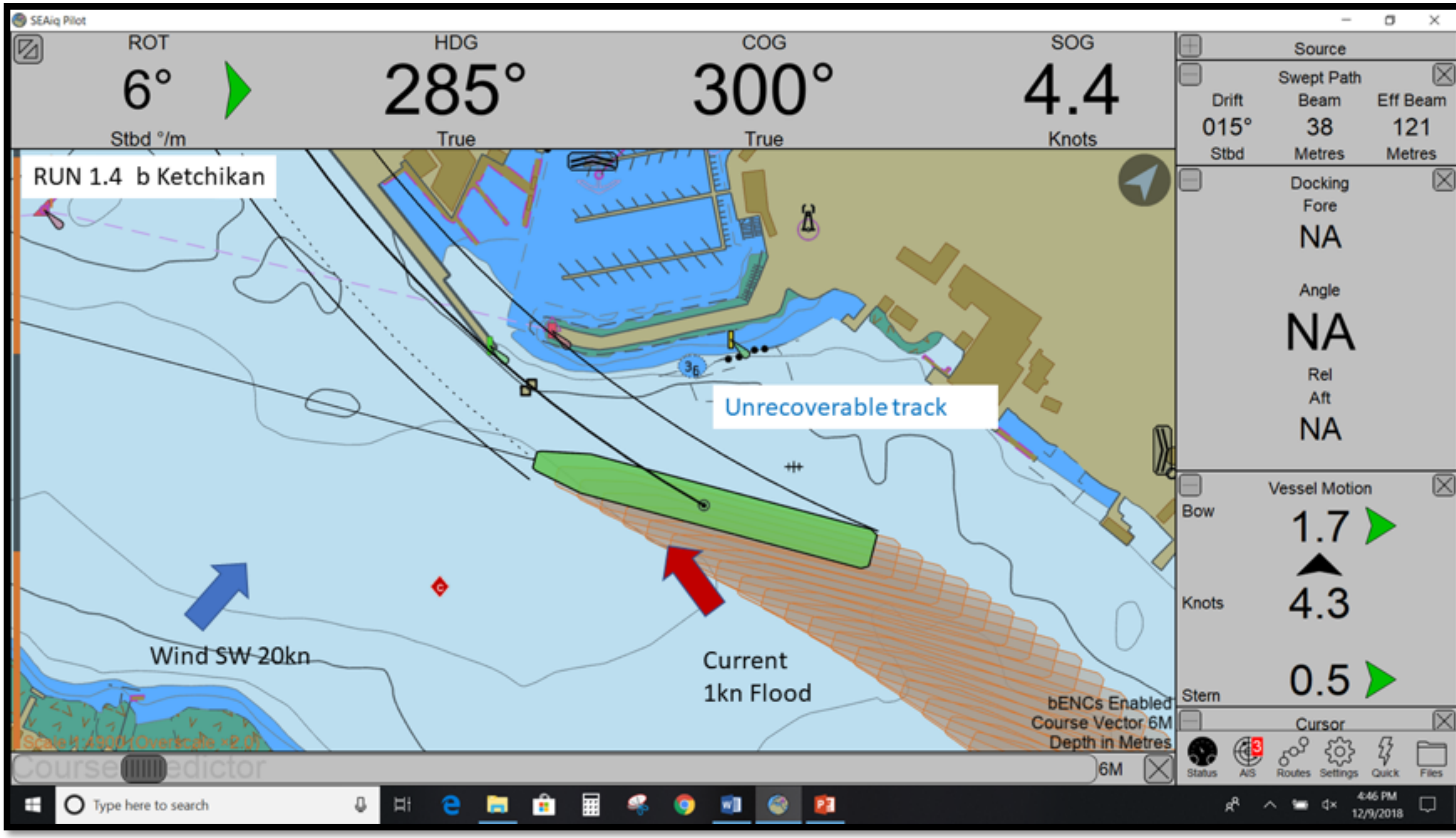
Sunday 12/9/2018

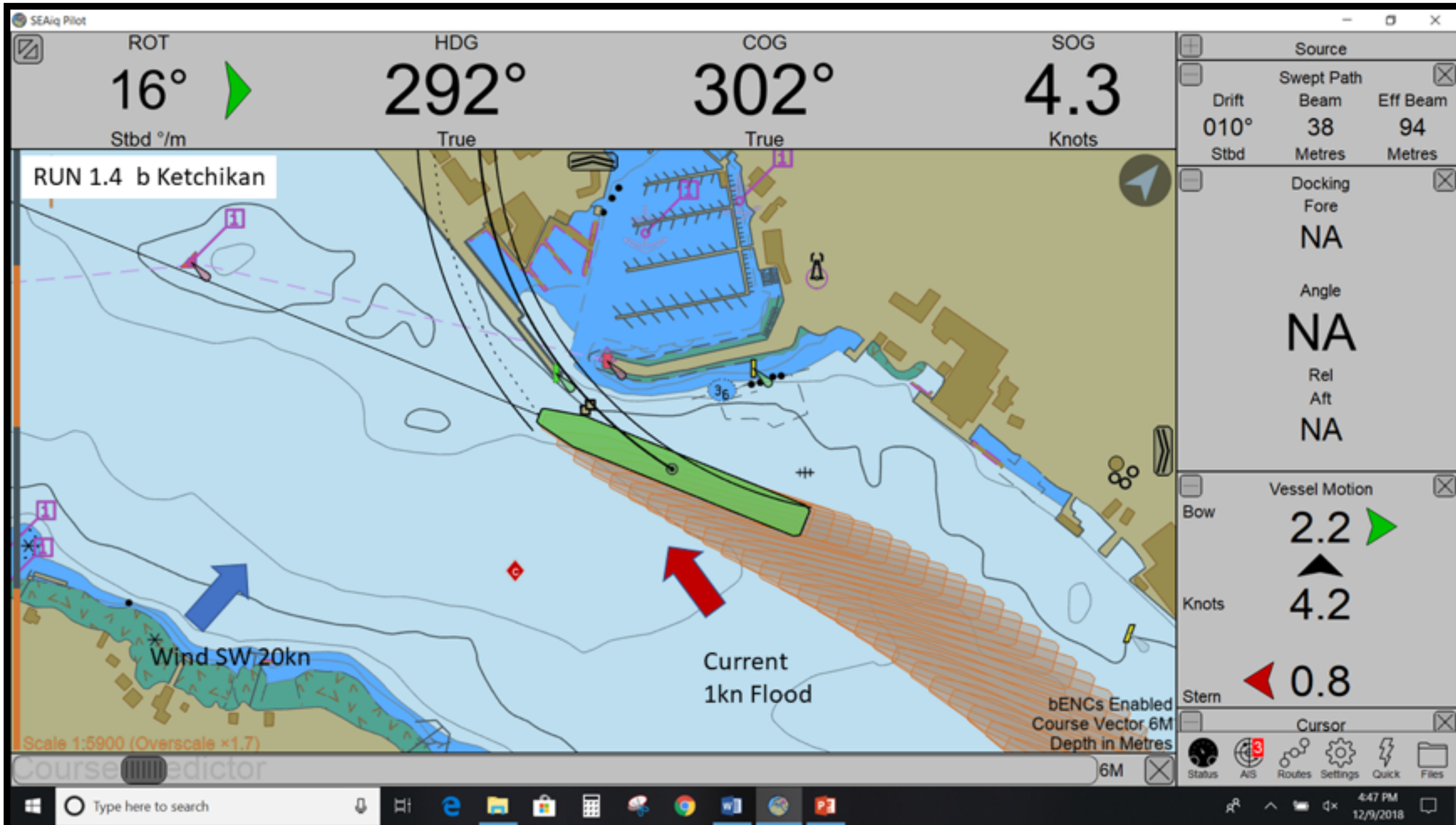
9th run



SEAiq Pilot
ROT
6°
Port °/m
HDG
296°
True
COG
315°
True
SOG
5.1
Knots
Source
Swept Path
Drift
019°
Stbd
Beam
38
Metres
Eff Beam
145
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.1
Knots
4.8
Stern
2.3
Cursor
RUN 1.4 b Ketchikan
Abort point
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:11k
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:42 PM
12/9/2018


SEAiq Pilot
ROT
6°
Port °/m
HDG
288°
True
COG
308°
True
SOG
4.8
Knots
Source
Swept Path
Drift
020°
Stbd
Beam
38
Metres
Eff Beam
149
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.0
Knots
4.5
Stern
2.2
Cursor
RUN 1.4 b Ketchikan
Using thrusters to save the ship, both to port
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:11k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:43 PM
12/9/2018


SEAiq Pilot
ROT
6°
Stbd °/m
HDG
285°
True
COG
300°
True
SOG
4.4
Knots
Source
Swept Path
Drift
015°
Stbd
Beam
38
Metres
Eff Beam
121
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.7
Knots
4.3
Stern
0.5
Cursor
RUN 1.4 b Ketchikan
Unrecoverable track
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:46 PM
12/9/2018

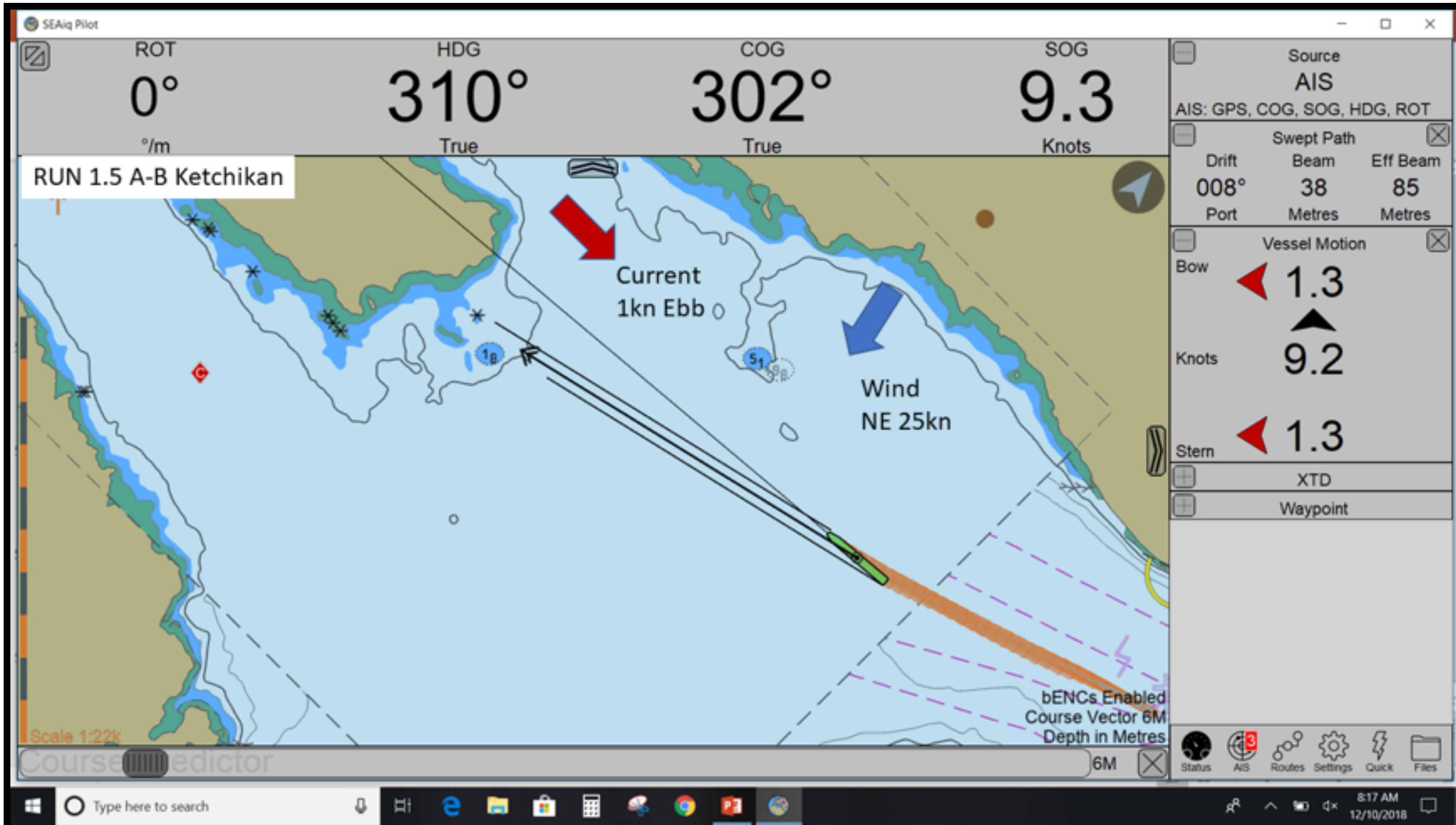

SEAiq Pilot
ROT
16°
Stbd °/m
HDG
292°
True
COG
302°
True
SOG
4.3
Knots
Source
Swept Path
Drift
010°
Stbd
Beam
38
Metres
Eff Beam
94
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
2.2
Knots
4.2
Stern
0.8
Cursor
RUN 1.4 b Ketchikan
Wind SW 20kn
Current
1kn Flood
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:5900 (Overscale ×1.7)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:47 PM
12/9/2018

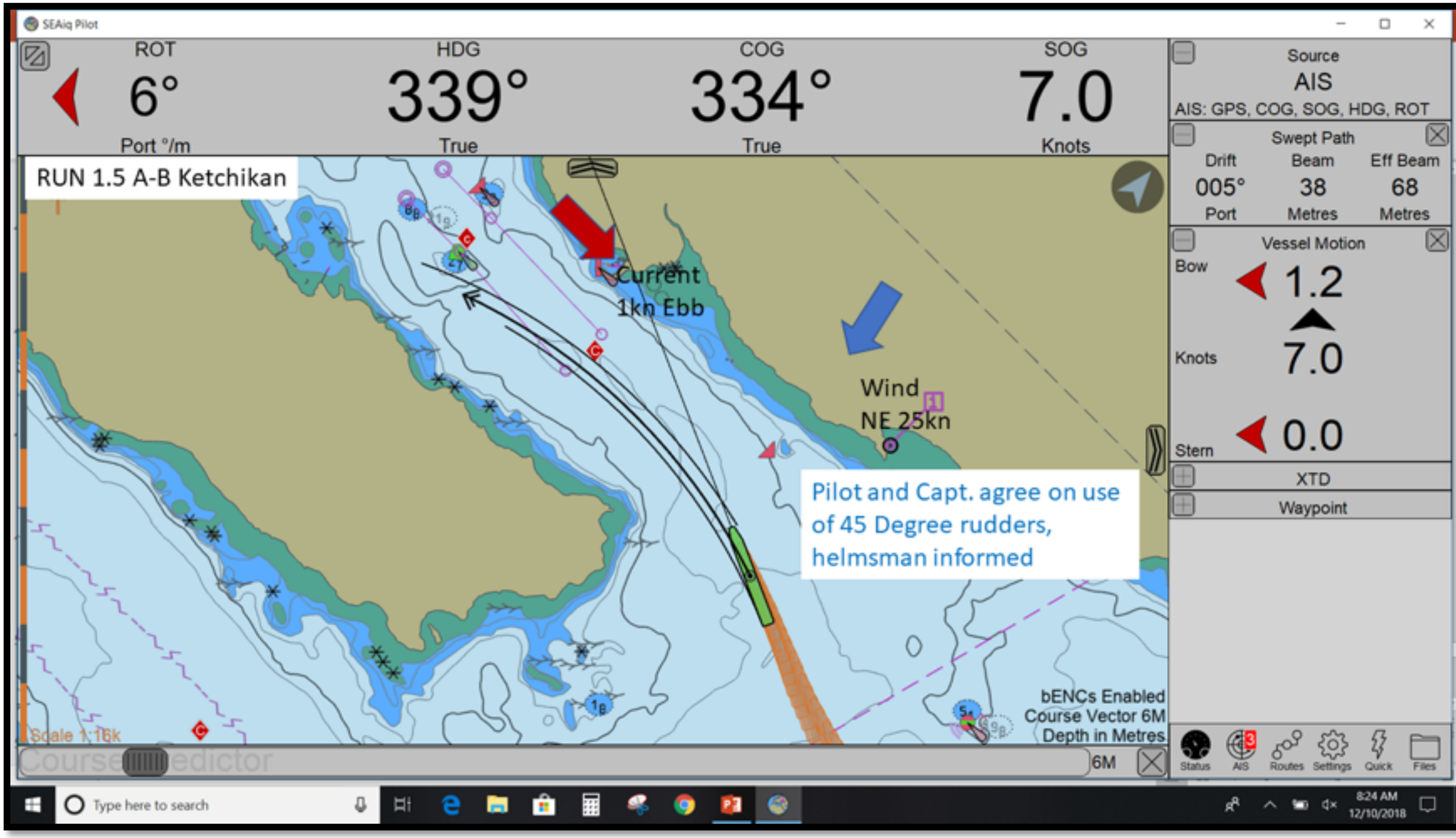
Run 1.5 A-B Ketchikan IB, NE 25kn, 1kn Ebb

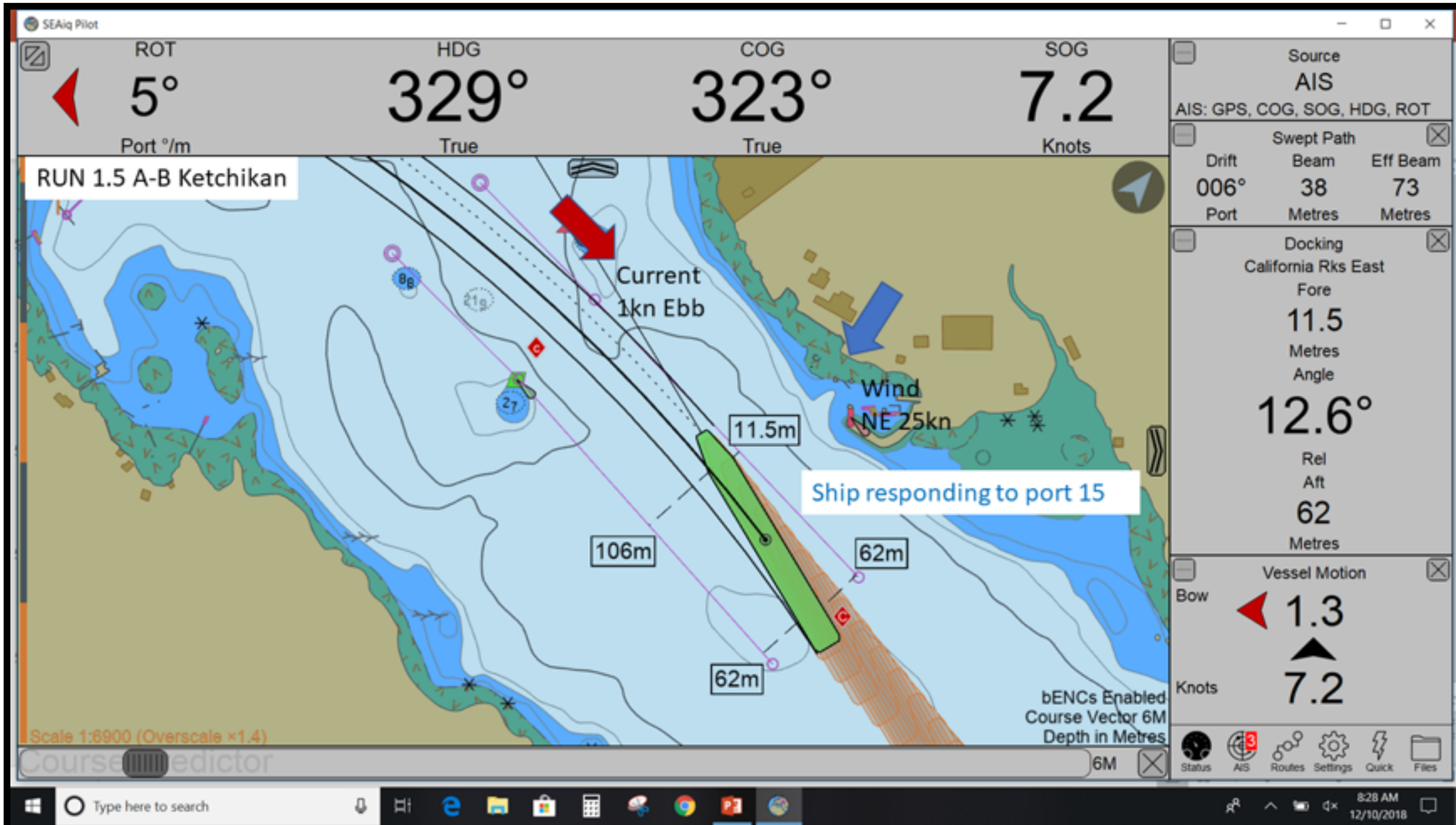
1.5a-b, NE 25kn 1kn Ebb, Ketchikan

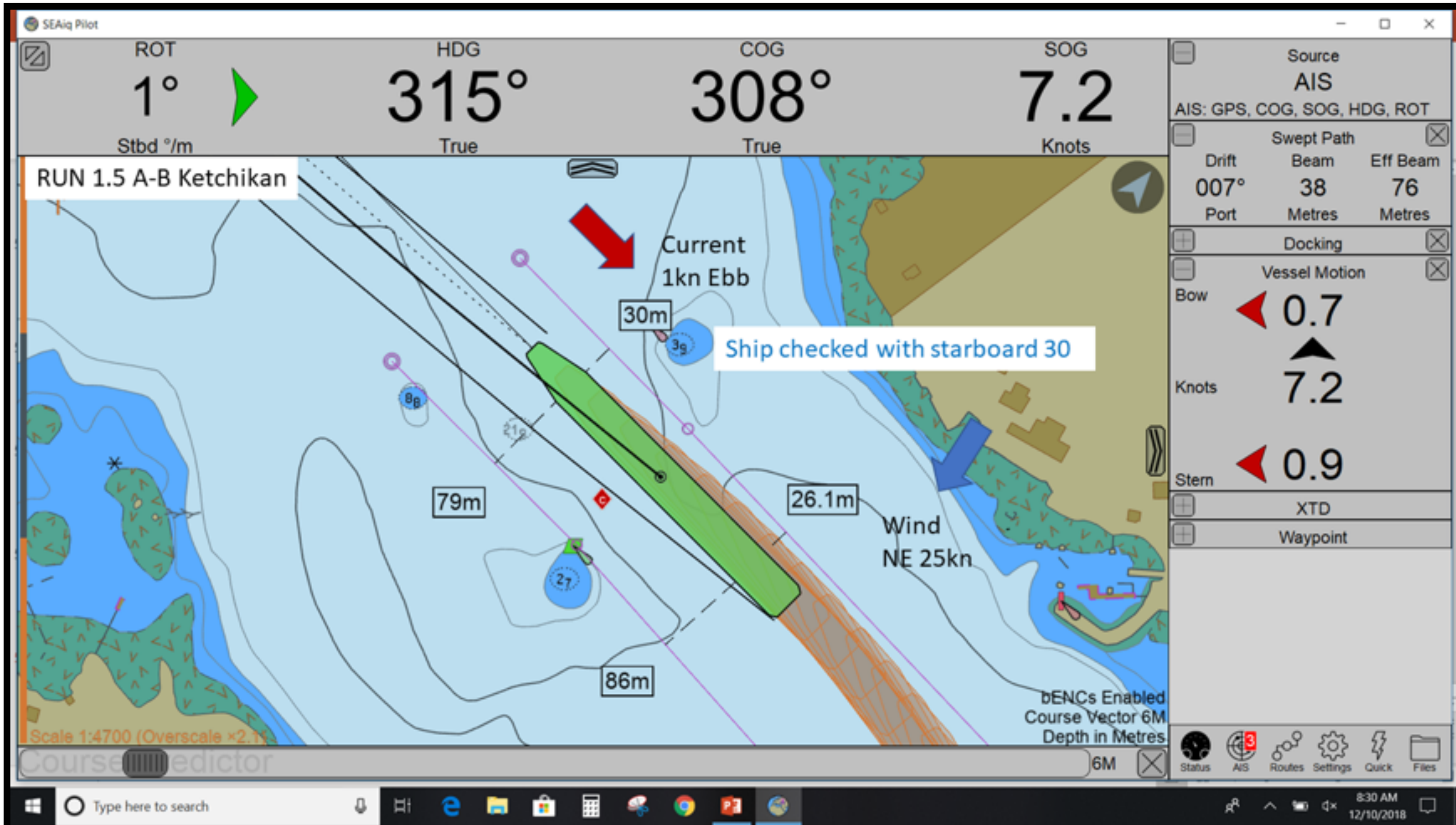
Monday 12/10/2018

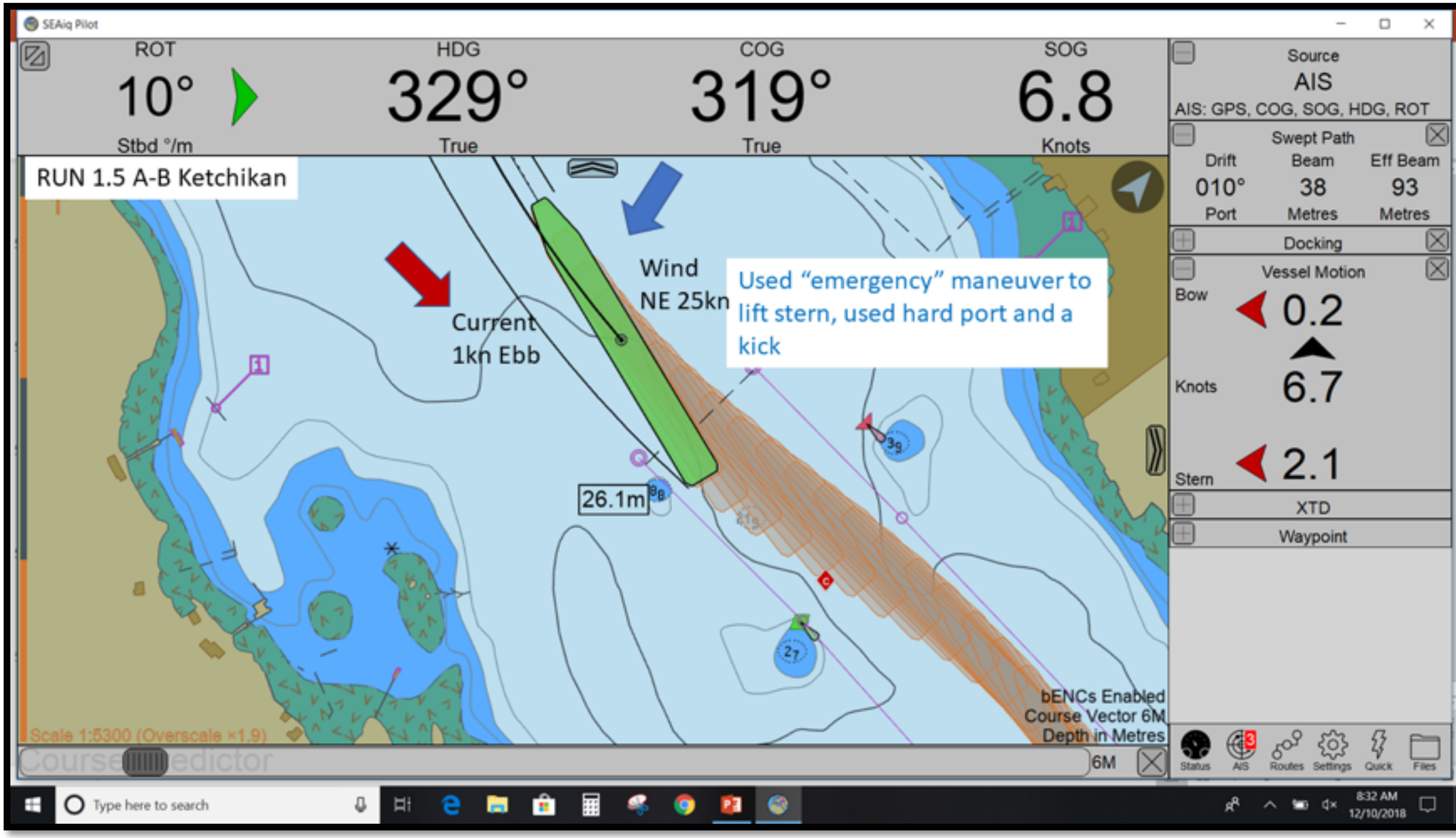
1st run

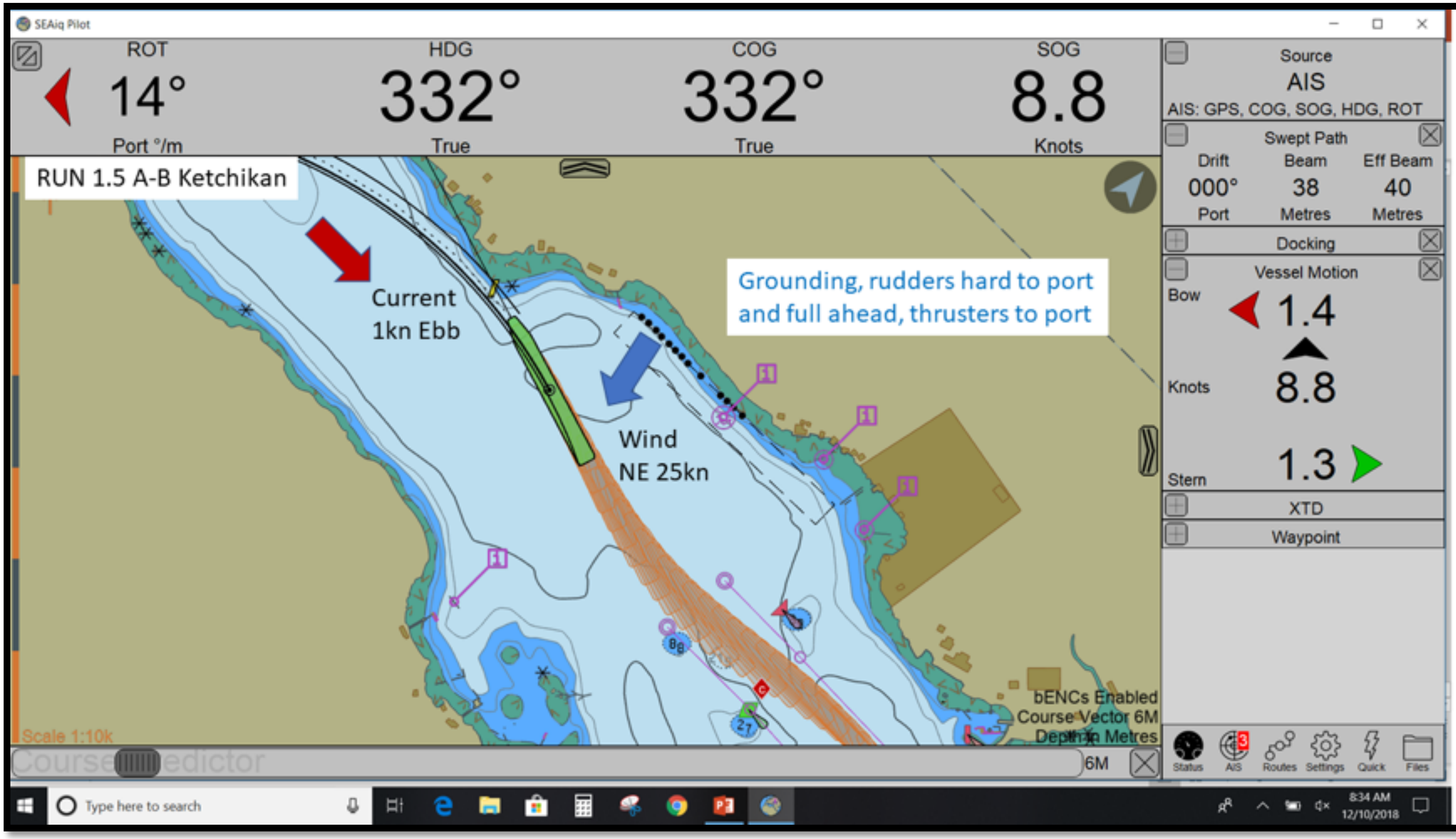

SEAiq Pilot
ROT
0°
°/m
HDG
310°
True
COG
302°
True
SOG
9.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
008°
Port
Beam
38
Metres
Eff Beam
85
Metres
Vessel Motion
Bow
1.3
Knots
9.2
Stern
1.3
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:22k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:17 AM
12/10/2018


SEAiq Pilot
ROT
6°
Port °/m
HDG
339°
True
COG
334°
True
SOG
7.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
005°
Port
Beam
38
Metres
Eff Beam
68
Metres
Vessel Motion
Bow
1.2
Knots
7.0
Stern
0.0
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
Pilot and Capt. agree on use of 45 Degree rudders, helmsman informed
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:16k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:24 AM
12/10/2018


SEAiq Pilot
ROT
5°
Port °/m
HDG
329°
True
COG
323°
True
SOG
7.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
006°
Port
Beam
38
Metres
Eff Beam
73
Metres
Docking
California Rks East
Fore
11.5
Metres
Angle
12.6°
Rel
Aft
62
Metres
Vessel Motion
Bow
1.3
Knots
7.2
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
11.5m
Ship responding to port 15
106m
62m
62m
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:6900 (Overscale ×1.4)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:28 AM
12/10/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
315°
True
COG
308°
True
SOG
7.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
007°
Port
Beam
38
Metres
Eff Beam
76
Metres
Docking
Vessel Motion
Bow
0.7
Knots
7.2
Stern
0.9
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
30m
Ship checked with starboard 30
79m
26.1m
Wind
NE 25kn
86m
bENCs Enabled
Course Vector 6M
Depth in Metres
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:30 AM
12/10/2018


SEAiq Pilot
ROT
10°
Stbd °/m
HDG
329°
True
COG
319°
True
SOG
6.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
010°
Port
Beam
38
Metres
Eff Beam
93
Metres
Docking
Vessel Motion
Bow
0.2
Knots
6.7
Stern
2.1
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Wind
NE 25kn
Current
1kn Ebb
Used "emergency" maneuver to lift stern, used hard port and a kick
26.1m
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:5300 (Overscale ×1.9)
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:32 AM
12/10/2018

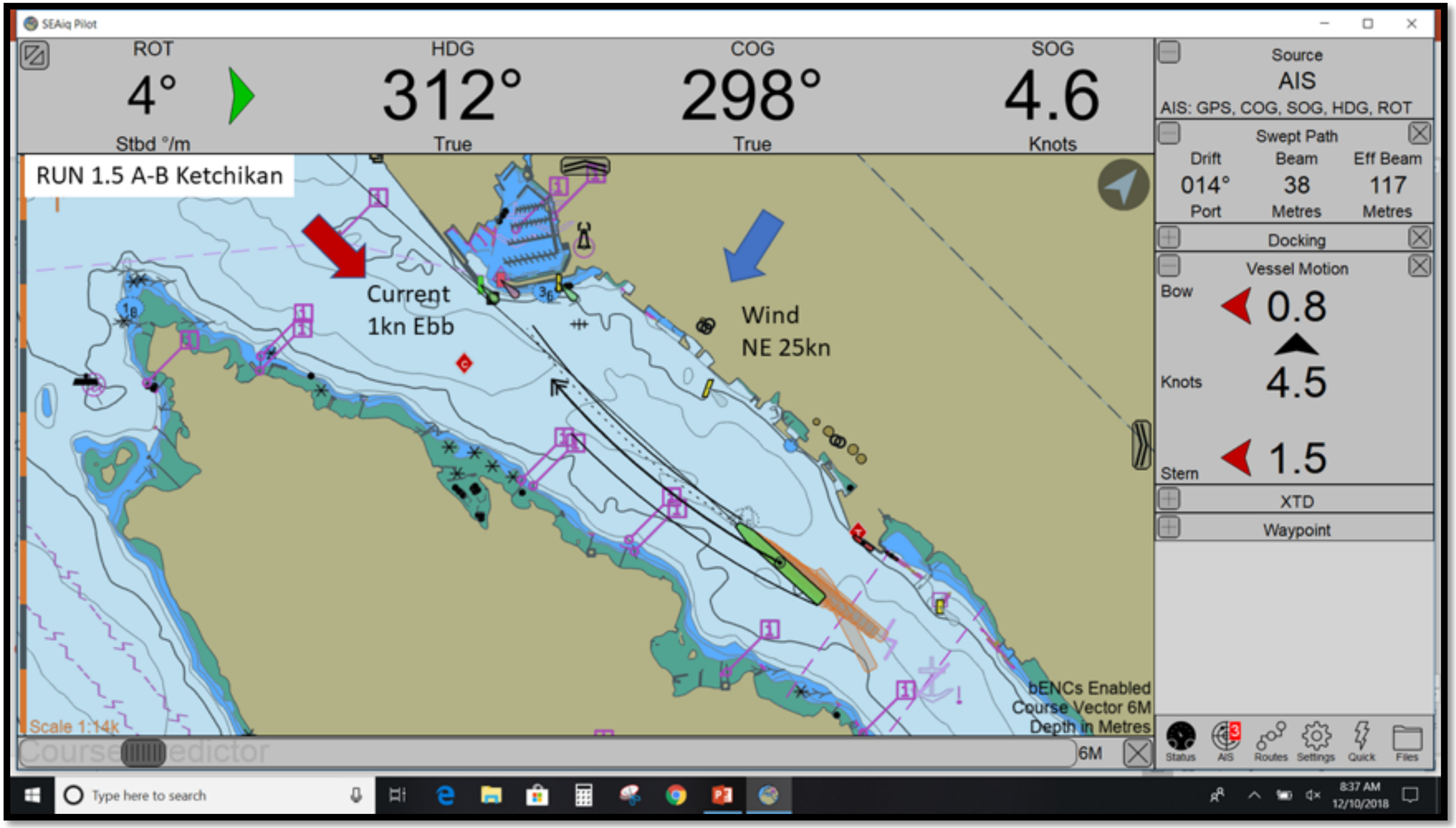

SEAiq Pilot
ROT
14°
Port °/m
HDG
332°
True
COG
332°
True
SOG
8.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Port
Beam
38
Metres
Eff Beam
40
Metres
Docking
Vessel Motion
Bow
1.4
Knots
8.8
1.3
Stern
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
Grounding, rudders hard to port
and full ahead, thrusters to port
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:10k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:34 AM
12/10/2018

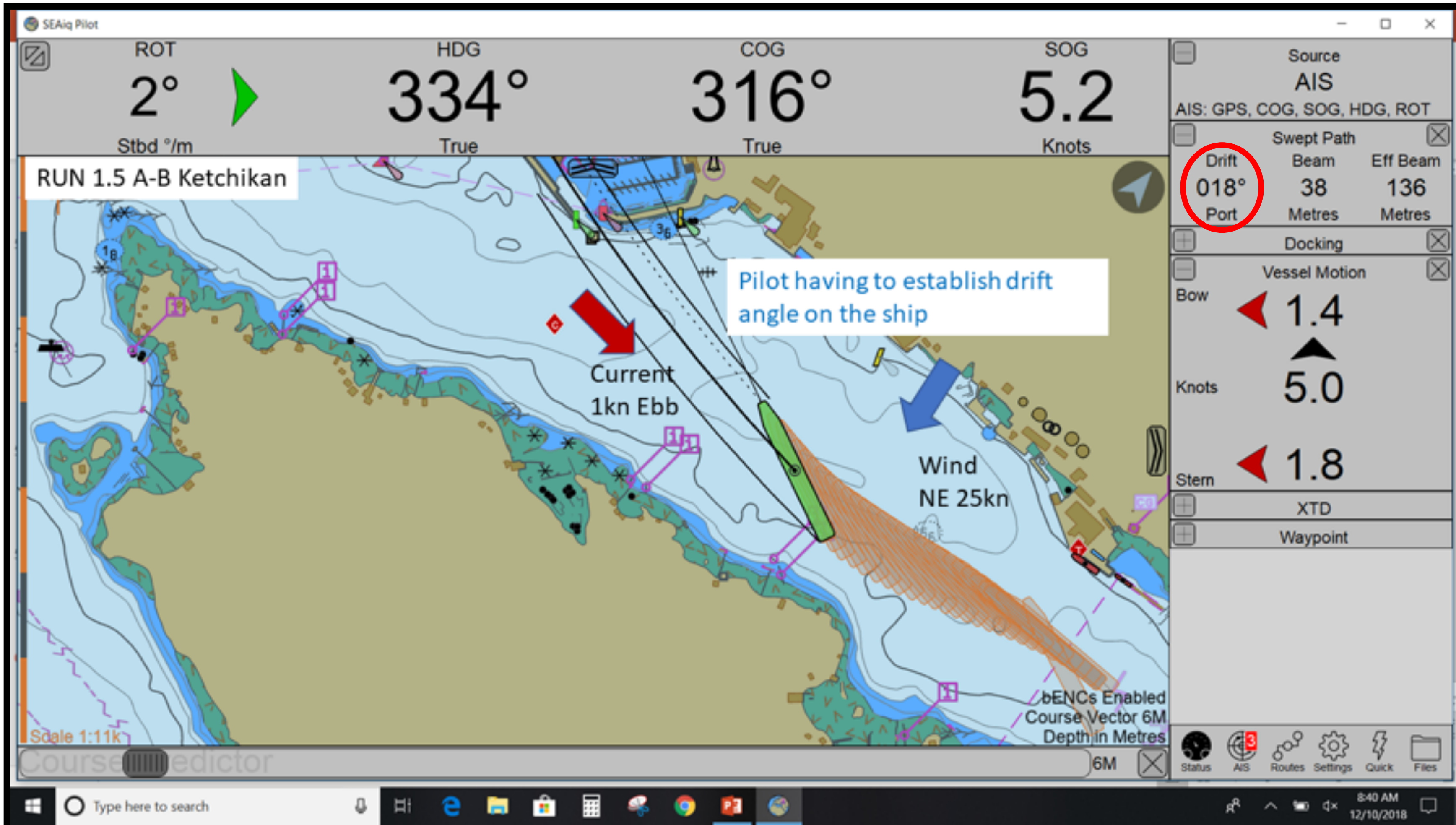
Run 1.5B Ketchikan IB, NE25, 1kn Ebb

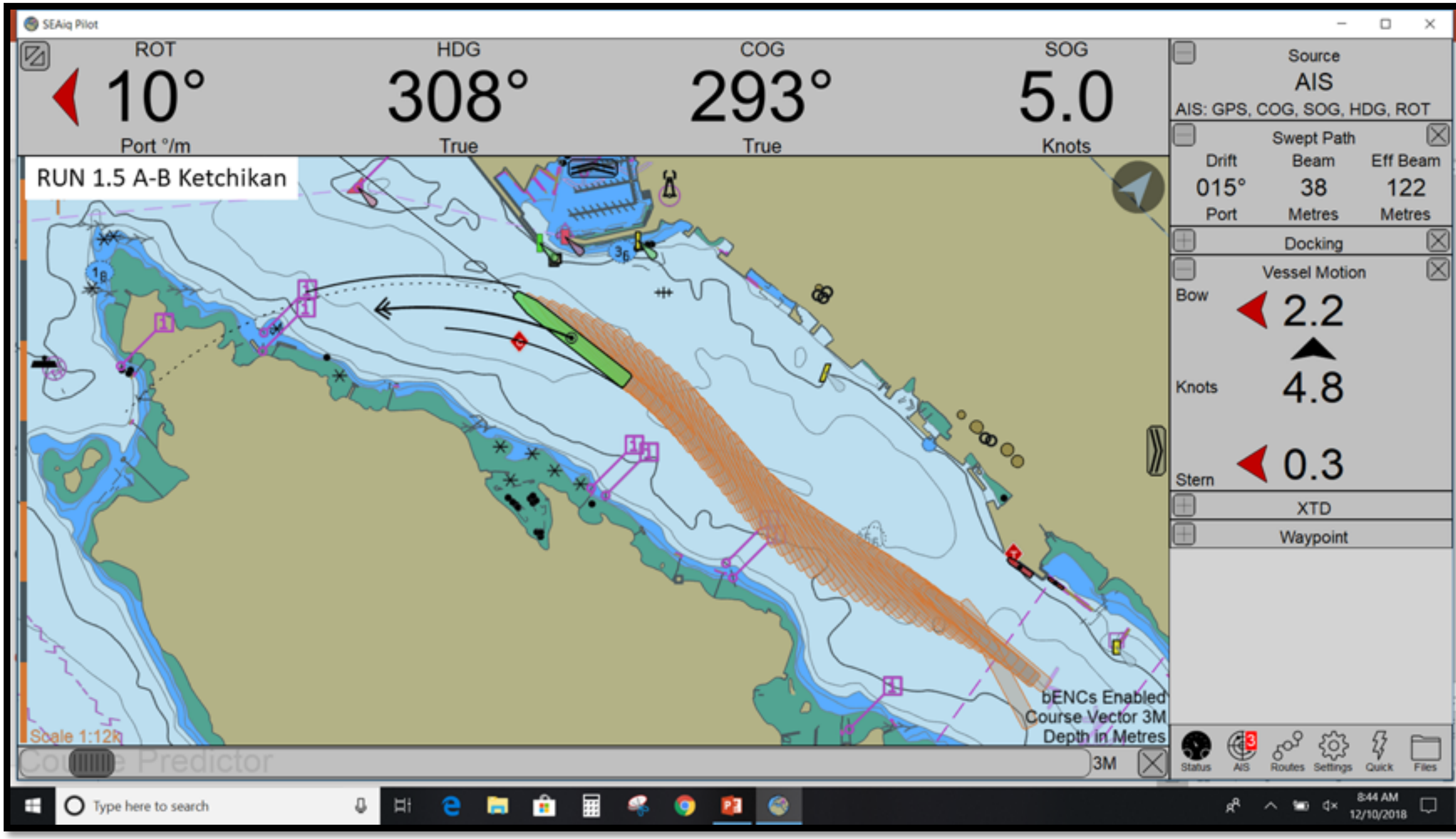
1.5b, NE 25kn 1kn Ebb, Ketchikan

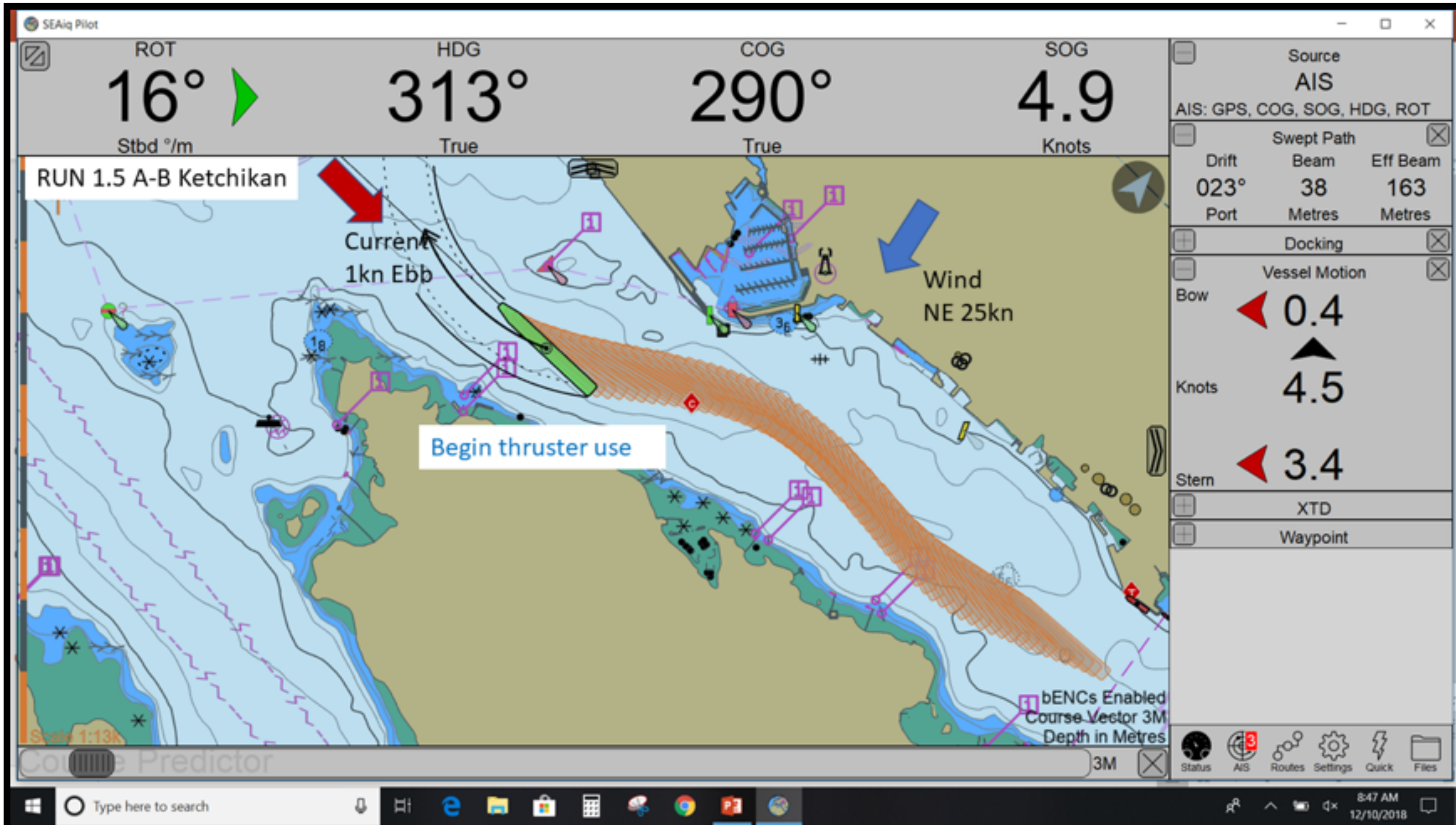
Monday 12/10/2018

2nd run


SEAiq Pilot
ROT
4°
Stbd °/m
HDG
312°
True
COG
298°
True
SOG
4.6
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
014°
Port
Beam
38
Metres
Eff Beam
117
Metres
Docking
Vessel Motion
Bow
0.8
Knots
4.5
Stern
1.5
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:14k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:37 AM
12/10/2018


SEAiq Pilot
ROT
2°
Stbd °/m
HDG
334°
True
COG
316°
True
SOG
5.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
018°
Port
Beam
38
Metres
Eff Beam
136
Metres
Docking
Vessel Motion
Bow
1.4
Knots
5.0
Stern
1.8
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Pilot having to establish drift angle on the ship
Current
1kn Ebb
Wind
NE 25kn
bENCs Enabled
Course Vector 6M
Depth in Metres
Scale 1:11k
Course Predictor
6M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:40 AM
12/10/2018


SEAiq Pilot
ROT
10°
Port °/m
HDG
308°
True
COG
293°
True
SOG
5.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
015°
Port
Beam
38
Metres
Eff Beam
122
Metres
Docking
Vessel Motion
Bow
2.2
Knots
4.8
Stern
0.3
XTD
Waypoint
RUN 1.5 A-B Ketchikan
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:12k
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:44 AM
12/10/2018


SEAiq Pilot
ROT
16°
Stbd °/m
HDG
313°
True
COG
290°
True
SOG
4.9
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
023°
Port
Beam
38
Metres
Eff Beam
163
Metres
Docking
Vessel Motion
Bow
0.4
Knots
4.5
Stern
3.4
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
Wind
NE 25kn
Begin thruster use
bENCs Enabled
Course Vector 3M
Depth in Metres
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:47 AM
12/10/2018

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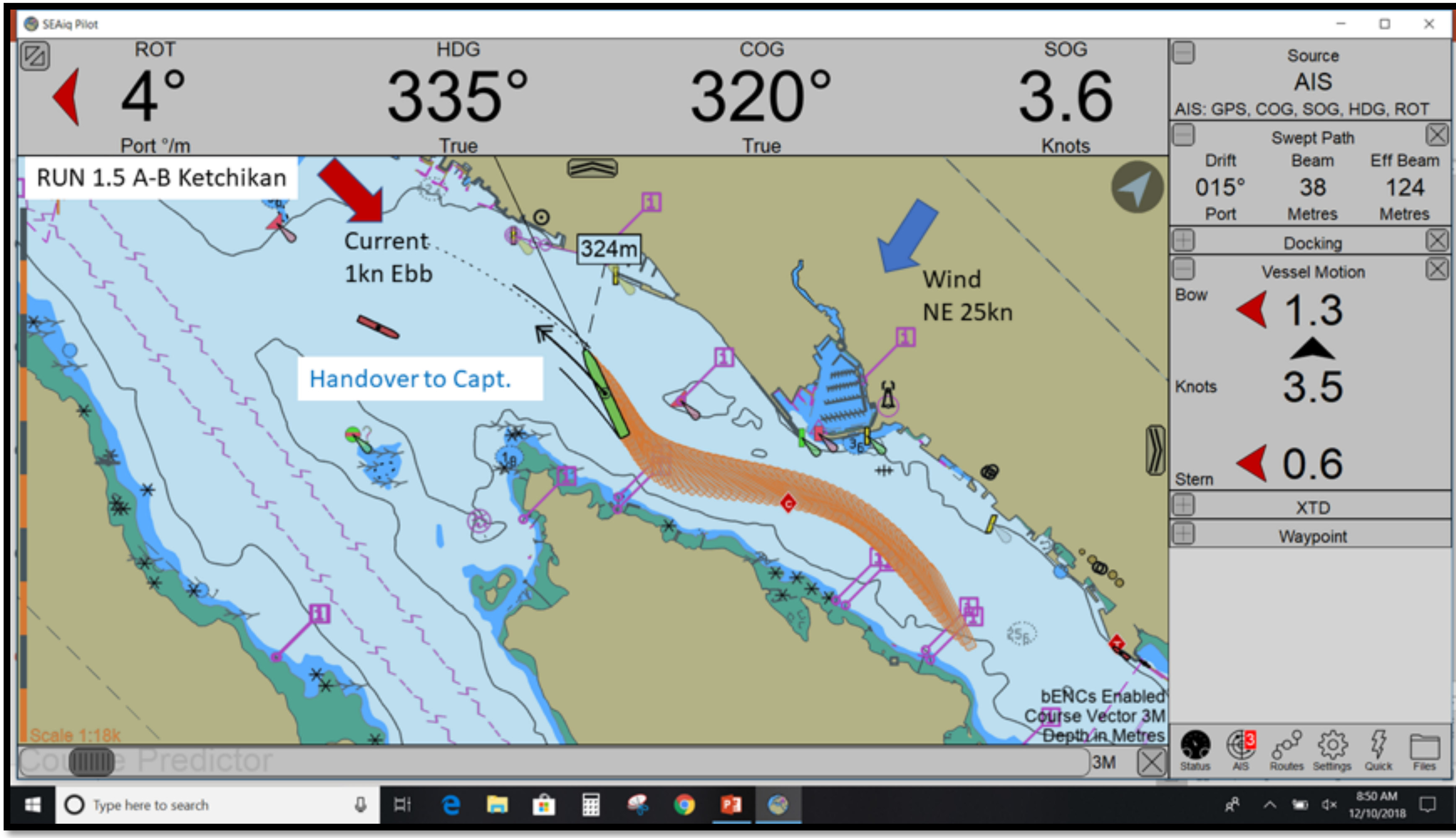
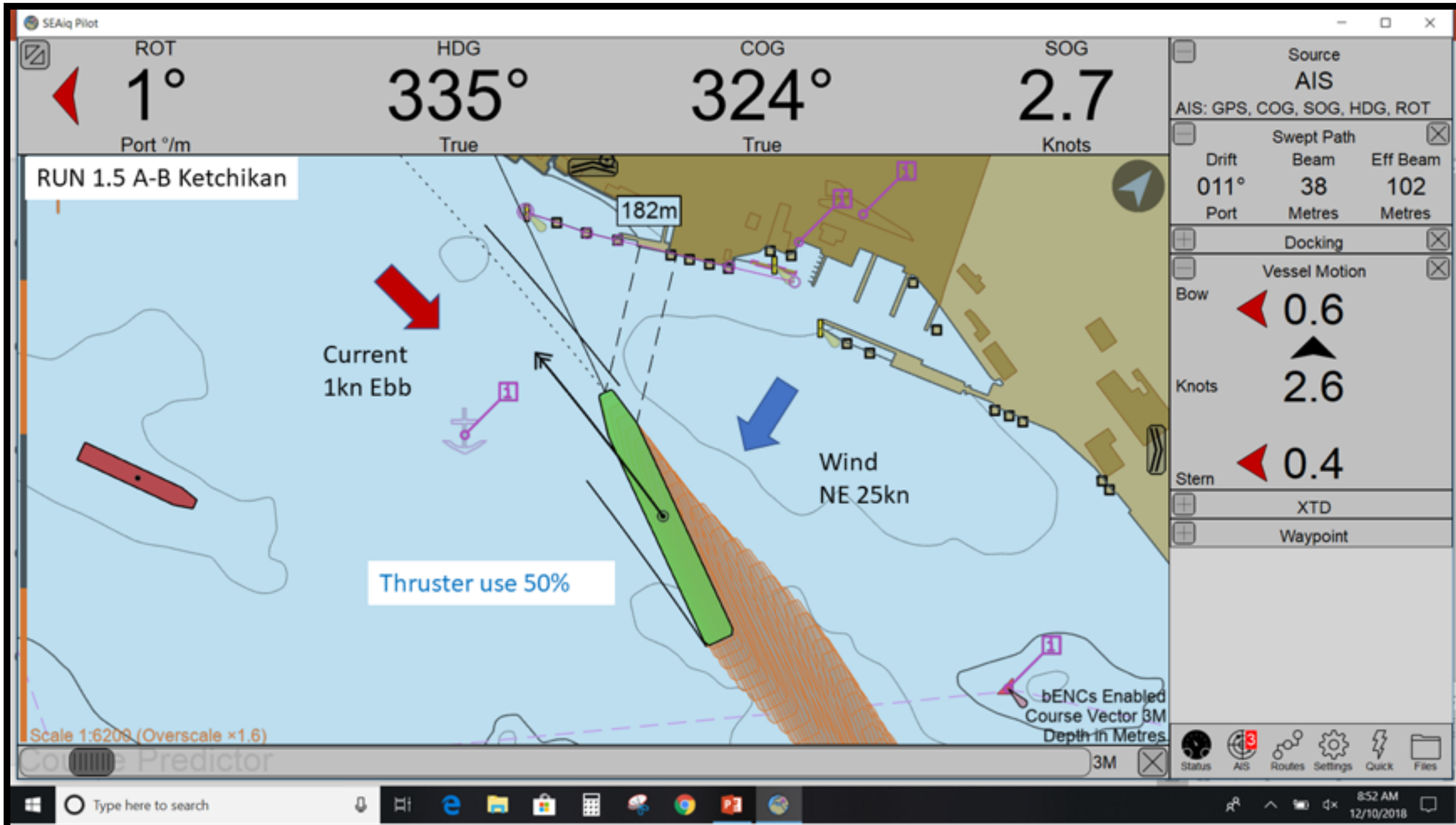
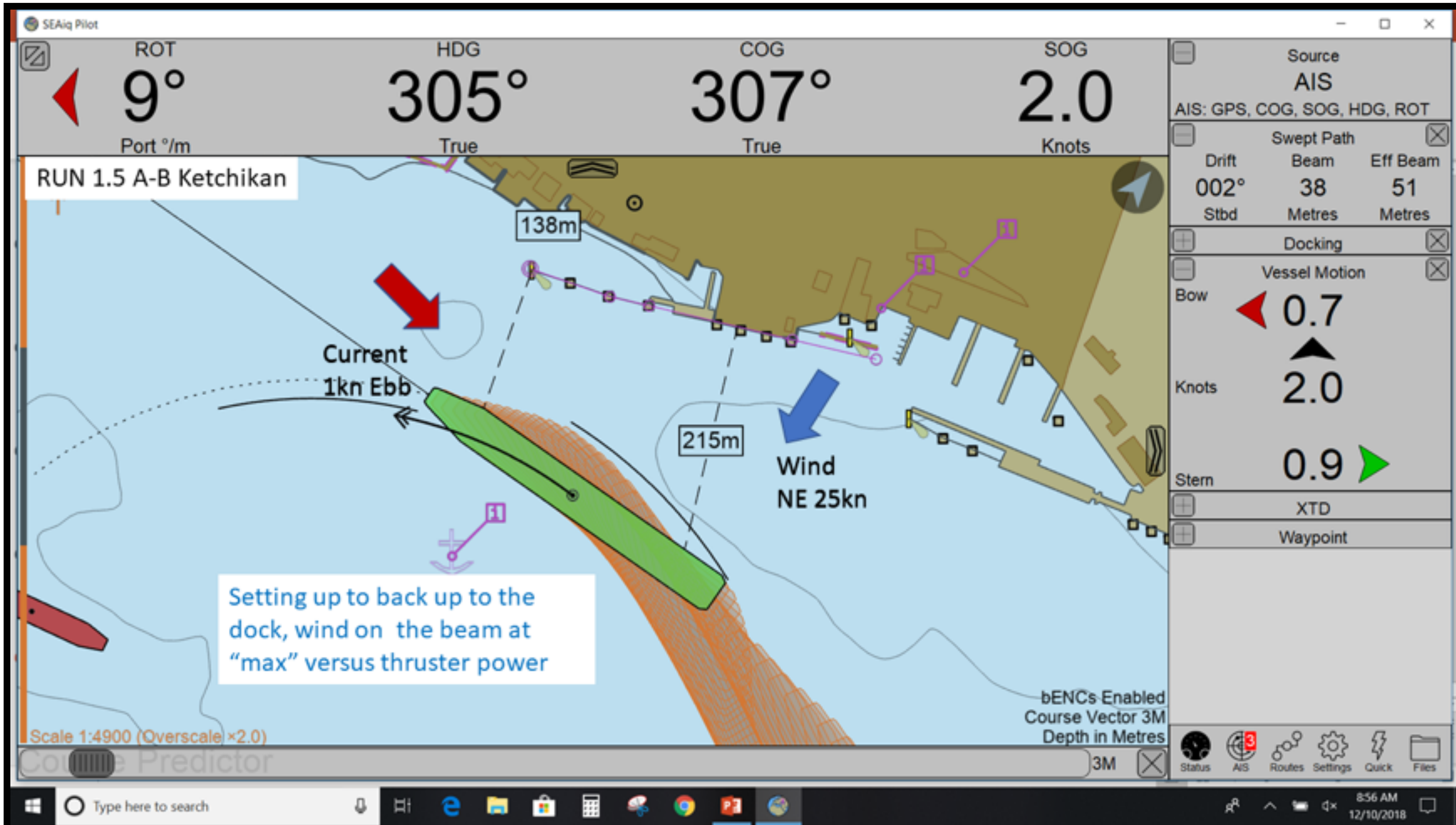
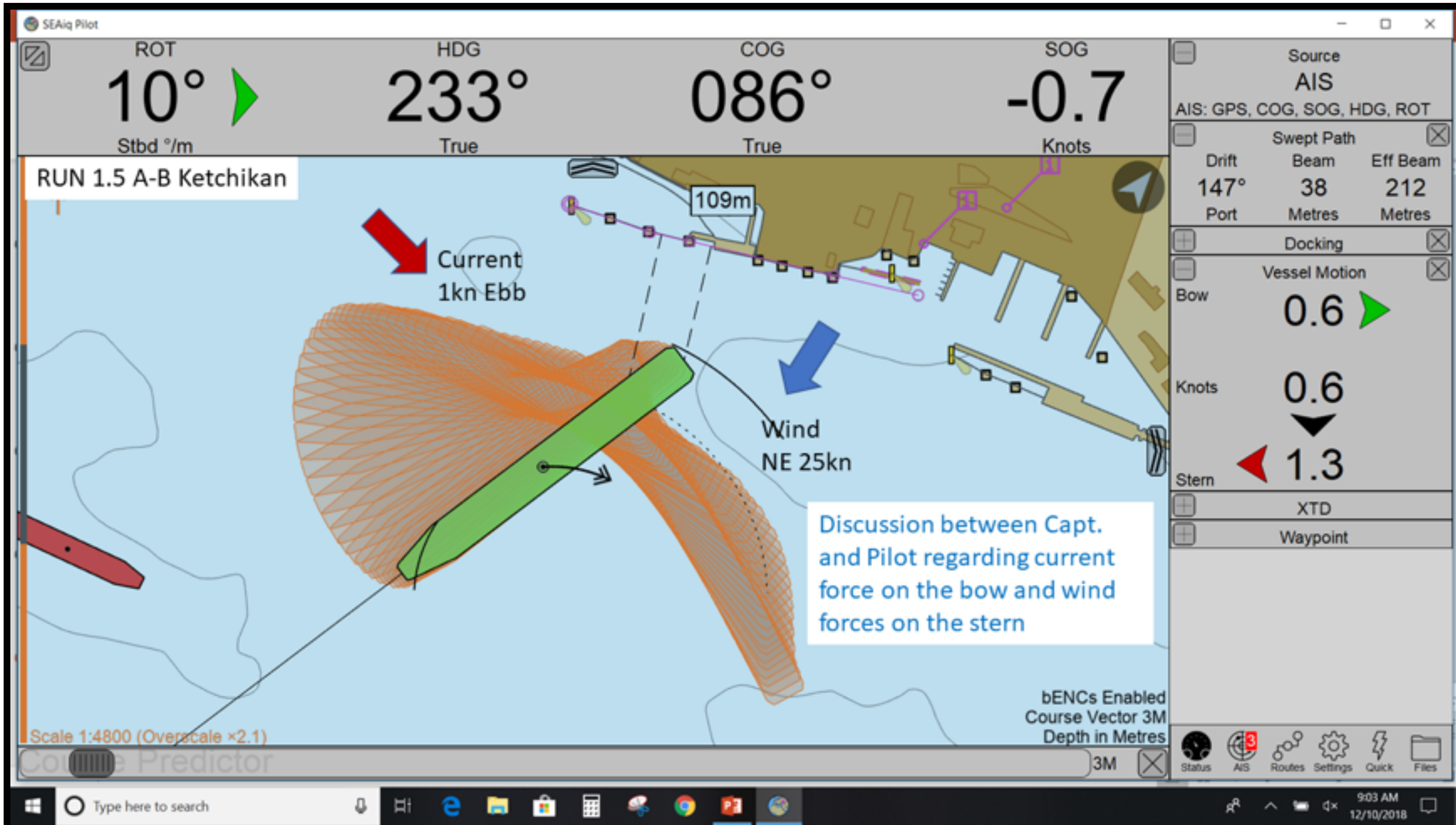

SEAiq Pilot
ROT
4°
Port °/m
HDG
335°
True
COG
320°
True
SOG
3.6
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
015°
Port
Beam
38
Metres
Eff Beam
124
Metres
Docking
Vessel Motion
Bow
1.3
Knots
3.5
Stern
0.6
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
324m
Wind
NE 25kn
Handover to Capt.
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:18k
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:50 AM
12/10/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
335°
True
COG
324°
True
SOG
2.7
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
011°
Port
Beam
38
Metres
Eff Beam
102
Metres
Docking
Vessel Motion
Bow
0.6
Knots
2.6
Stern
0.4
XTD
Waypoint
RUN 1.5 A-B Ketchikan
182m
Current
1kn Ebb
Wind
NE 25kn
Thruster use 50%
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:6200 (Overscale ×1.6)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:52 AM
12/10/2018


SEAiq Pilot
ROT
9°
Port °/m
HDG
305°
True
COG
307°
True
SOG
2.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
51
Metres
Docking
Vessel Motion
Bow
0.7
Knots
2.0
Stern
0.9
XTD
Waypoint
RUN 1.5 A-B Ketchikan
138m
215m
Current
1kn Ebb
Wind
NE 25kn
Setting up to back up to the
dock, wind on the beam at
"max" versus thruster power
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:4900 (Overscale ×2.0)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:56 AM
12/10/2018


SEAiq Pilot
ROT
10°
Stbd °/m
HDG
233°
True
COG
086°
True
SOG
-0.7
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
147°
Port
Beam
38
Metres
Eff Beam
212
Metres
Docking
Vessel Motion
Bow
0.6
Knots
0.6
Stern
1.3
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
109m
Wind
NE 25kn
Discussion between Capt. and Pilot regarding current force on the bow and wind forces on the stern
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:4800 (Overscale ×2.1)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:03 AM
12/10/2018

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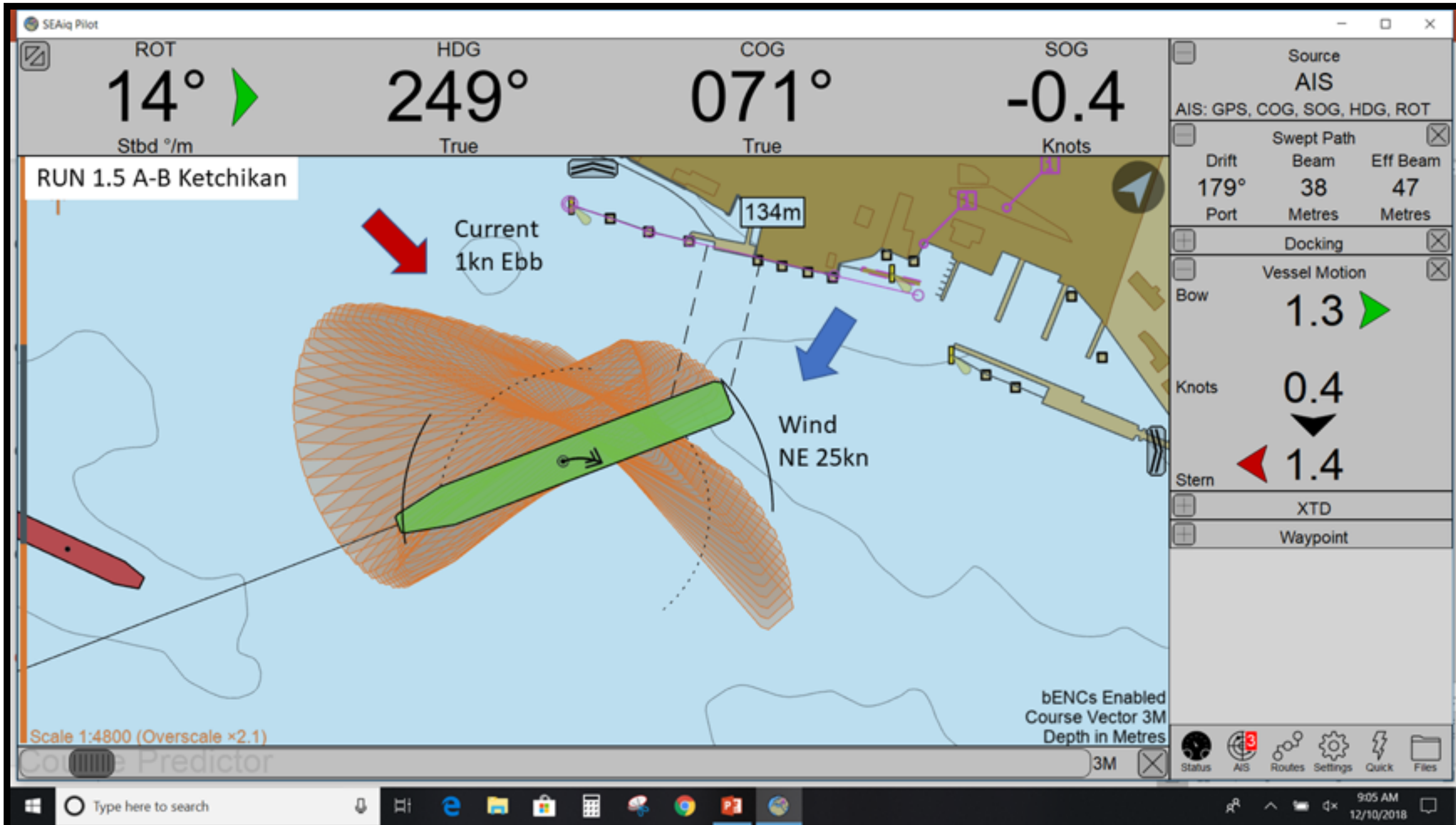
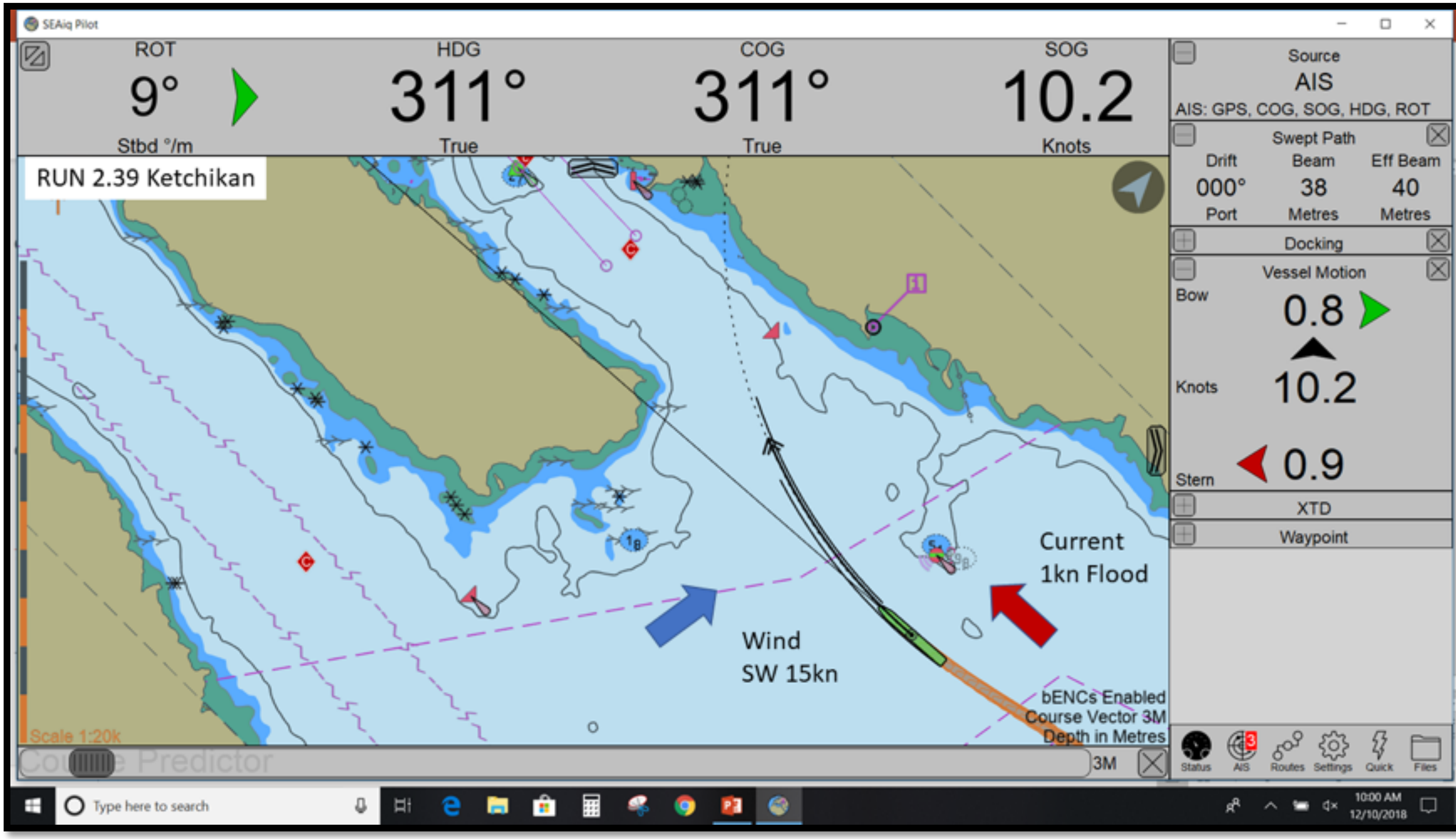
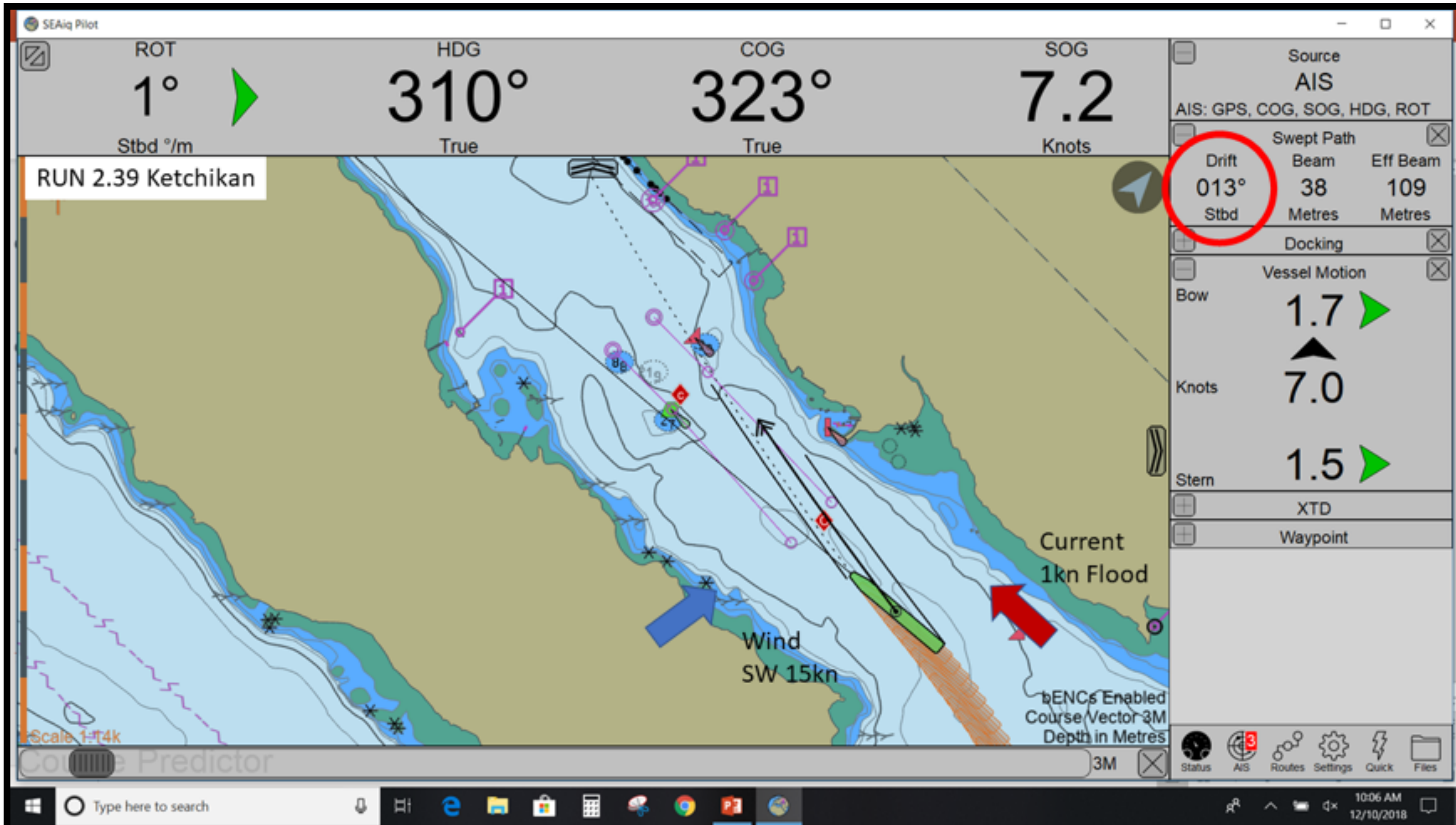
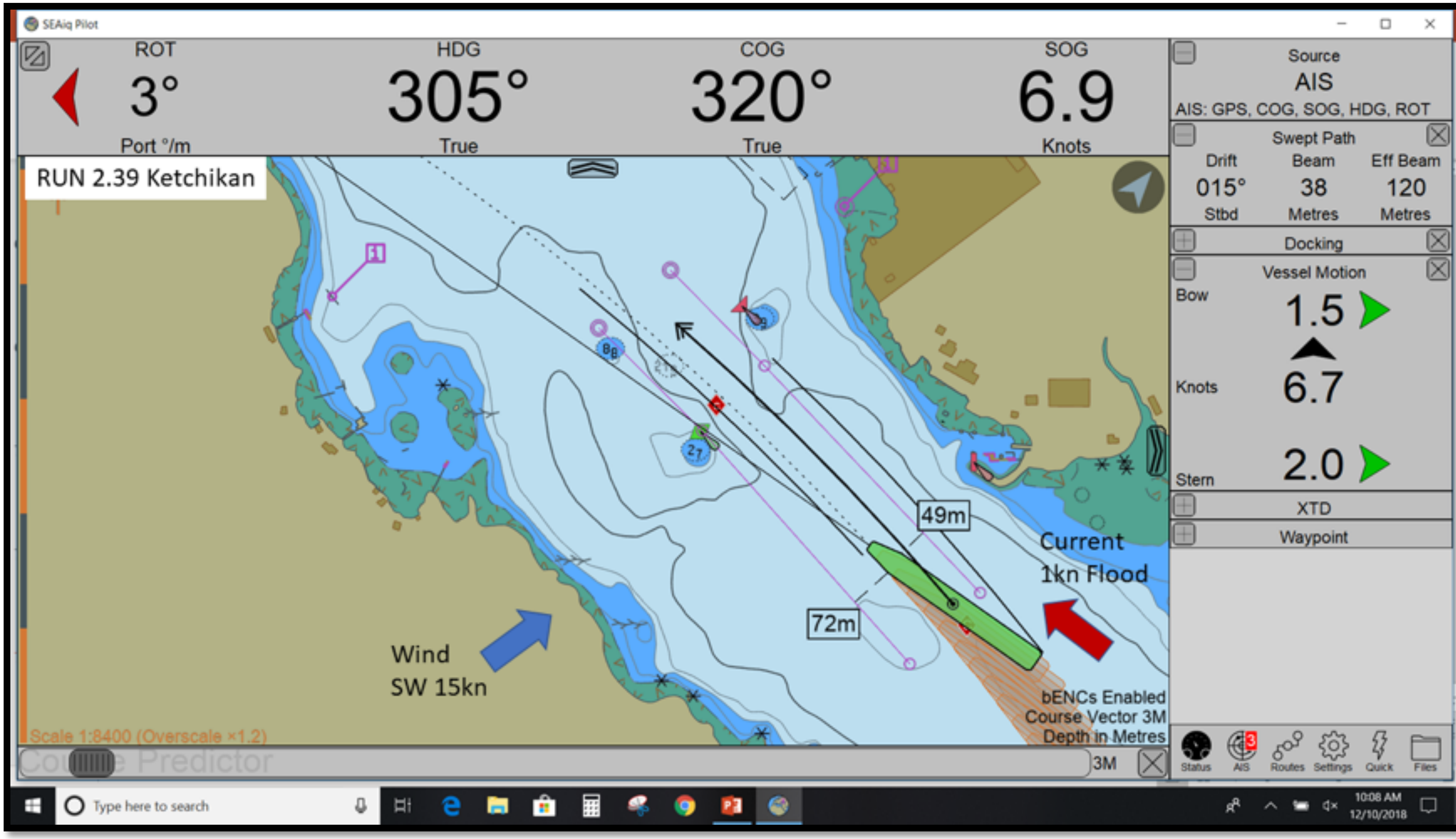
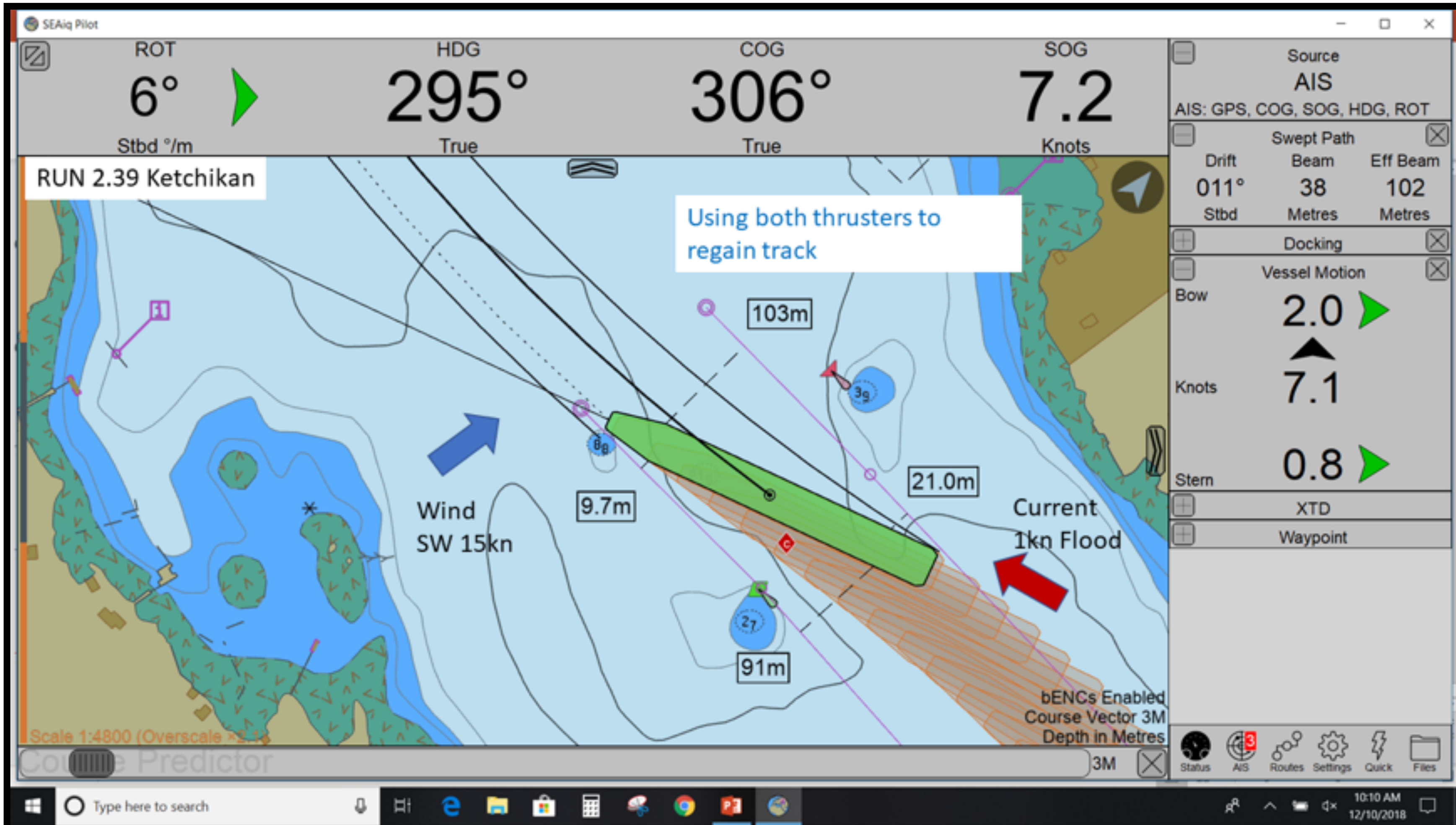

SEAiq Pilot
ROT
14°
Stbd °/m
HDG
249°
True
COG
071°
True
SOG
-0.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
179°
Port
Beam
38
Metres
Eff Beam
47
Metres
Docking
Vessel Motion
Bow
1.3
Knots
0.4
Stern
1.4
XTD
Waypoint
RUN 1.5 A-B Ketchikan
Current
1kn Ebb
134m
Wind
NE 25kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:4800 (Overscale ×2.1)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:05 AM
12/10/2018

Run 2.39B Ketchikan IB SW15, 1kn Flood

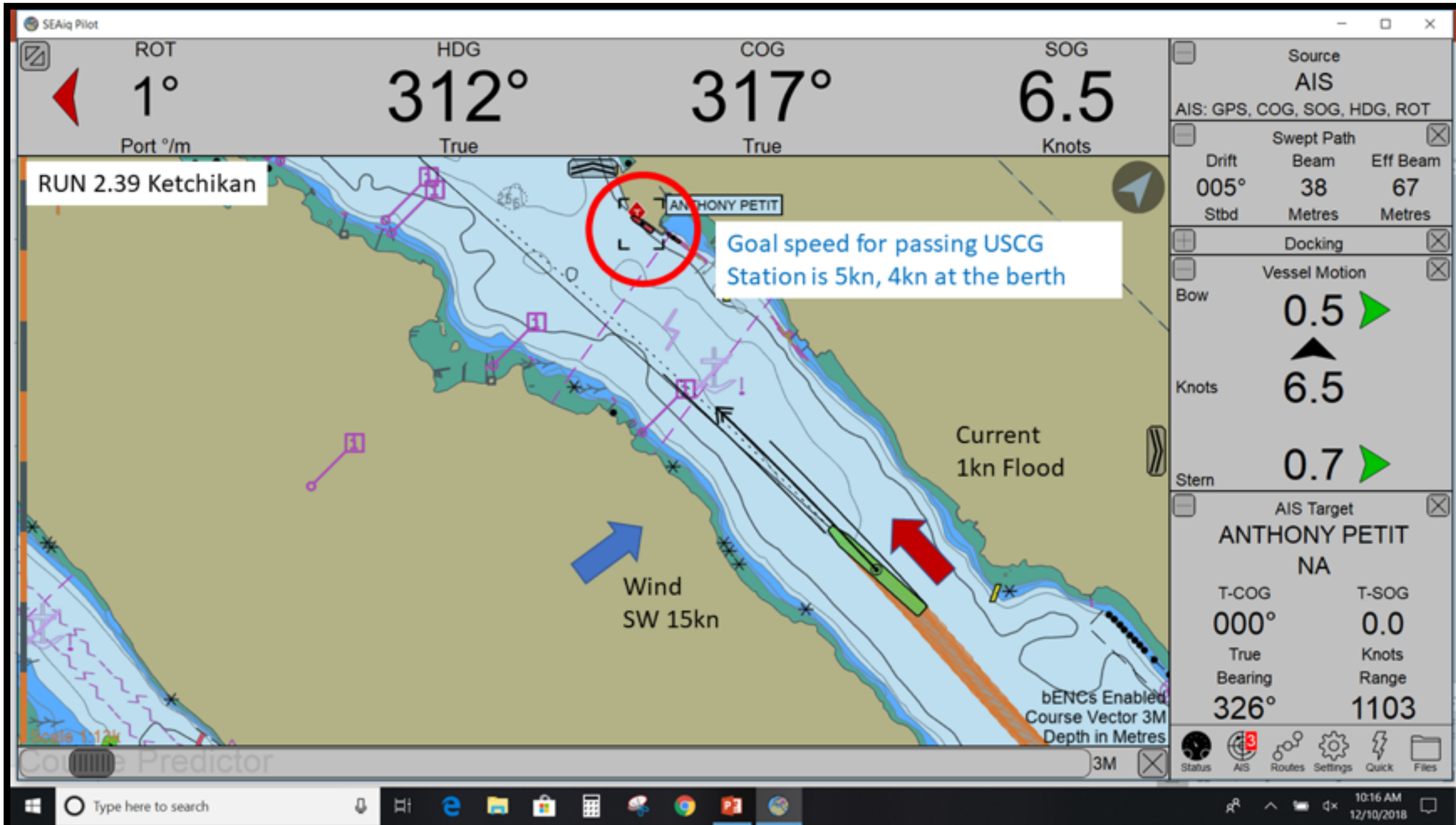

SEAiq Pilot
ROT
9°
Stbd °/m
HDG
311°
True
COG
311°
True
SOG
10.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Port
Beam
38
Metres
Eff Beam
40
Metres
Docking
Vessel Motion
Bow
0.8
Knots
10.2
Stern
0.9
XTD
Waypoint
RUN 2.39 Ketchikan
Current
1kn Flood
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:20k
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:00 AM
12/10/2018

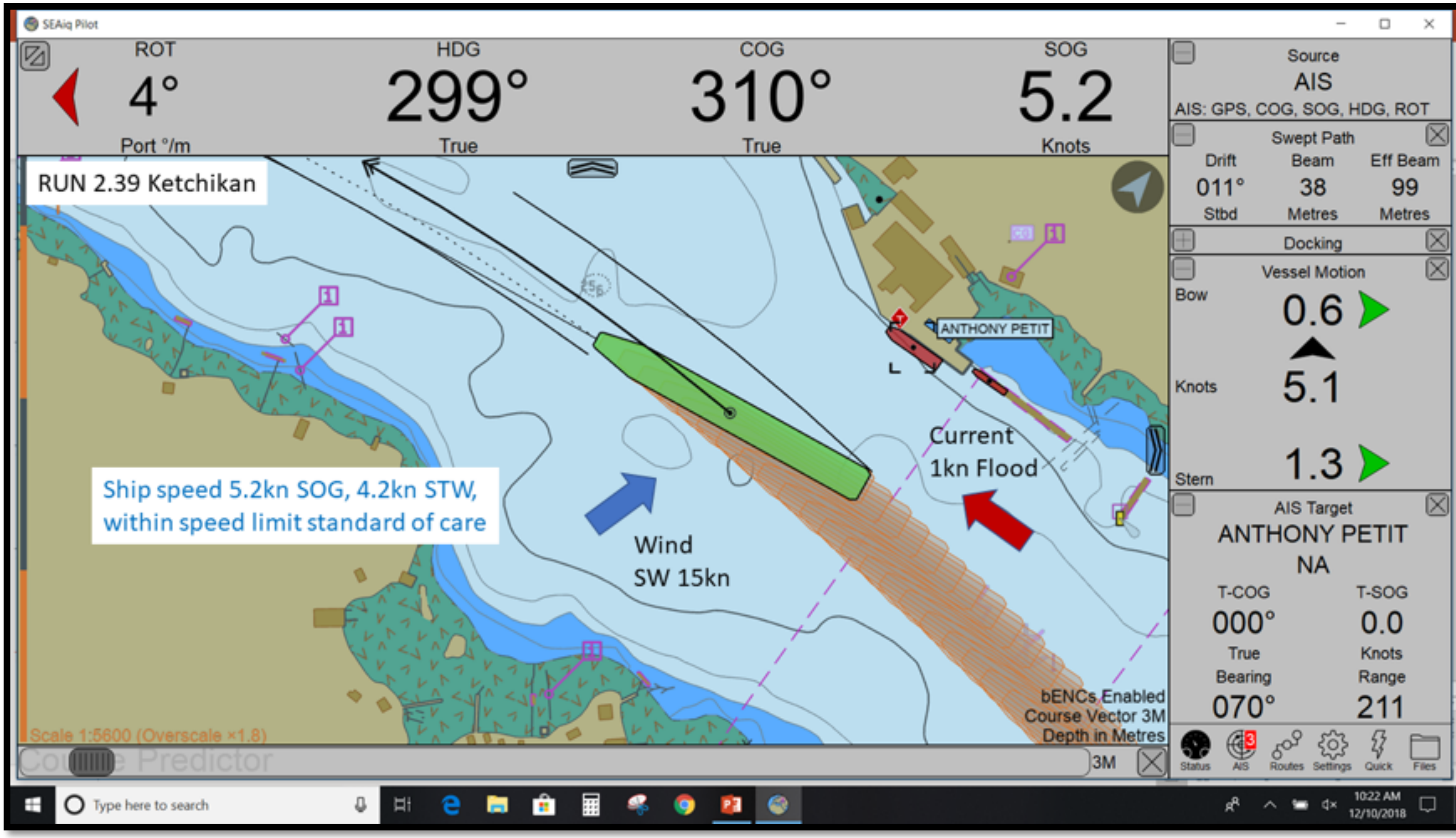

SEAiq Pilot
ROT
1°
Stbd °/m
HDG
310°
True
COG
323°
True
SOG
7.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
013°
Stbd
Beam
38
Metres
Eff Beam
109
Metres
Docking
Vessel Motion
Bow
1.7
Knots
7.0
1.5
Stern
XTD
Waypoint
RUN 2.39 Ketchikan
Current
1kn Flood
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:14k
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:06 AM
12/10/2018

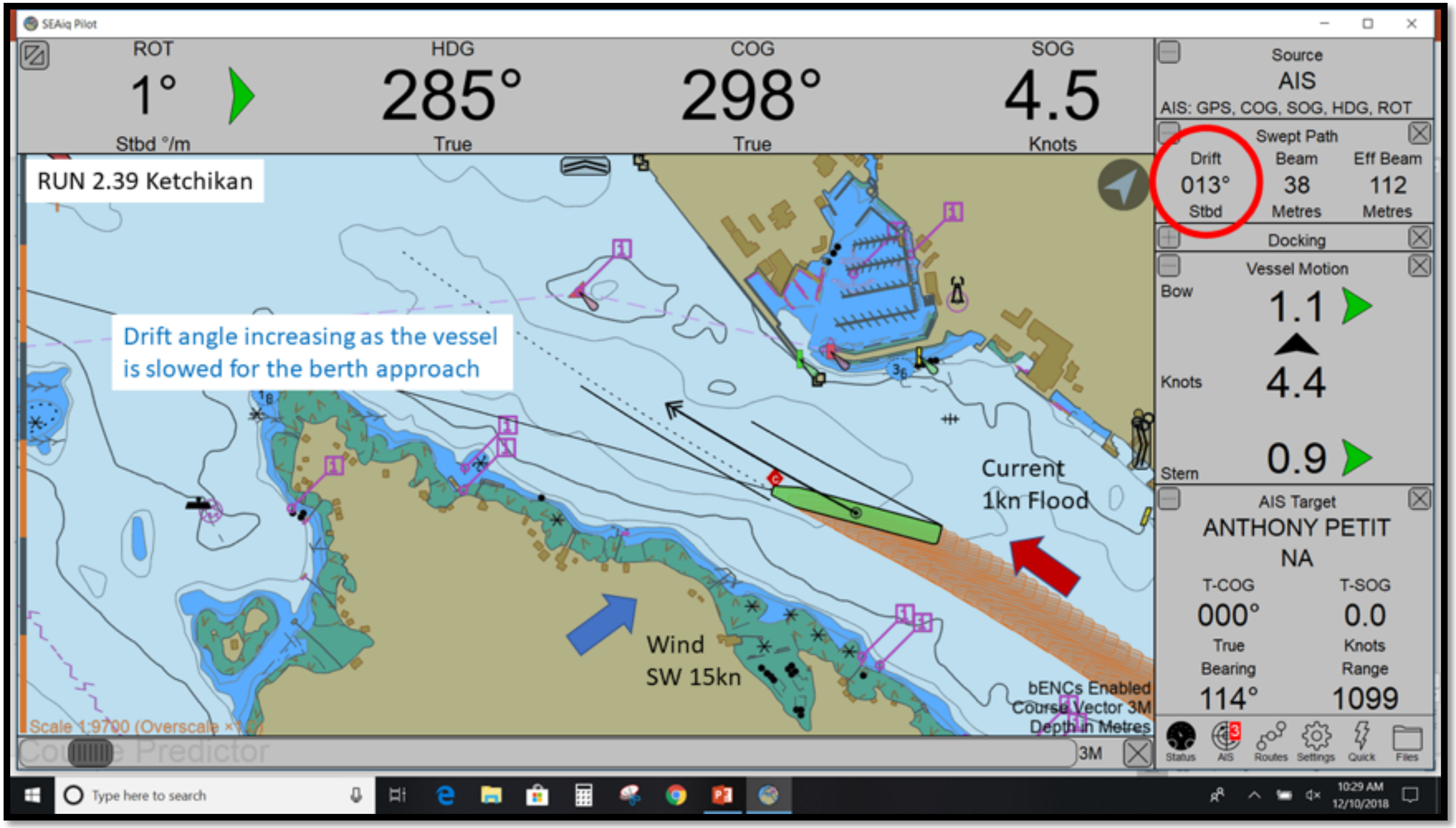

SEAiq Pilot
ROT
3°
Port °/m
HDG
305°
True
COG
320°
True
SOG
6.9
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
015°
Stbd
Beam
38
Metres
Eff Beam
120
Metres
Docking
Vessel Motion
Bow
1.5
Knots
6.7
Stern
2.0
XTD
Waypoint
RUN 2.39 Ketchikan
49m
72m
Current
1kn Flood
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:8400 (Overscale ×1.2)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:08 AM
12/10/2018

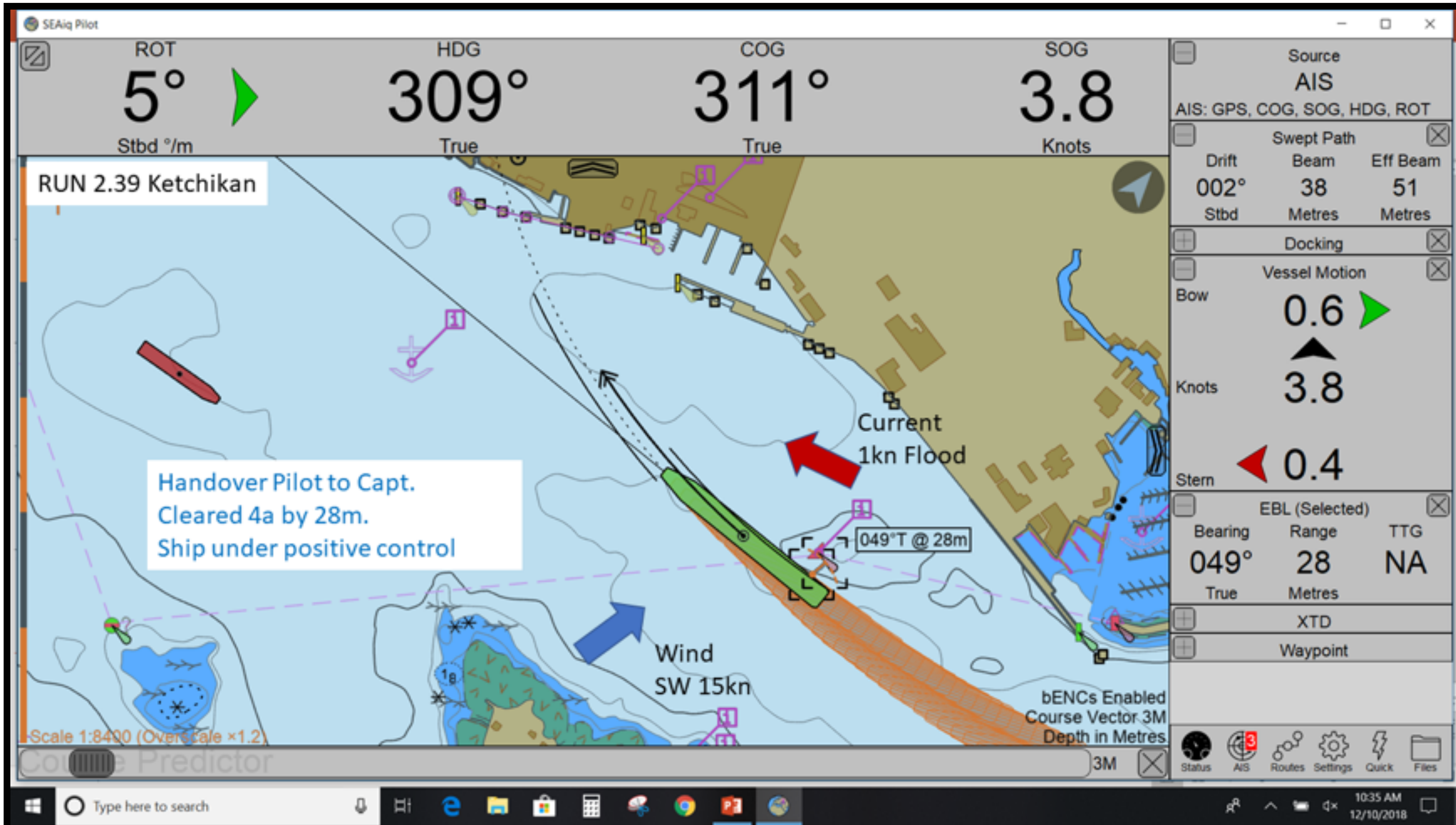

SEAiq Pilot
ROT
6°
Stbd °/m
HDG
295°
True
COG
306°
True
SOG
7.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
011°
Stbd
Beam
38
Metres
Eff Beam
102
Metres
Docking
Vessel Motion
Bow
2.0
Knots
7.1
0.8
Stern
XTD
Waypoint
RUN 2.39 Ketchikan
Using both thrusters to regain track
103m
9.7m
21.0m
91m
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:4800
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:10 AM
12/10/2018

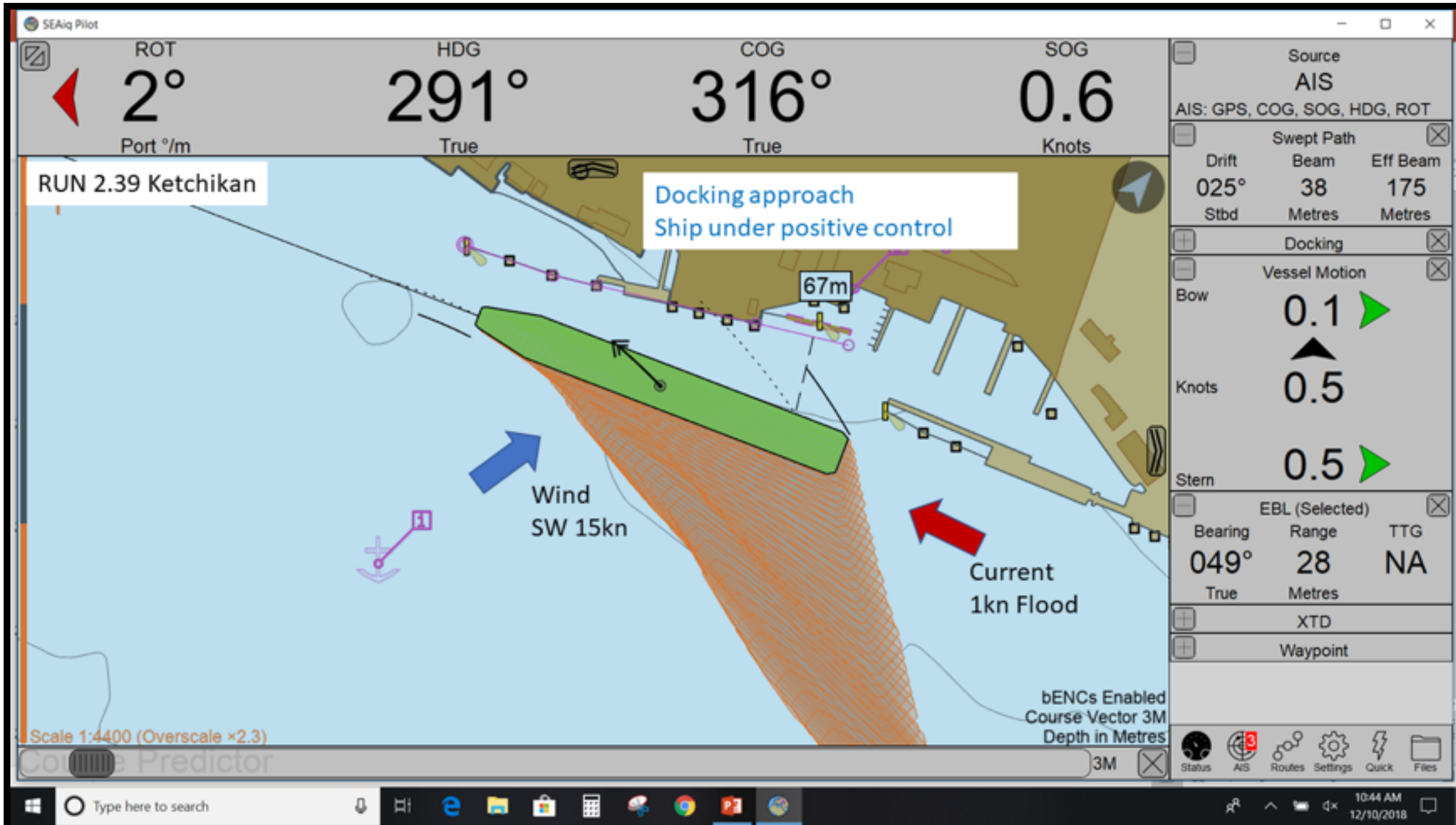
SEAiq Pilot
ROT
5°
Stbd °/m
HDG
304°
True
COG
311°
True
SOG
7.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
80
Metres
Docking
Vessel Motion
Bow
1.4
Knots
7.2
0.4
Stern
XTD
Waypoint
RUN 2.39 Ketchikan
Ship back under positive control
71m
40m
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:6400 (Overscale ×1.5)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:12 AM
12/10/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
312°
True
COG
317°
True
SOG
6.5
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
005°
Stbd
Beam
38
Metres
Eff Beam
67
Metres
Docking
Vessel Motion
Bow
0.5
Knots
6.5
Stern
0.7
AIS Target
ANTHONY PETIT
NA
T-COG
000°
True
T-SOG
0.0
Knots
Bearing
326°
Range
1103
RUN 2.39 Ketchikan
ANTHONY PETIT
Goal speed for passing USCG Station is 5kn, 4kn at the berth
Current
1kn Flood
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:16 AM
12/10/2018


SEAiq Pilot
ROT
4°
Port °/m
HDG
299°
True
COG
310°
True
SOG
5.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
011°
Stbd
Beam
38
Metres
Eff Beam
99
Metres
Docking
Vessel Motion
Bow
0.6
Knots
5.1
Stern
1.3
AIS Target
ANTHONY PETIT
NA
T-COG
000°
True
T-SOG
0.0
Knots
Bearing
070°
Range
211
RUN 2.39 Ketchikan
Ship speed 5.2kn SOG, 4.2kn STW,
within speed limit standard of care
Wind
SW 15kn
Current
1kn Flood
ANTHONY PETIT
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:5600 (Overscale ×1.8)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:22 AM
12/10/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
285°
True
COG
298°
True
SOG
4.5
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
013°
Stbd
Beam
38
Metres
Eff Beam
112
Metres
Docking
Vessel Motion
Bow
1.1
Knots
4.4
Stern
0.9
AIS Target
ANTHONY PETIT
NA
T-COG
000°
True
T-SOG
0.0
Knots
Bearing
114°
Range
1099
Status
AIS
Routes
Settings
Quick
Files
RUN 2.39 Ketchikan
Drift angle increasing as the vessel is slowed for the berth approach
Current
1kn Flood
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:9700 (Overscale
Course Predictor
3M
Type here to search
10:29 AM
12/10/2018


SEAiq Pilot
ROT
5°
Stbd °/m
HDG
309°
True
COG
311°
True
SOG
3.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift Beam Eff Beam
002° 38 51
Stbd Metres Metres
Docking
Vessel Motion
Bow
0.6
Knots
3.8
Stern
0.4
EBL (Selected)
Bearing Range TTG
049° 28 NA
True Metres
XTD
Waypoint
RUN 2.39 Ketchikan
Handover Pilot to Capt.
Cleared 4a by 28m.
Ship under positive control
Current
1kn Flood
049°T @ 28m
Wind
SW 15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:8400 (Overscale ×1.2)
Course Predictor
3M
Status AIS Routes Settings Quick Files
Type here to search
10:35 AM
12/10/2018


SEAiq Pilot
ROT
2°
Port °/m
HDG
291°
True
COG
316°
True
SOG
0.6
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
025°
Stbd
Beam
38
Metres
Eff Beam
175
Metres
Docking
Vessel Motion
Bow
0.1
Knots
0.5
Stern
0.5
EBL (Selected)
Bearing
049°
True
Range
28
Metres
TTG
NA
XTD
Waypoint
RUN 2.39 Ketchikan
Docking approach
Ship under positive control
67m
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:4400 (Overscale ×2.3)
Course Predictor
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:44 AM
12/10/2018

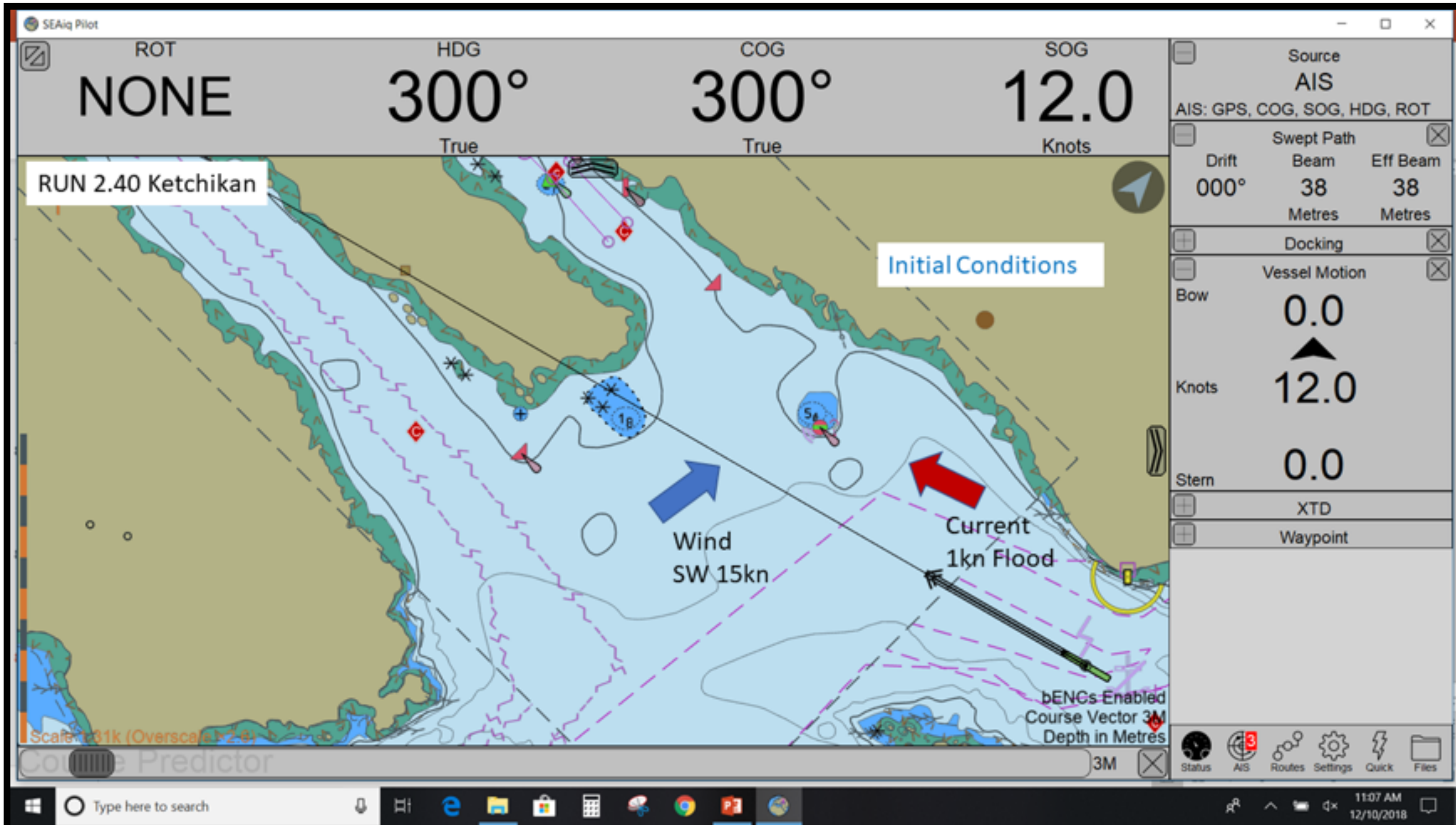
Run 2.40 Ketchikan, SW 15, 1kn Flood

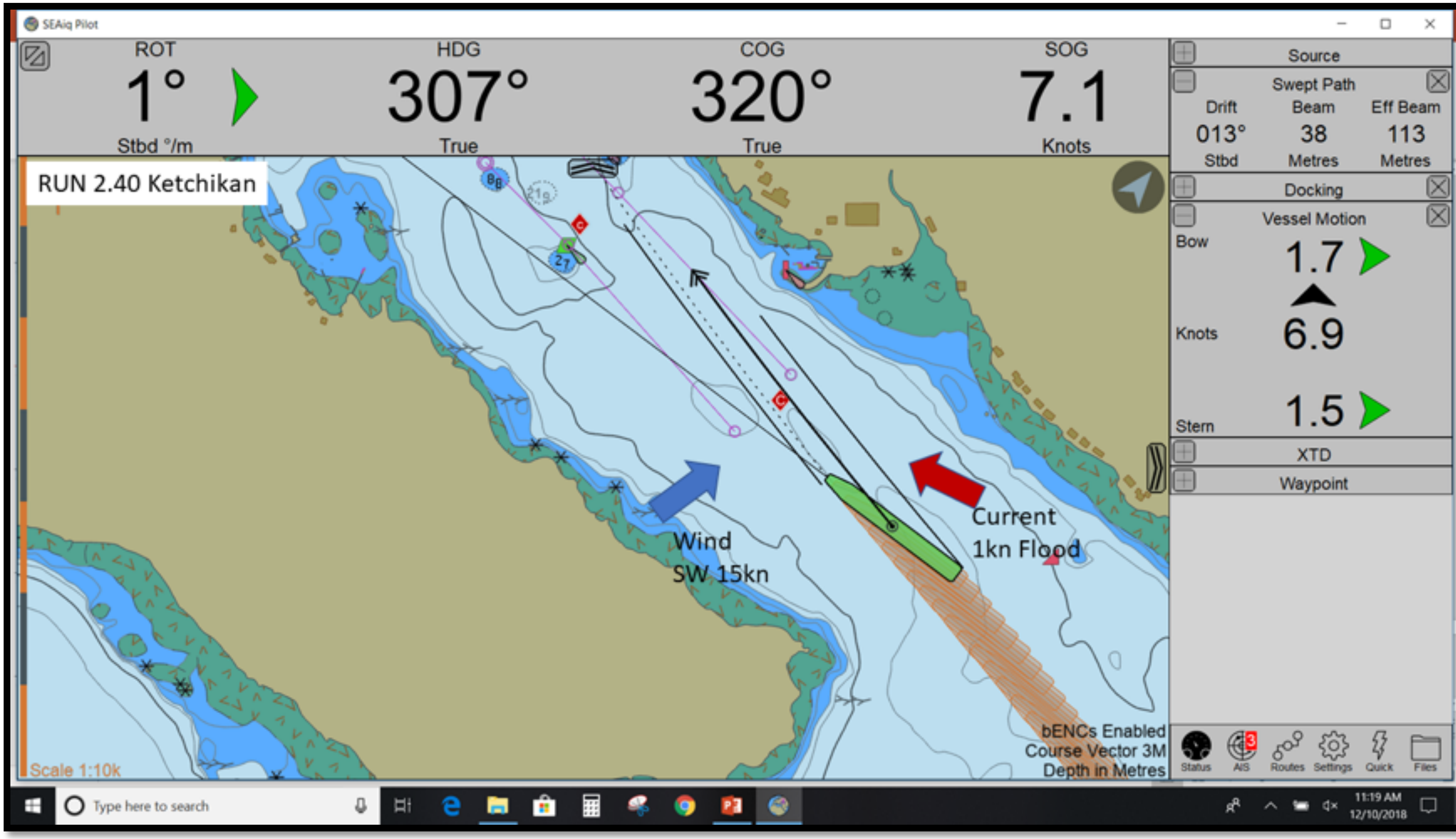
2.40 SW15 1kn Flood, Ketchikan

Same as before, different Pilot

Monday 12/10/2018

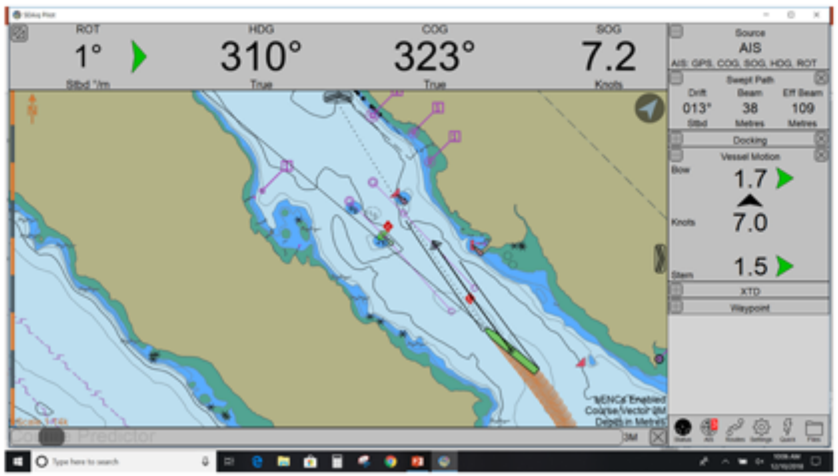
4th Run


SEAiq Pilot
ROT
NONE
HDG
300°
True
COG
300°
True
SOG
12.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Beam
38
Metres
Eff Beam
38
Metres
Docking
Vessel Motion
Bow
0.0
Knots
12.0
Stern
0.0
XTD
Waypoint
RUN 2.40 Ketchikan
Initial Conditions
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
3M
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:07 AM
12/10/2018

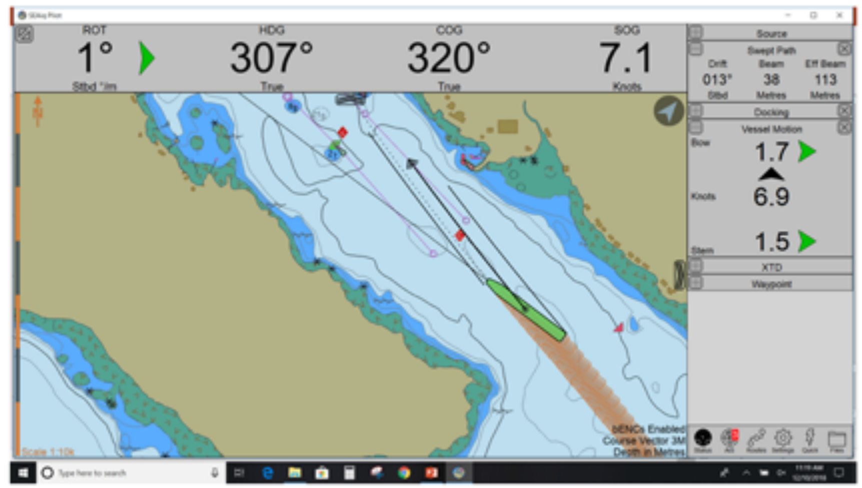

SEAiq Pilot
ROT
1°
Stbd °/m
HDG
307°
True
COG
320°
True
SOG
7.1
Knots
Source
Swept Path
Drift
013°
Stbd
Beam
38
Metres
Eff Beam
113
Metres
Docking
Vessel Motion
Bow
1.7
Knots
6.9
Stern
1.5
XTD
Waypoint
RUN 2.40 Ketchikan
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:10k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:19 AM
12/10/2018

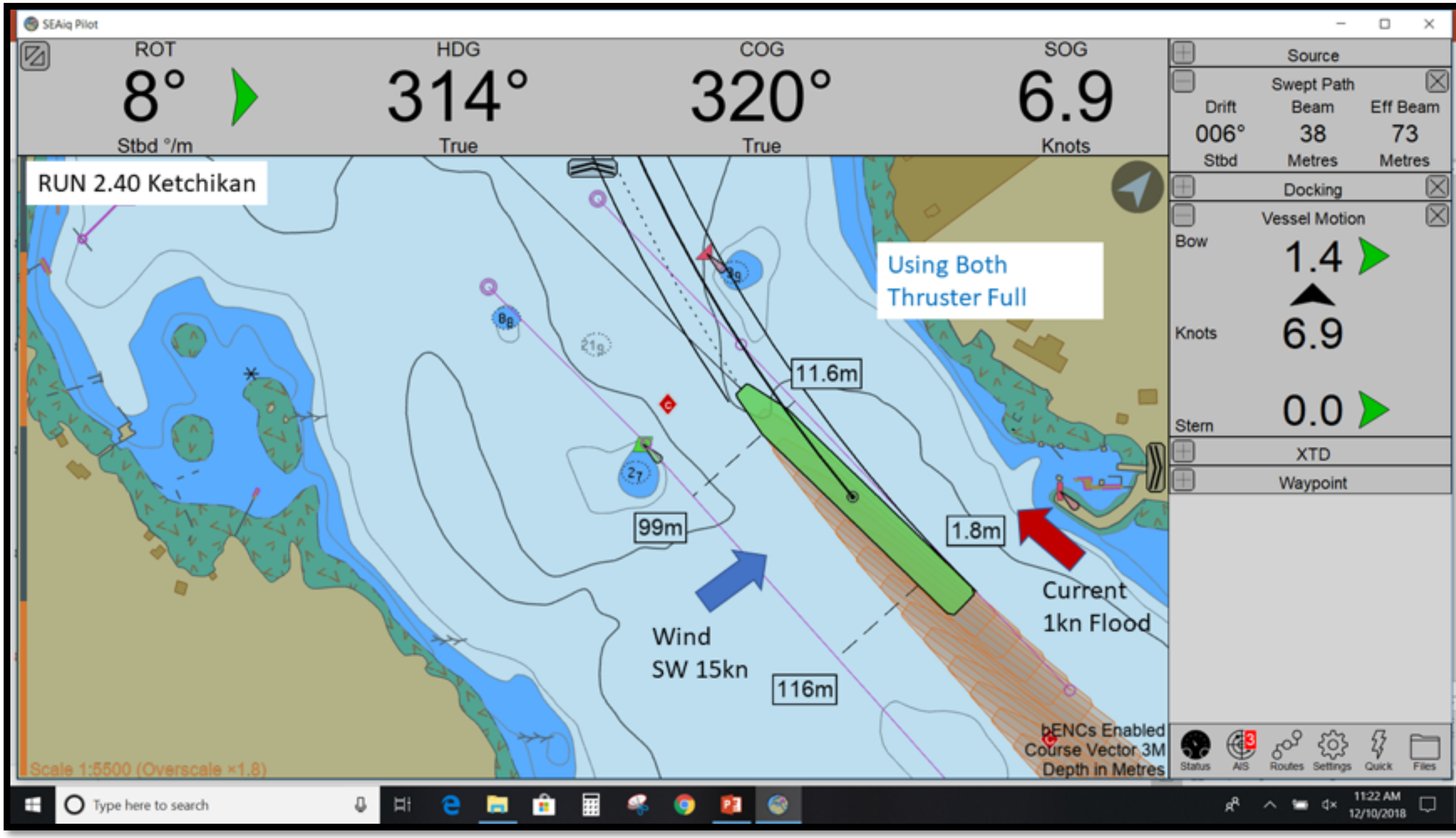
Same Conditions, Different Pilot

Run 2.39

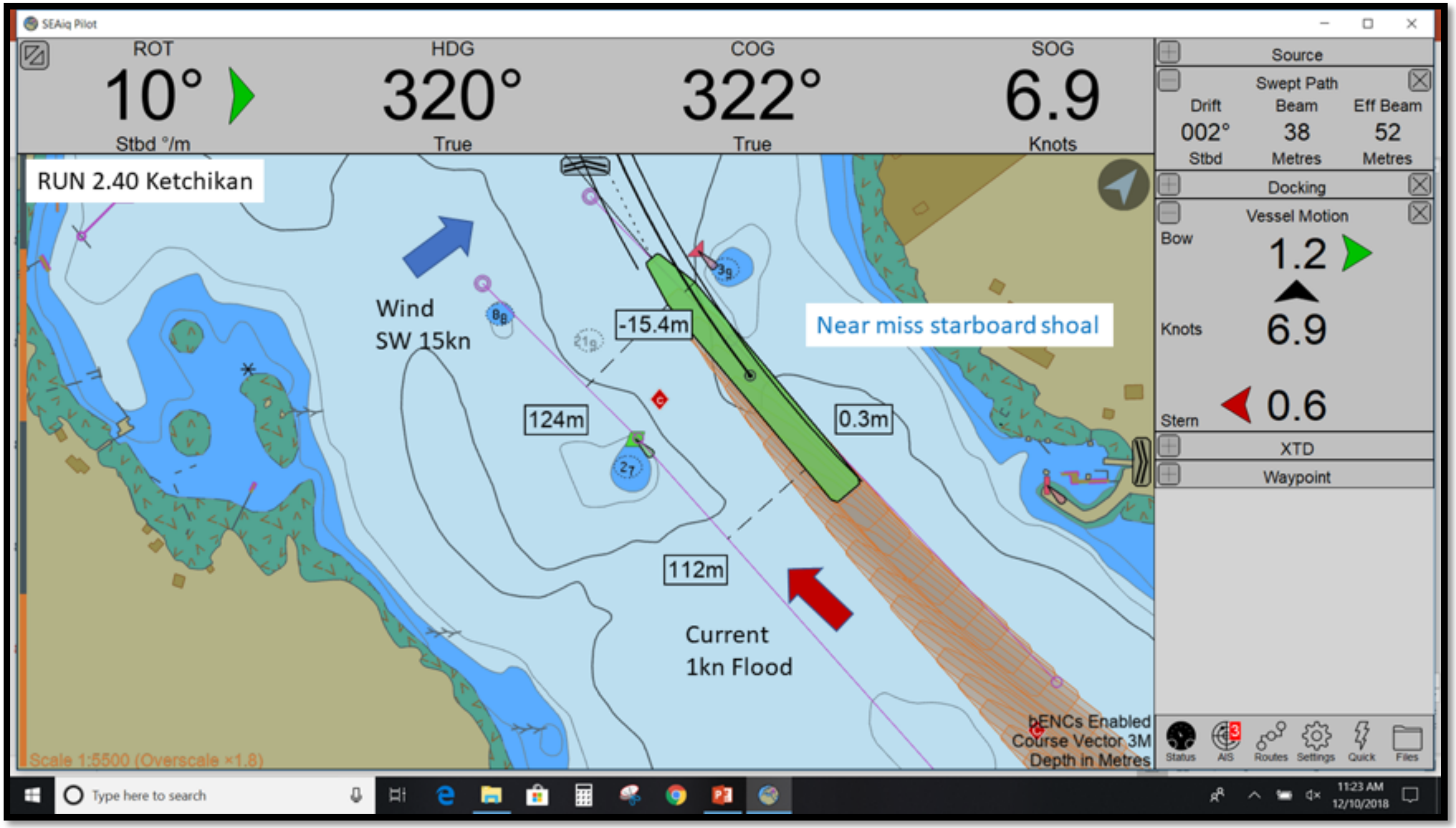


Run 2.4

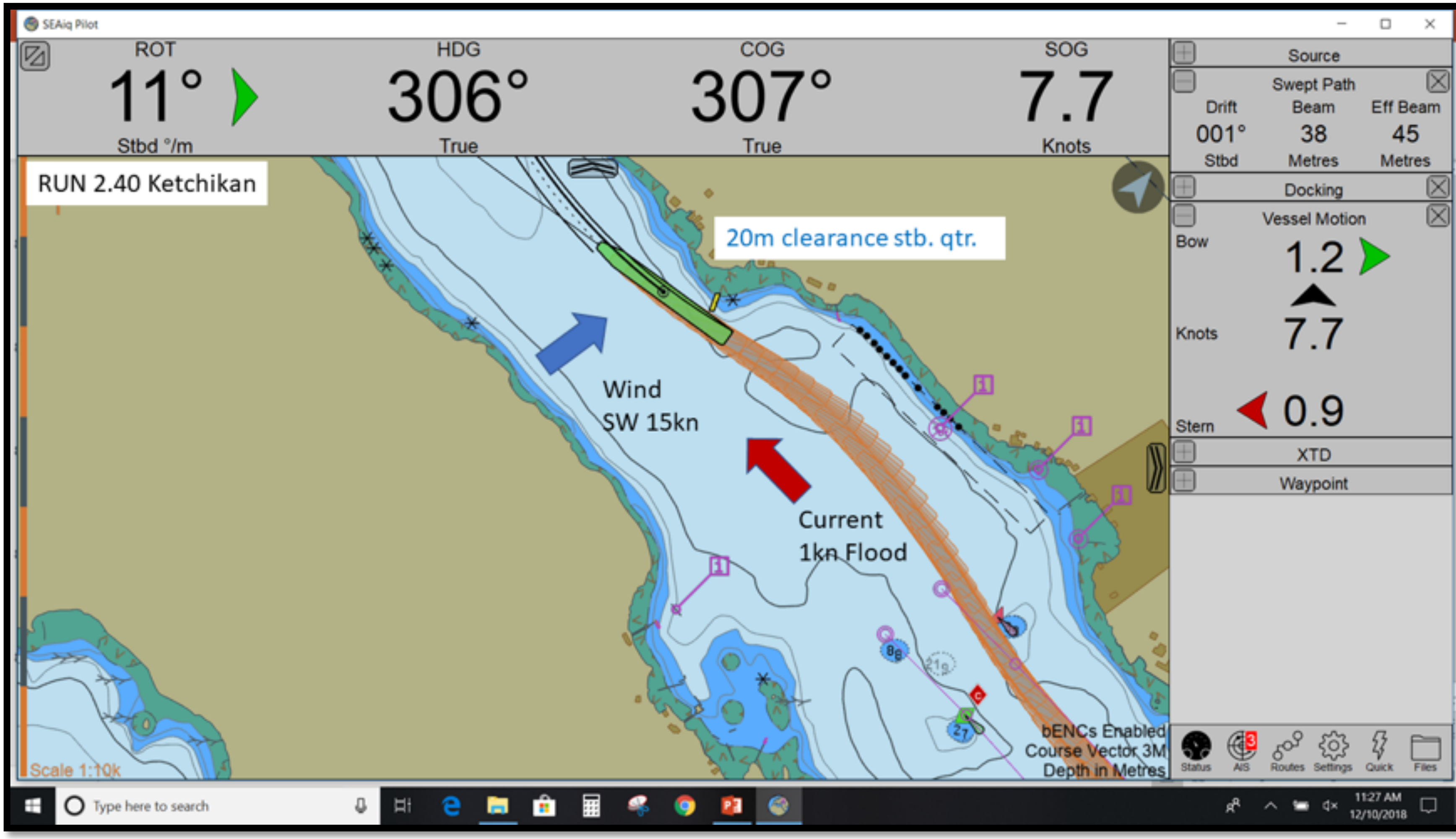


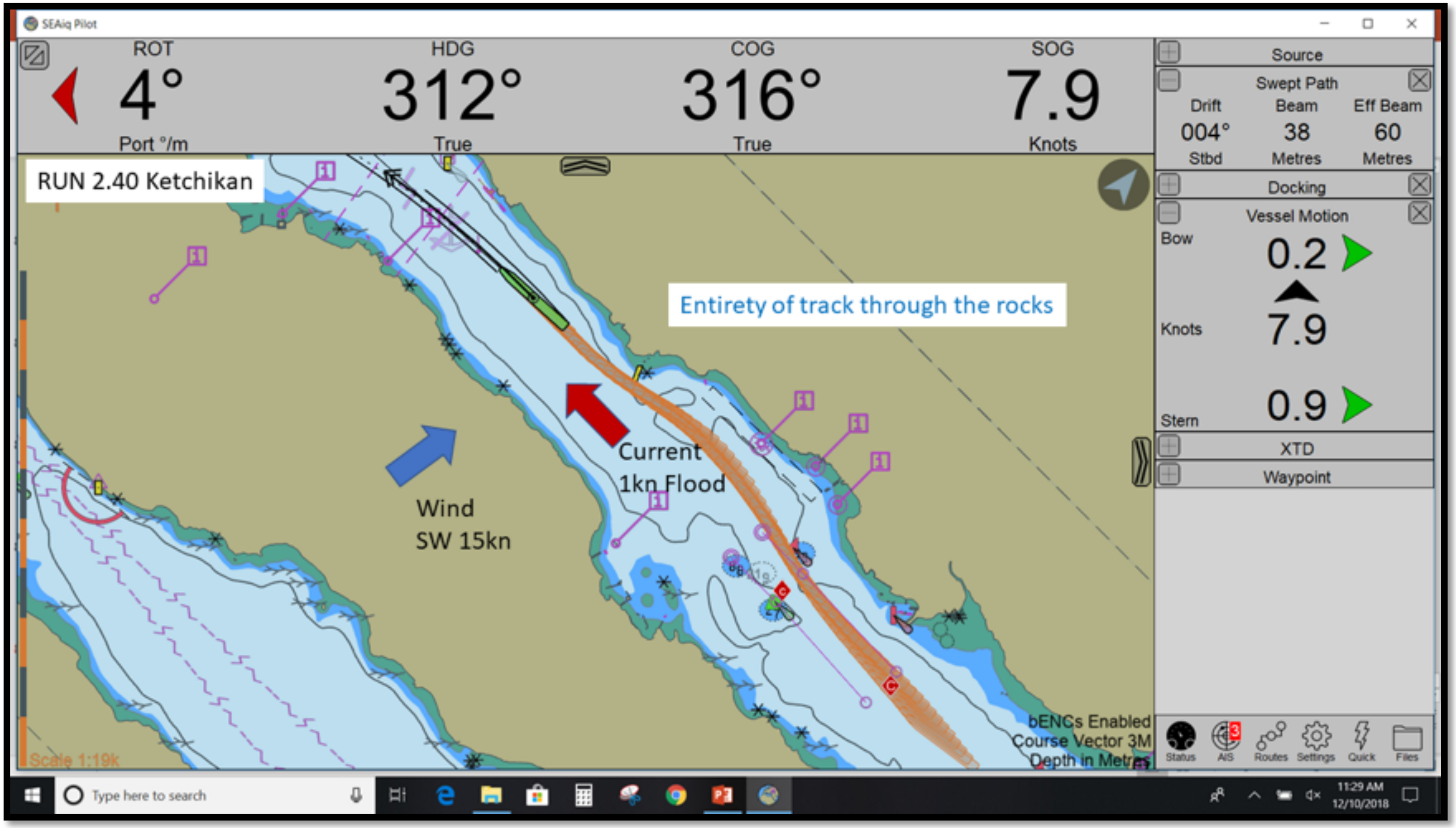


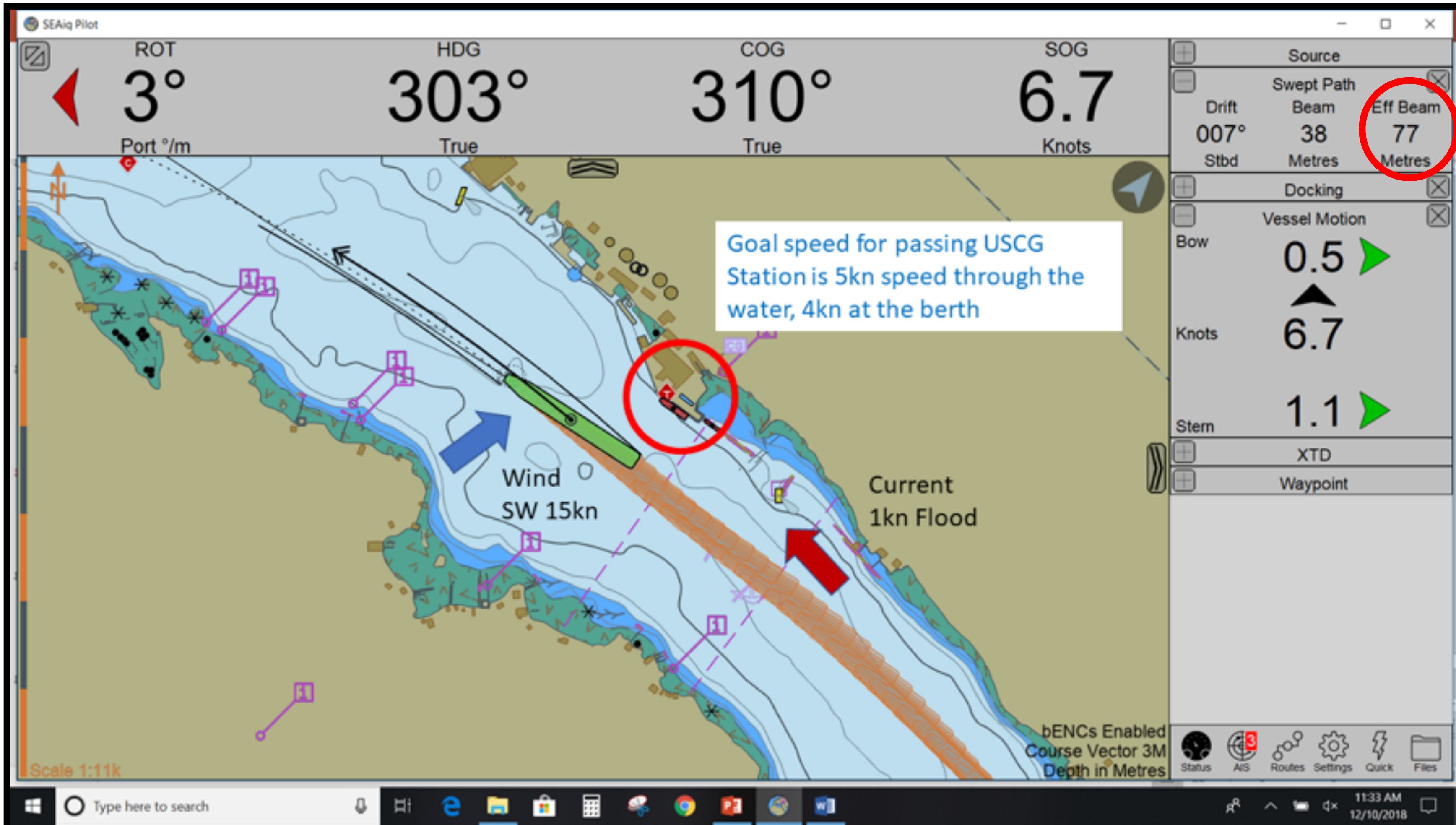
SEAiq Pilot
ROT
8°
Stbd °/m
HDG
314°
True
COG
320°
True
SOG
6.9
Knots
Source
Swept Path
Drift
006°
Stbd
Beam
38
Metres
Eff Beam
73
Metres
Docking
Vessel Motion
Bow
1.4
Knots
6.9
0.0
Stern
XTD
Waypoint
RUN 2.40 Ketchikan
Using Both
Thruster Full
11.6m
99m
1.8m
Current
1kn Flood
Wind
SW 15kn
116m
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:5500 (Overscale ×1.8)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:22 AM
12/10/2018

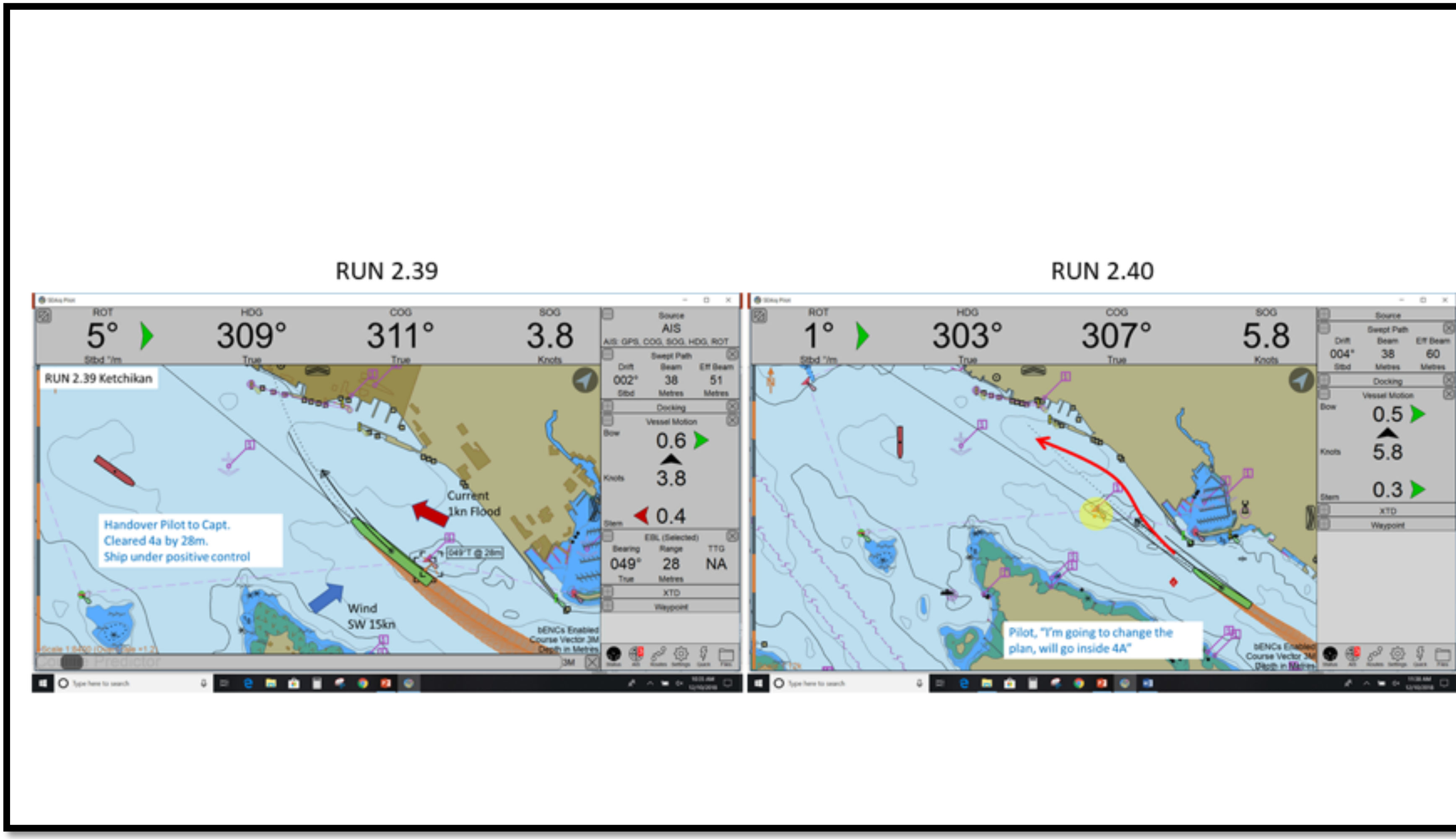

SEAiq Pilot
ROT
10°
Stbd °/m
HDG
320°
True
COG
322°
True
SOG
6.9
Knots
Source
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
52
Metres
Docking
Vessel Motion
Bow
1.2
Knots
6.9
Stern
0.6
XTD
Waypoint
RUN 2.40 Ketchikan
Wind
SW 15kn
-15.4m
Near miss starboard shoal
124m
0.3m
112m
Current
1kn Flood
Scale 1:5500 (Overscale ×1.8)
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:23 AM
12/10/2018


SEAiq Pilot
ROT
6°
Port °/m
HDG
325°
True
COG
327°
True
SOG
7.2
Knots
Source
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
49
Metres
Docking
Vessel Motion
Bow
0.4
Knots
7.2
Stern
0.8
XTD
Waypoint
RUN 2.40 Ketchikan
Buoy close aboard starboard quarter
Wind
SW 15kn
Current
1kn Flood
-2.3m
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:24 AM
12/10/2018

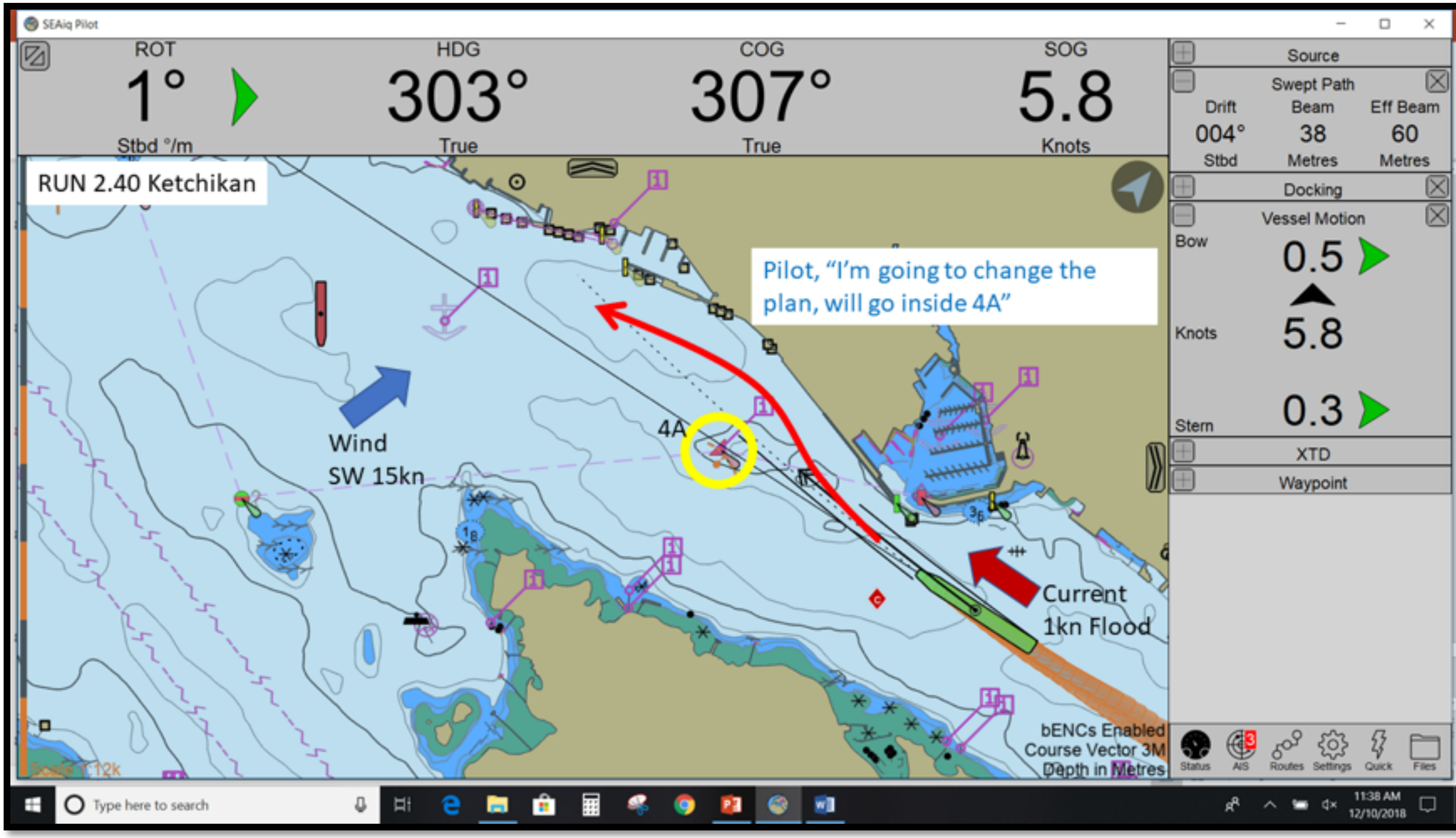

SEAiq Pilot
ROT
11°
Stbd °/m
HDG
306°
True
COG
307°
True
SOG
7.7
Knots
Source
Swept Path
Drift
001°
Stbd
Beam
38
Metres
Eff Beam
45
Metres
Docking
Vessel Motion
Bow
1.2
Knots
7.7
Stern
0.9
XTD
Waypoint
RUN 2.40 Ketchikan
20m clearance stb. qtr.
Wind
SW 15kn
Current
1kn Flood
Scale 1:10k
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:27 AM
12/10/2018

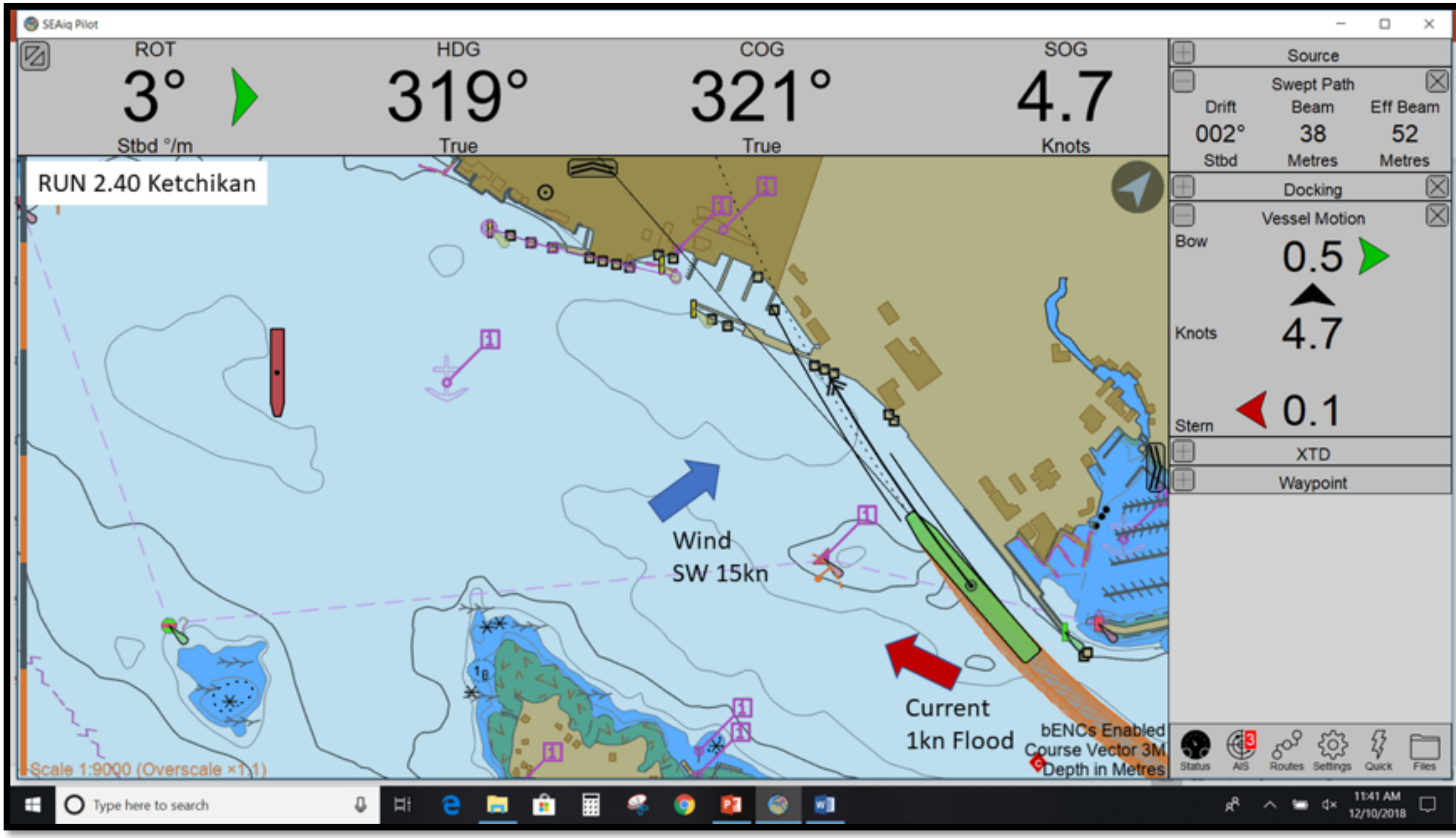

SEAiq Pilot
ROT
4°
Port °/m
HDG
312°
True
COG
316°
True
SOG
7.9
Knots
Source
Swept Path
Drift
004°
Stbd
Beam
38
Metres
Eff Beam
60
Metres
Docking
Vessel Motion
Bow
0.2
Knots
7.9
0.9
Stern
XTD
Waypoint
RUN 2.40 Ketchikan
Entirety of track through the rocks
Current
1kn Flood
Wind
SW 15kn
Scale 1:19k
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:29 AM
12/10/2018


SEAiq Pilot
ROT
3°
Port °/m
HDG
303°
True
COG
310°
True
SOG
6.7
Knots
Source
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
77
Metres
Docking
Vessel Motion
Bow
0.5
Knots
6.7
Stern
1.1
XTD
Waypoint
Goal speed for passing USCG Station is 5kn speed through the water, 4kn at the berth
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:11k
Type here to search
11:33 AM
12/10/2018

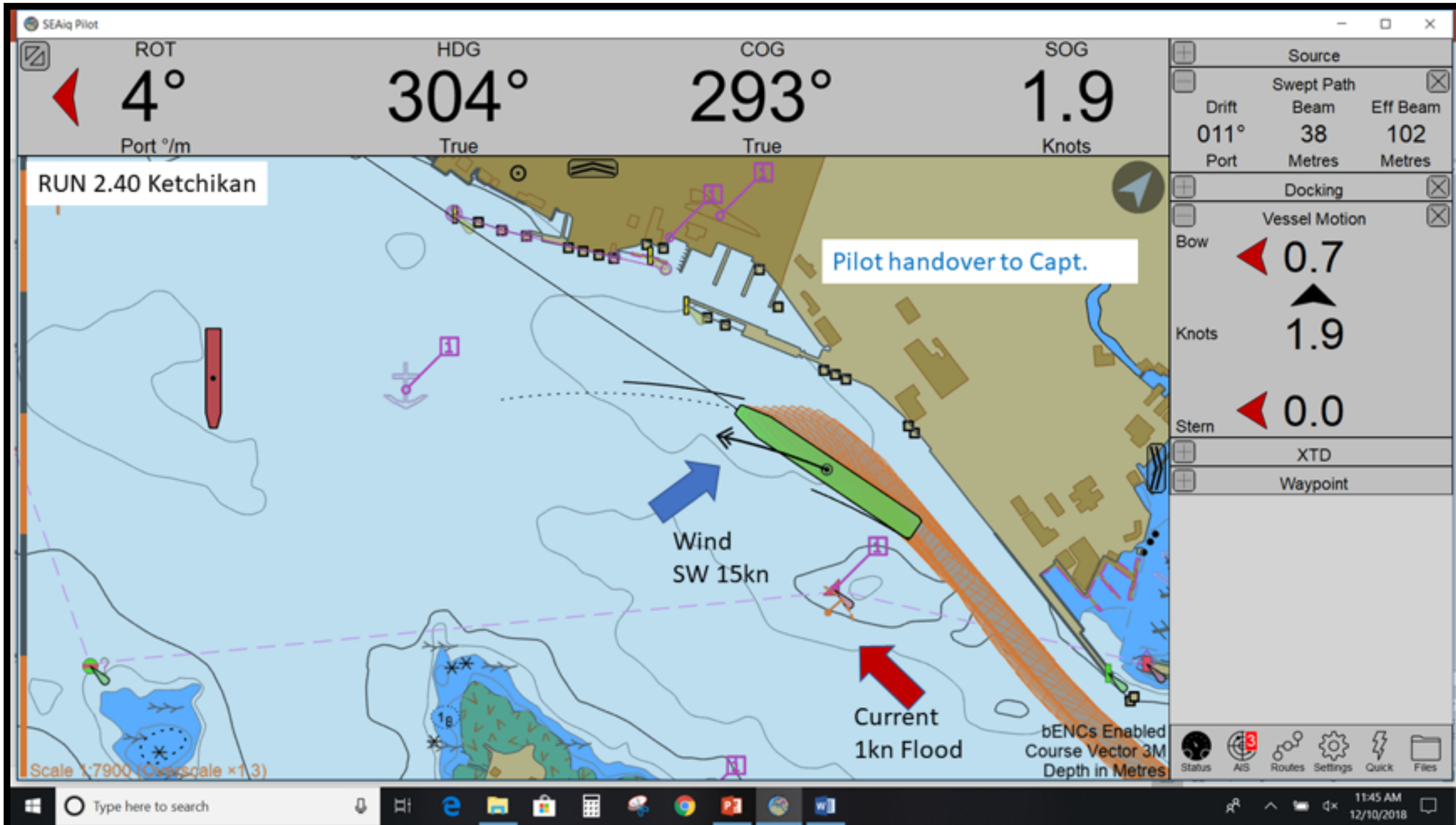

RUN 2.39
RUN 2.40
5°
309°
311°
3.8
RUN 2.39 Ketchikan
Handover Pilot to Capt.
Cleared 4a by 28m.
Ship under positive control
Current
1kn Flood
Wind
SW 15kn
0.6
3.8
0.4
1°
303°
307°
5.8
0.5
5.8
0.3
Pilot, "I'm going to change the
plan, will go inside 4A"

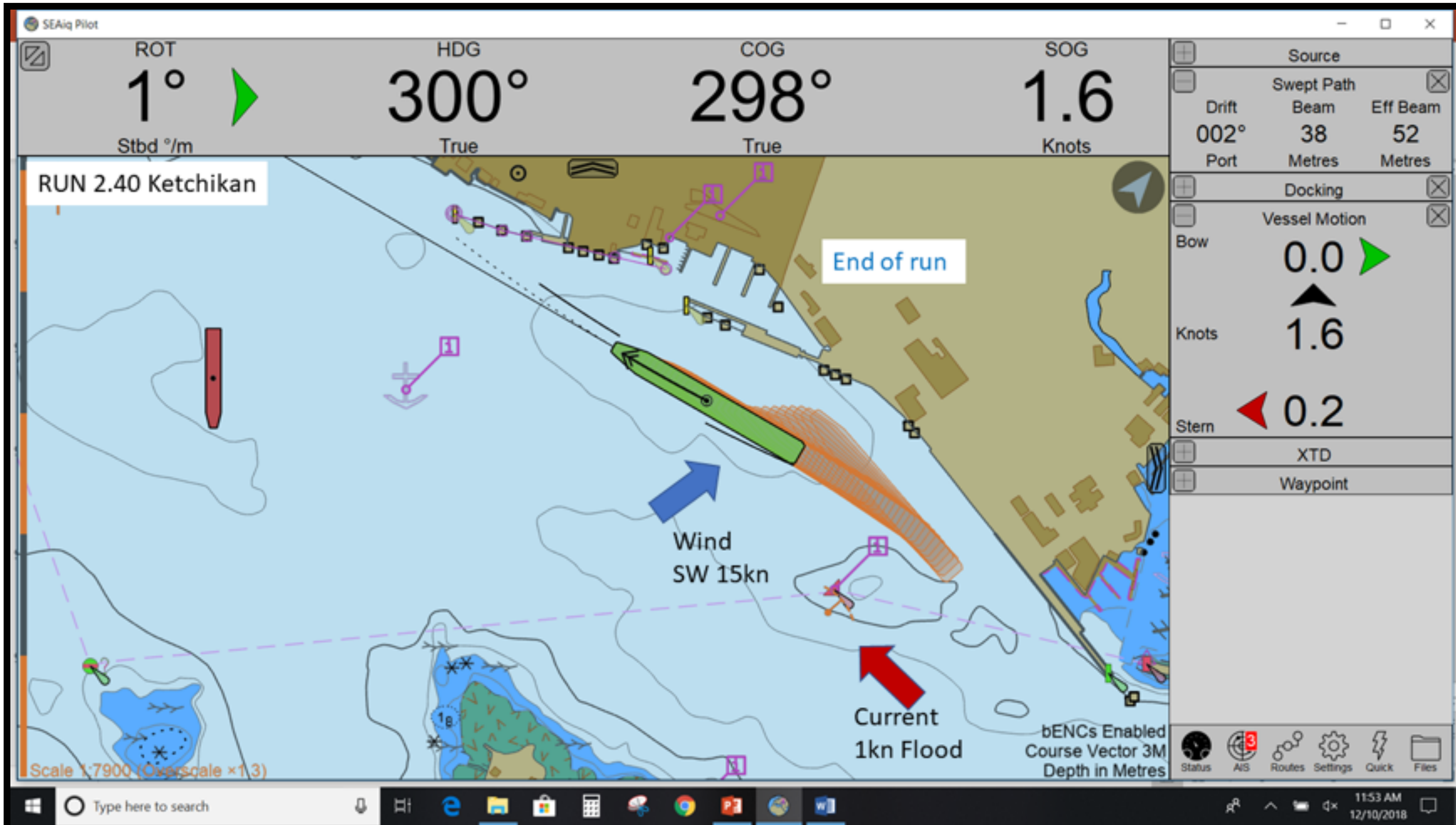
171


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
303°
True
COG
307°
True
SOG
5.8
Knots
Source
Swept Path
Drift
004°
Stbd
Beam
38
Metres
Eff Beam
60
Metres
Docking
Vessel Motion
Bow
0.5
Knots
5.8
Stern
0.3
XTD
Waypoint
RUN 2.40 Ketchikan
Pilot, "I'm going to change the plan, will go inside 4A"
Wind
SW 15kn
4A
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:38 AM
12/10/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
319°
True
COG
321°
True
SOG
4.7
Knots
Source
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
52
Metres
Docking
Vessel Motion
Bow
0.5
Knots
4.7
Stern
0.1
XTD
Waypoint
RUN 2.40 Ketchikan
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:9000 (Overscale ×1.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:41 AM
12/10/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
320°
True
COG
313°
True
SOG
3.1
Knots
Source
Swept Path
Drift
007°
Port
Beam
38
Metres
Eff Beam
77
Metres
Docking
Vessel Motion
Bow
0.5
Knots
3.1
Stern
0.3
XTD
Waypoint
RUN 2.40 Ketchikan
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:8400 (Overscale ×1.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:43 AM
12/10/2018


SEAiq Pilot
ROT
4°
Port °/m
HDG
304°
True
COG
293°
True
SOG
1.9
Knots
Source
Swept Path
Drift
011°
Port
Beam
38
Metres
Eff Beam
102
Metres
Docking
Vessel Motion
Bow
0.7
Knots
1.9
Stern
0.0
XTD
Waypoint
RUN 2.40 Ketchikan
Pilot handover to Capt.
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:7900 (Overscale ×1.3)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:45 AM
12/10/2018

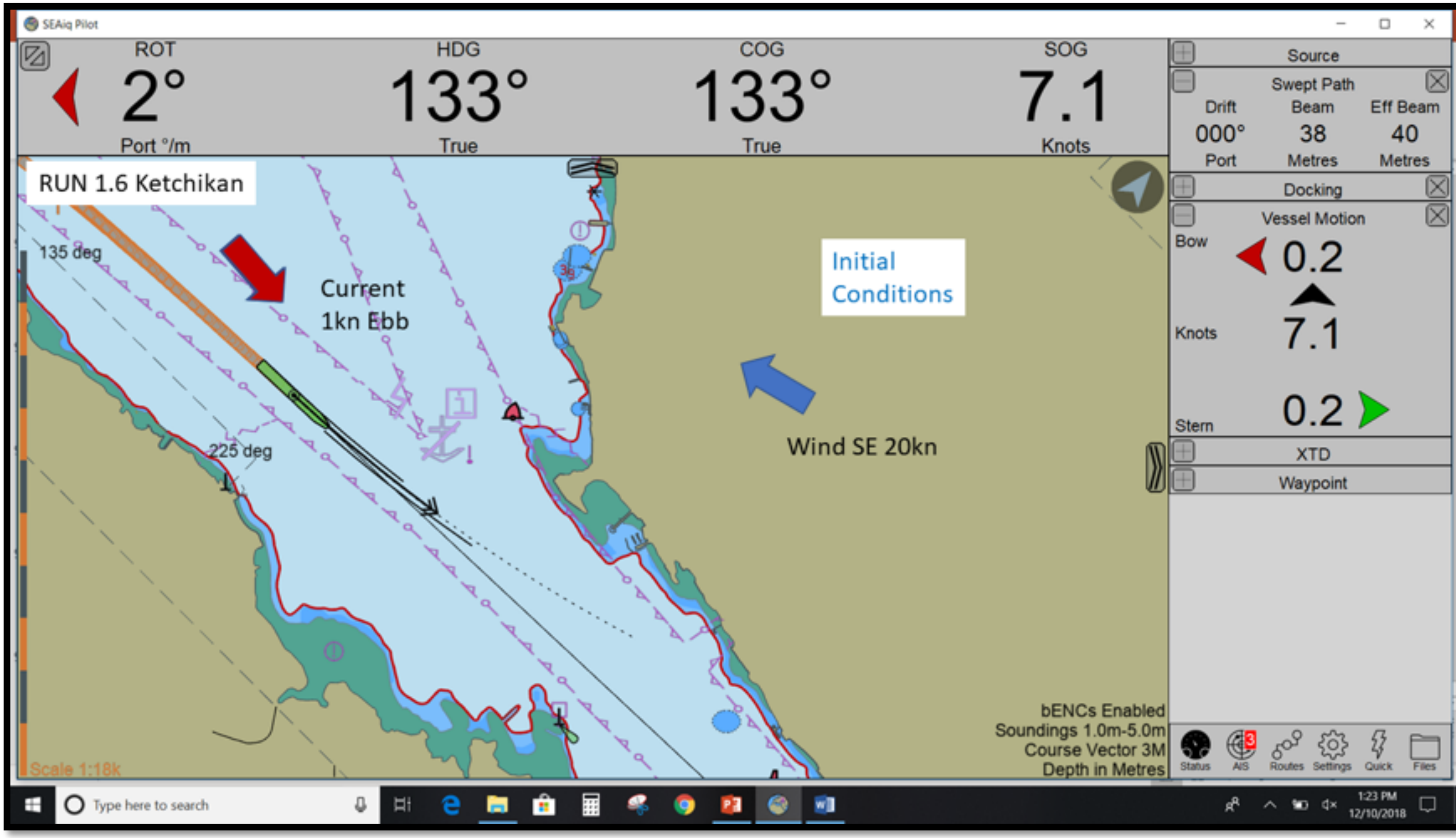

SEAiq Pilot
ROT
1°
Stbd °/m
HDG
300°
True
COG
298°
True
SOG
1.6
Knots
Source
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
52
Metres
Docking
Vessel Motion
Bow
0.0
Knots
1.6
Stern
0.2
XTD
Waypoint
RUN 2.40 Ketchikan
End of run
Wind
SW 15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:7900 (Overscale ×1.3)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:53 AM
12/10/2018

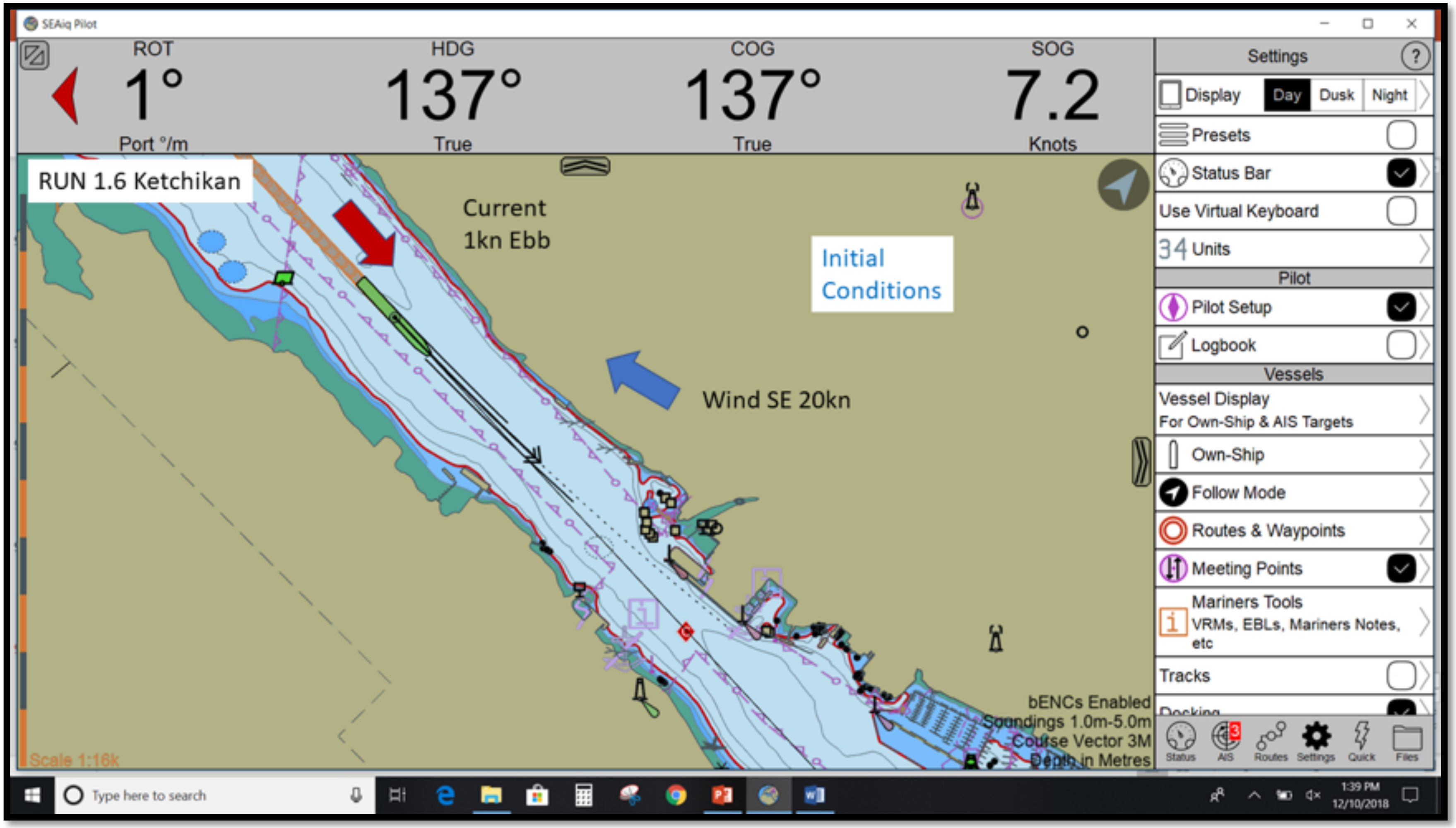
Run 1.6 Ketchikan, North Approach, SE20, 1kn Ebb

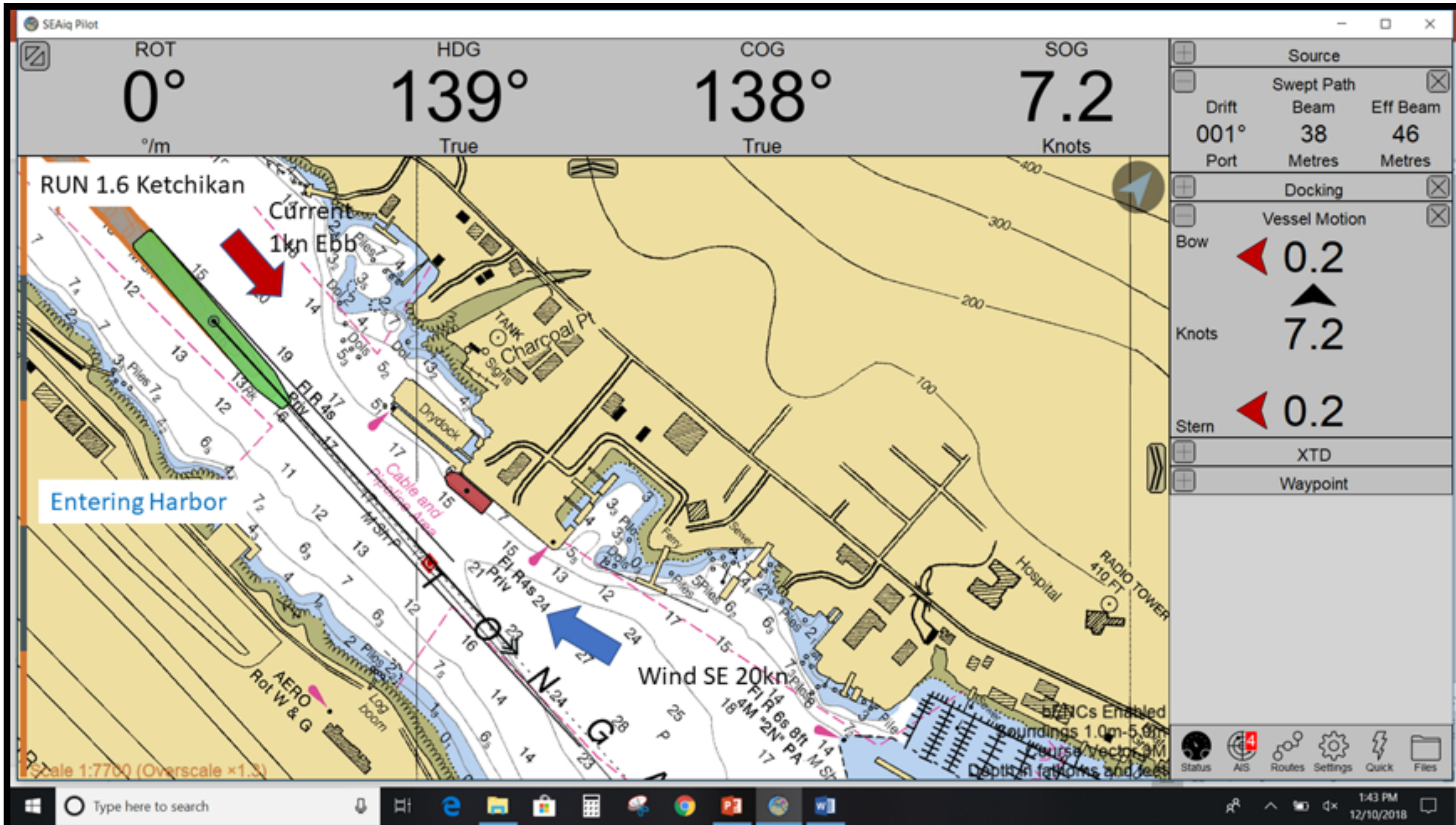
1.6 SE20 1kn Ebb, North Approach to Ketchikan

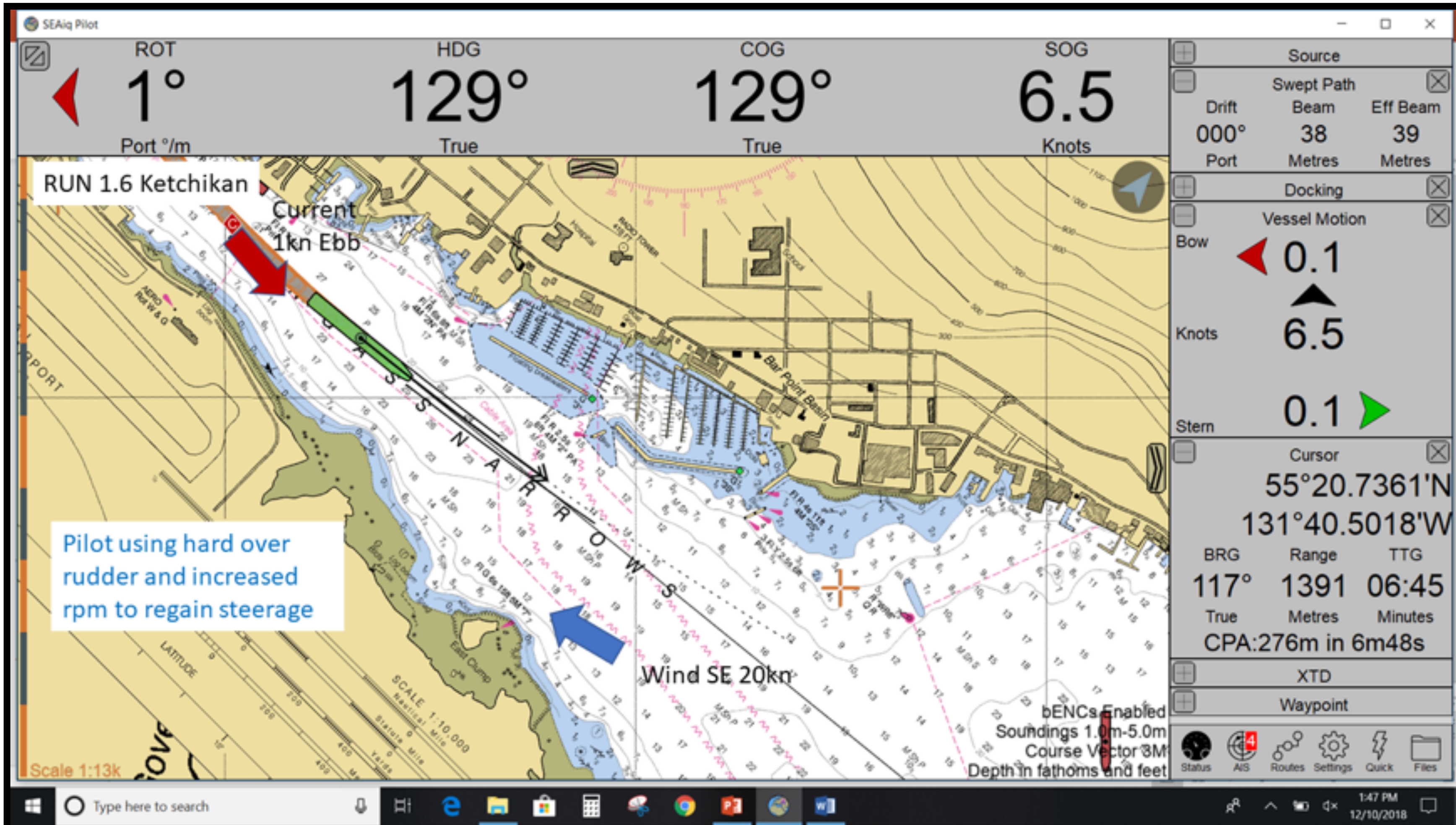
Monday 12/10/2018

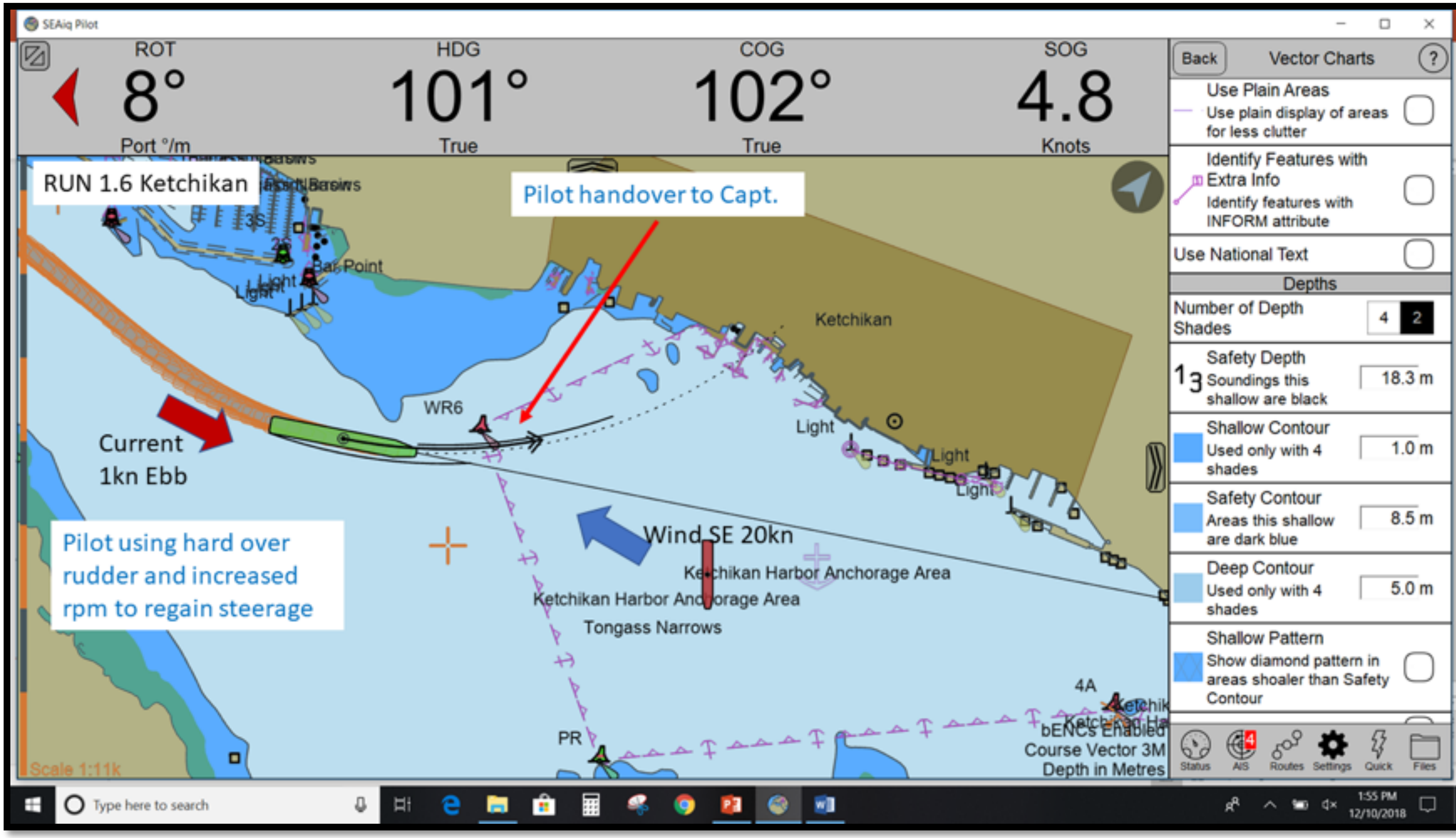
5th Run, 1st run after lunch

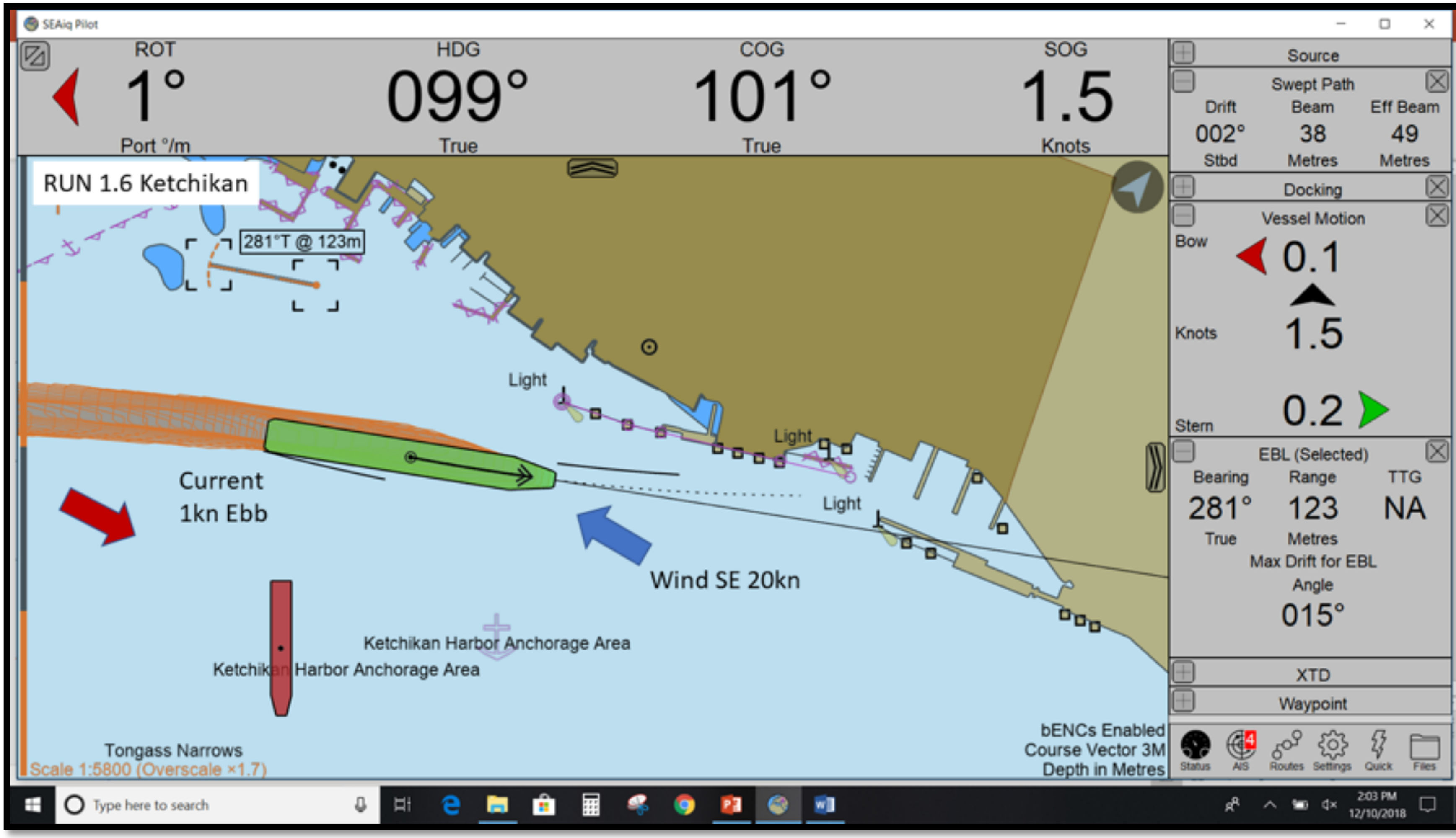

SEAiq Pilot
ROT
2°
Port °/m
HDG
133°
True
COG
133°
True
SOG
7.1
Knots
Source
Swept Path
Drift
000°
Port
Beam
38
Metres
Eff Beam
40
Metres
Docking
Vessel Motion
Bow
0.2
Knots
7.1
Stern
0.2
XTD
Waypoint
RUN 1.6 Ketchikan
135 deg
Current
1kn Ebb
Initial
Conditions
Wind SE 20kn
225 deg
bENCs Enabled
Soundings 1.0m-5.0m
Course Vector 3M
Depth in Metres
Scale 1:18k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:23 PM
12/10/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
137°
True
COG
137°
True
SOG
7.2
Knots
RUN 1.6 Ketchikan
Current
1kn Ebb
Initial
Conditions
Wind SE 20kn
bENCs Enabled
Soundings 1.0m-5.0m
Course Vector 3M
Depth in Metres
Scale 1:16k
Settings
Display
Day
Dusk
Night
Presets
Status Bar
Use Virtual Keyboard
Units
Pilot
Pilot Setup
Logbook
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Follow Mode
Routes & Waypoints
Meeting Points
Mariners Tools
VRMs, EBLs, Mariners Notes, etc
Tracks
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:39 PM
12/10/2018


SEAiq Pilot
ROT
0°
°/m
HDG
139°
True
COG
138°
True
SOG
7.2
Knots
Source
Swept Path
Drift
001°
Port
Beam
38
Metres
Eff Beam
46
Metres
Docking
Vessel Motion
Bow
0.2
Knots
7.2
Stern
0.2
XTD
Waypoint
RUN 1.6 Ketchikan
Current
1kn Ebb
Entering Harbor
Wind SE 20kn
Charcoal Pt
Hospital
RADIO TOWER
Scale 1:7700 (Overscale ×1.3)
Status
AIS
Routes
Settings
Quick
Files


SEAiq Pilot
ROT
1°
Port °/m
HDG
129°
True
COG
129°
True
SOG
6.5
Knots
Source
Swept Path
Drift
000°
Port
Beam
38
Metres
Eff Beam
39
Metres
Docking
Vessel Motion
Bow
0.1
Knots
6.5
Stern
0.1
Cursor
55°20.7361'N
131°40.5018'W
BRG
117°
True
Range
1391
Metres
TTG
06:45
Minutes
CPA:276m in 6m48s
XTD
Waypoint
RUN 1.6 Ketchikan
Current
1kn Ebb
Pilot using hard over
rudder and increased
rpm to regain steerage
Wind SE 20kn
Scale 1:13k
bENCs Enabled
Depth in fathoms and feet
Type here to search
1:47 PM
12/10/2018


SEAiq Pilot
ROT
8°
Port °/m
HDG
101°
True
COG
102°
True
SOG
4.8
Knots
RUN 1.6 Ketchikan
Pilot handover to Capt.
Current
1kn Ebb
Pilot using hard over rudder and increased rpm to regain steerage
Wind SE 20kn
Ketchikan
WR6
Light
Bar Point
Ketchikan Harbor Anchorage Area
Tongass Narrows
PR
4A
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:11k
Back
Vector Charts
Use Plain Areas
Use plain display of areas for less clutter
Identify Features with Extra Info
Identify features with INFORM attribute
Use National Text
Depths
Number of Depth Shades
4
2
Safety Depth
Soundings this shallow are black
18.3 m
Shallow Contour
Used only with 4 shades
1.0 m
Safety Contour
Areas this shallow are dark blue
8.5 m
Deep Contour
Used only with 4 shades
5.0 m
Shallow Pattern
Show diamond pattern in areas shoaler than Safety Contour
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:55 PM
12/10/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
099°
True
COG
101°
True
SOG
1.5
Knots
Source
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
49
Metres
Docking
Vessel Motion
Bow
0.1
Knots
1.5
Stern
0.2
EBL (Selected)
Bearing
281°
True
Range
123
Metres
TTG
NA
Max Drift for EBL
Angle
015°
XTD
Waypoint
RUN 1.6 Ketchikan
281°T @ 123m
Light
Light
Light
Current
1kn Ebb
Wind SE 20kn
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
Scale 1:5800 (Overscale ×1.7)
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:03 PM
12/10/2018

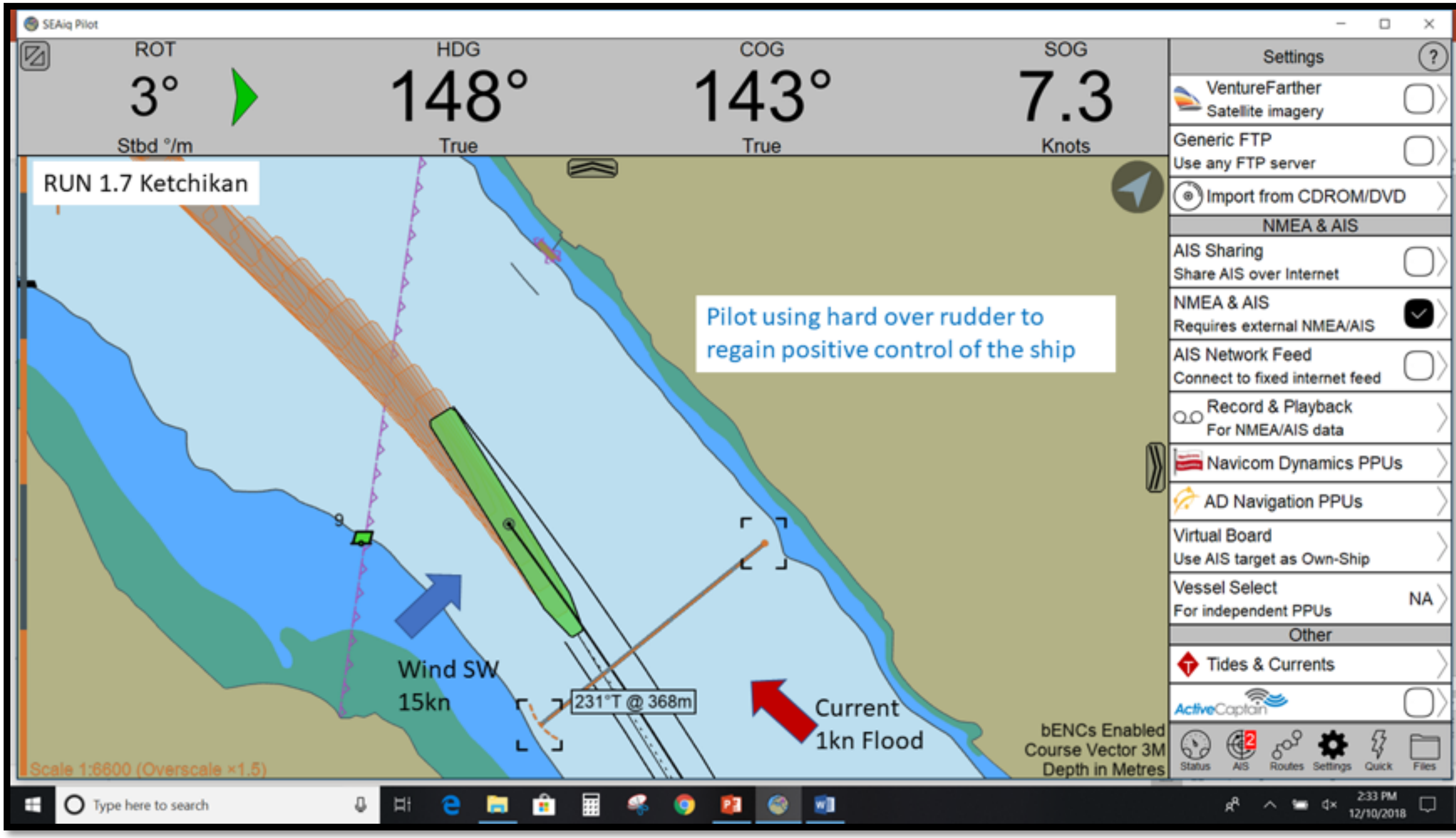
Run 1.7 Ketchikan, North Approach, SW20kn, 1kn Flood

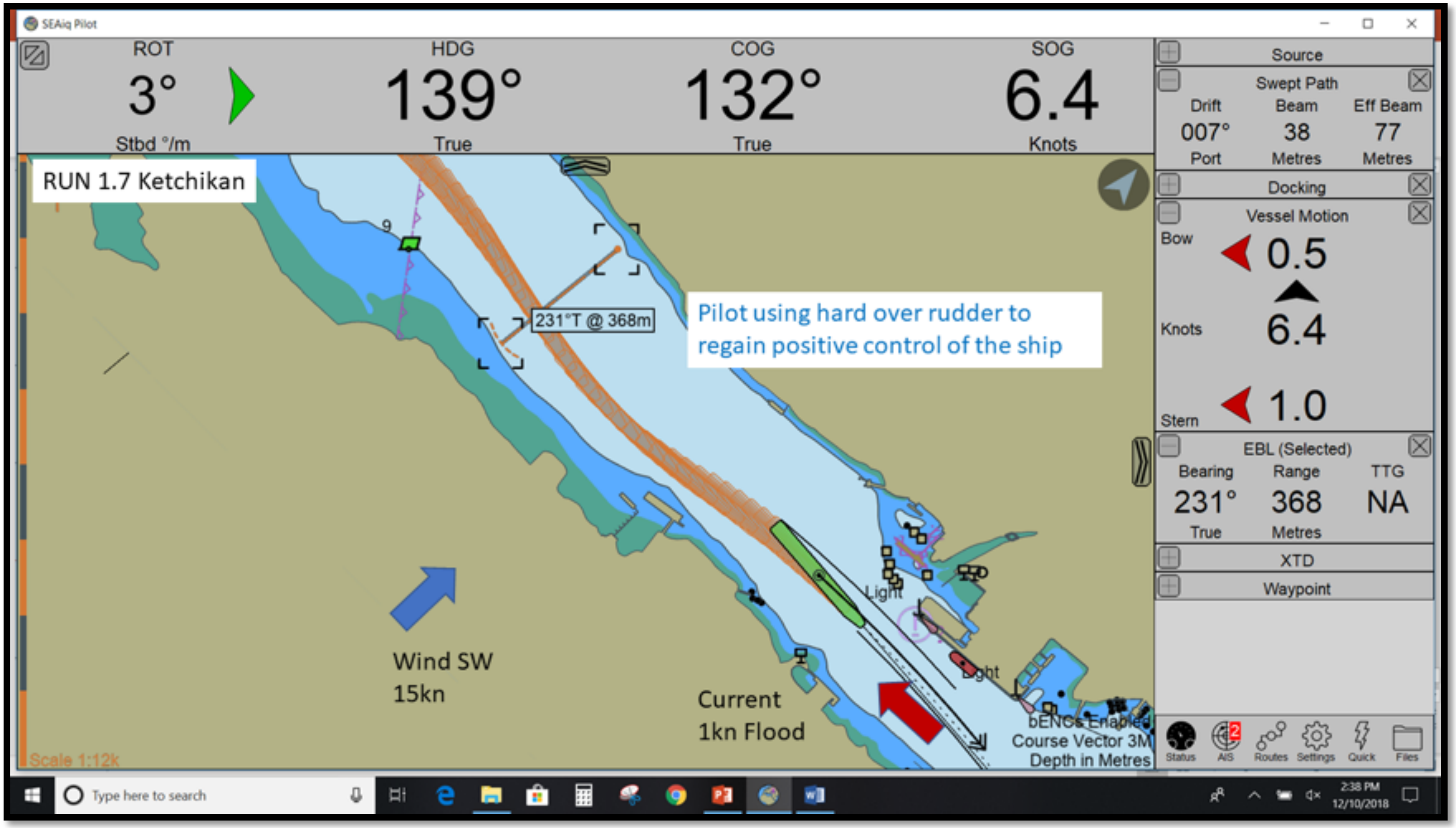
1.7 SW15 1kn Flood, North Approach to Ketchikan

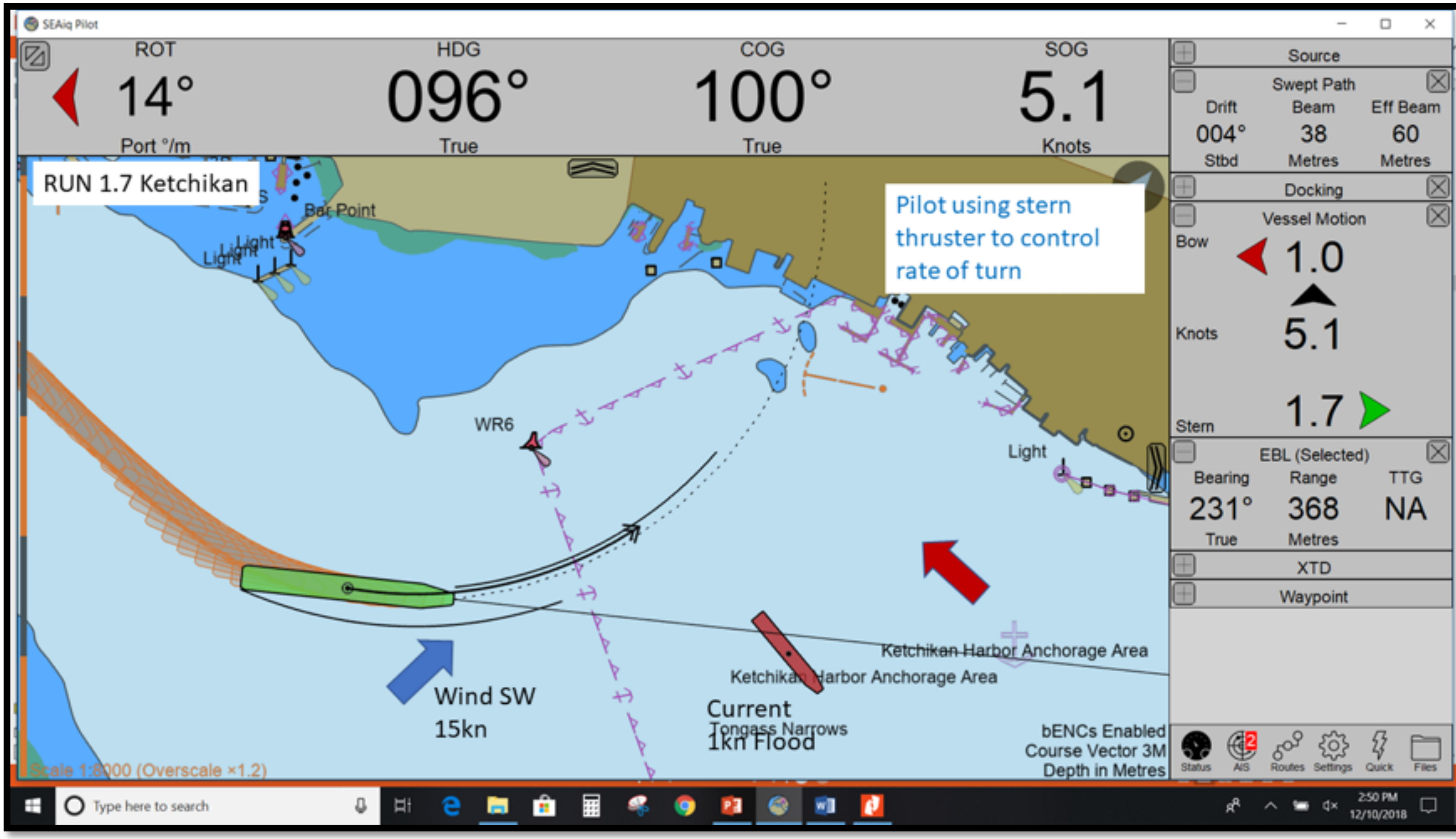
(Run not counted due to sim anomaly)

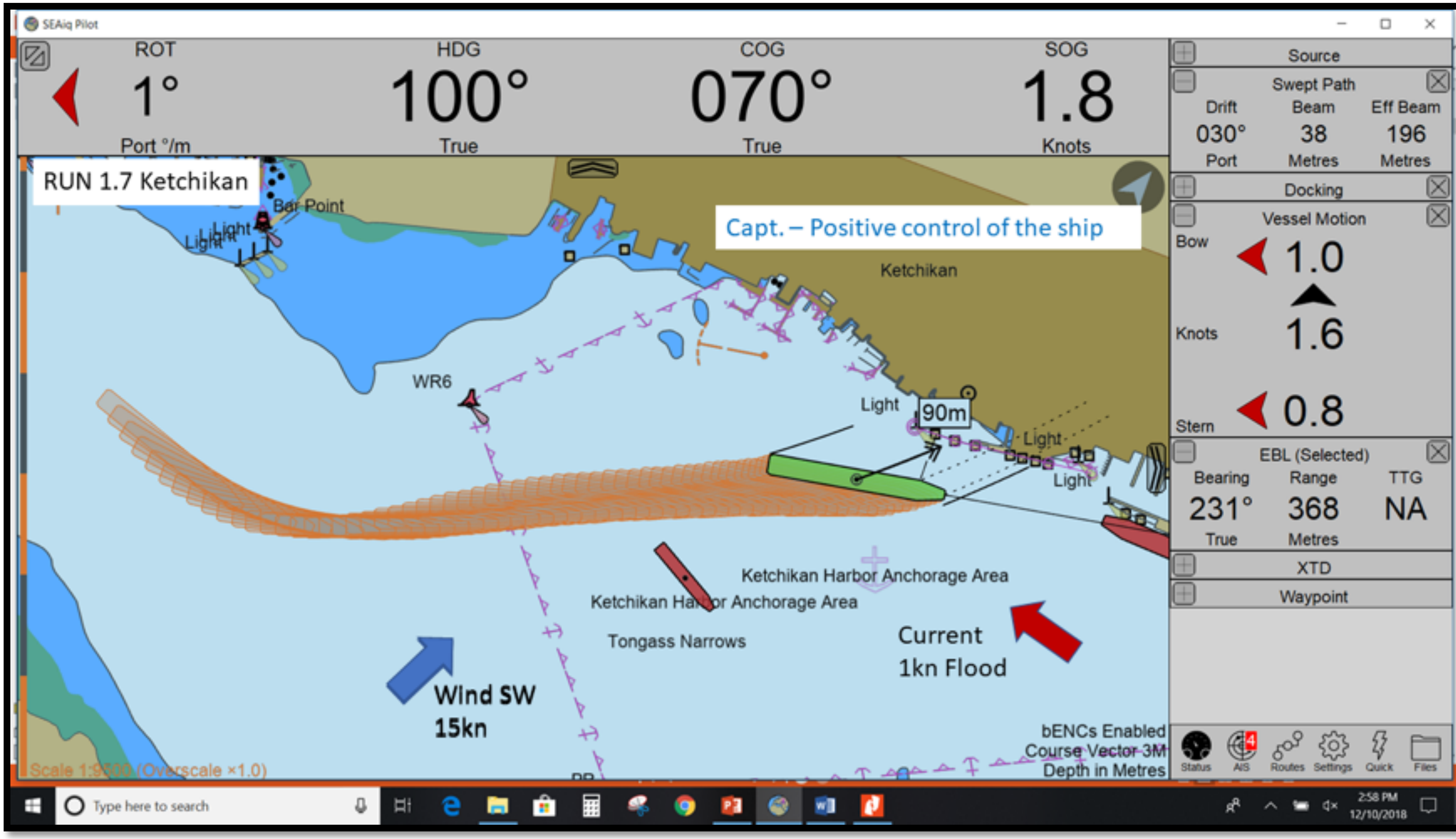
Monday 12/10/2018

6th Run


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
148°
True
COG
143°
True
SOG
7.3
Knots
RUN 1.7 Ketchikan
Pilot using hard over rudder to regain positive control of the ship
Wind SW 15kn
231°T @ 368m
Current 1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:6600 (Overscale ×1.5)
Settings
VentureFarther
Satellite imagery
Generic FTP
Use any FTP server
Import from CDROM/DVD
NMEA & AIS
AIS Sharing
Share AIS over Internet
NMEA & AIS
Requires external NMEA/AIS
AIS Network Feed
Connect to fixed internet feed
Record & Playback
For NMEA/AIS data
Navicom Dynamics PPUs
AD Navigation PPUs
Virtual Board
Use AIS target as Own-Ship
Vessel Select
For independent PPUs
NA
Other
Tides & Currents
ActiveCaptain
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:33 PM
12/10/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
139°
True
COG
132°
True
SOG
6.4
Knots
Source
Swept Path
Drift
007°
Port
Beam
38
Metres
Eff Beam
77
Metres
Docking
Vessel Motion
Bow
0.5
Knots
6.4
Stern
1.0
EBL (Selected)
Bearing
231°
True
Range
368
Metres
TTG
NA
XTD
Waypoint
RUN 1.7 Ketchikan
231°T @ 368m
Pilot using hard over rudder to regain positive control of the ship
Wind SW
15kn
Current
1kn Flood
Light
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:12k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:38 PM
12/10/2018


SEAiq Pilot
ROT
14°
Port °/m
HDG
096°
True
COG
100°
True
SOG
5.1
Knots
Source
Swept Path
Drift
004°
Stbd
Beam
38
Metres
Eff Beam
60
Metres
Docking
Vessel Motion
Bow
1.0
Knots
5.1
Stern
1.7
EBL (Selected)
Bearing
231°
True
Range
368
Metres
TTG
NA
XTD
Waypoint
RUN 1.7 Ketchikan
Bar Point
Light
Pilot using stern thruster to control rate of turn
WR6
Light
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Wind SW 15kn
Current 1kn Flood
Tongass Narrows
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:8000 (Overscale ×1.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:50 PM
12/10/2018

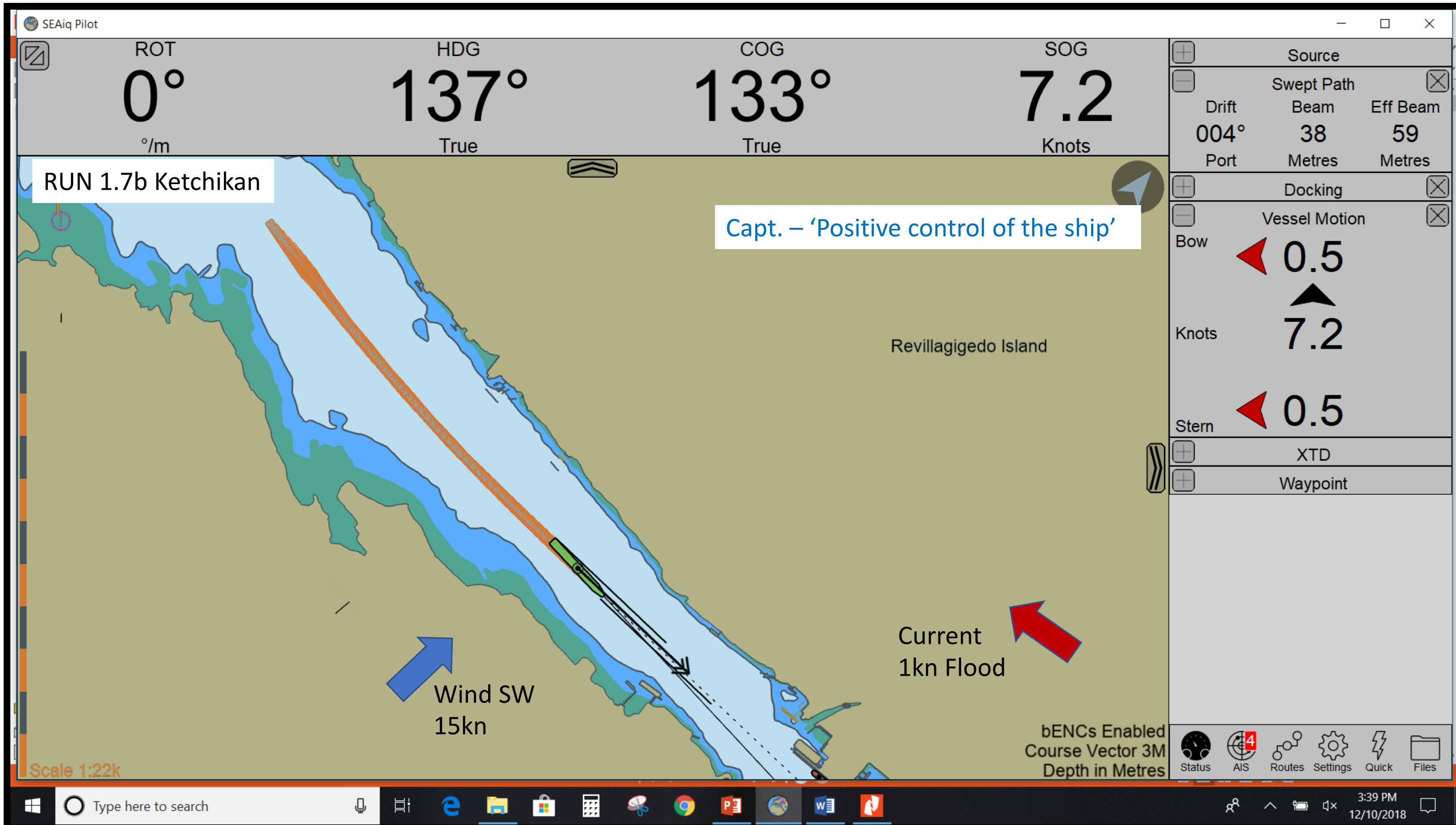

SEAiq Pilot
ROT
1°
Port °/m
HDG
100°
True
COG
070°
True
SOG
1.8
Knots
Source
Swept Path
Drift
030°
Port
Beam
38
Metres
Eff Beam
196
Metres
Docking
Vessel Motion
Bow
1.0
Knots
1.6
Stern
0.8
EBL (Selected)
Bearing
231°
True
Range
368
Metres
TTG
NA
XTD
Waypoint
RUN 1.7 Ketchikan
Capt. – Positive control of the ship
Bar Point
Light
Ketchikan
WR6
Light
90m
Light
Light
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
Current
1kn Flood
Wind SW
15kn
bENCs Enabled
Course Vector 3M
Depth in Metres
Scale 1:9500 (Overscale ×1.0)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:58 PM
12/10/2018

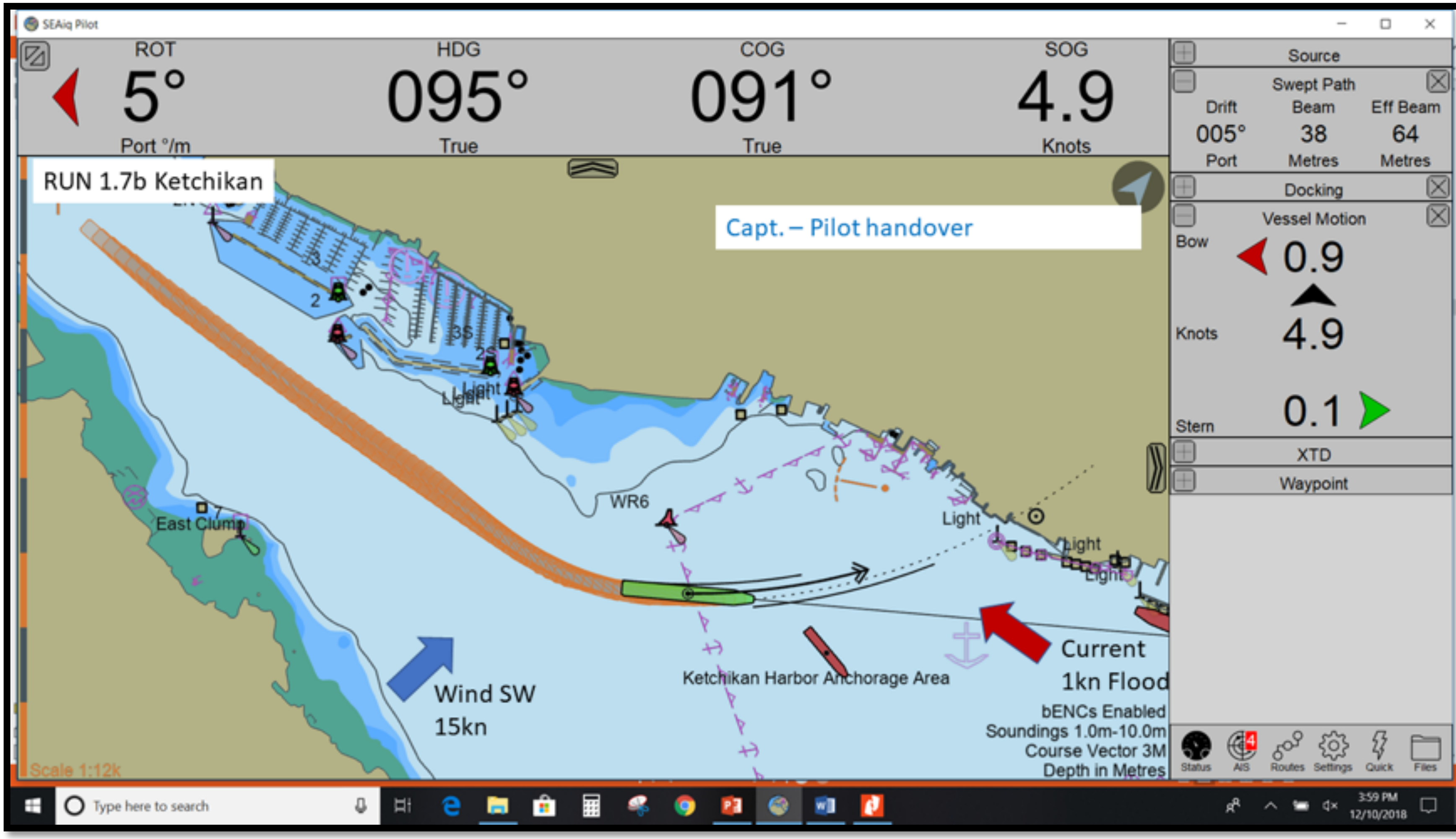
Run 1.7B Ketchikan, North Approach, SW15, 1kn Flood

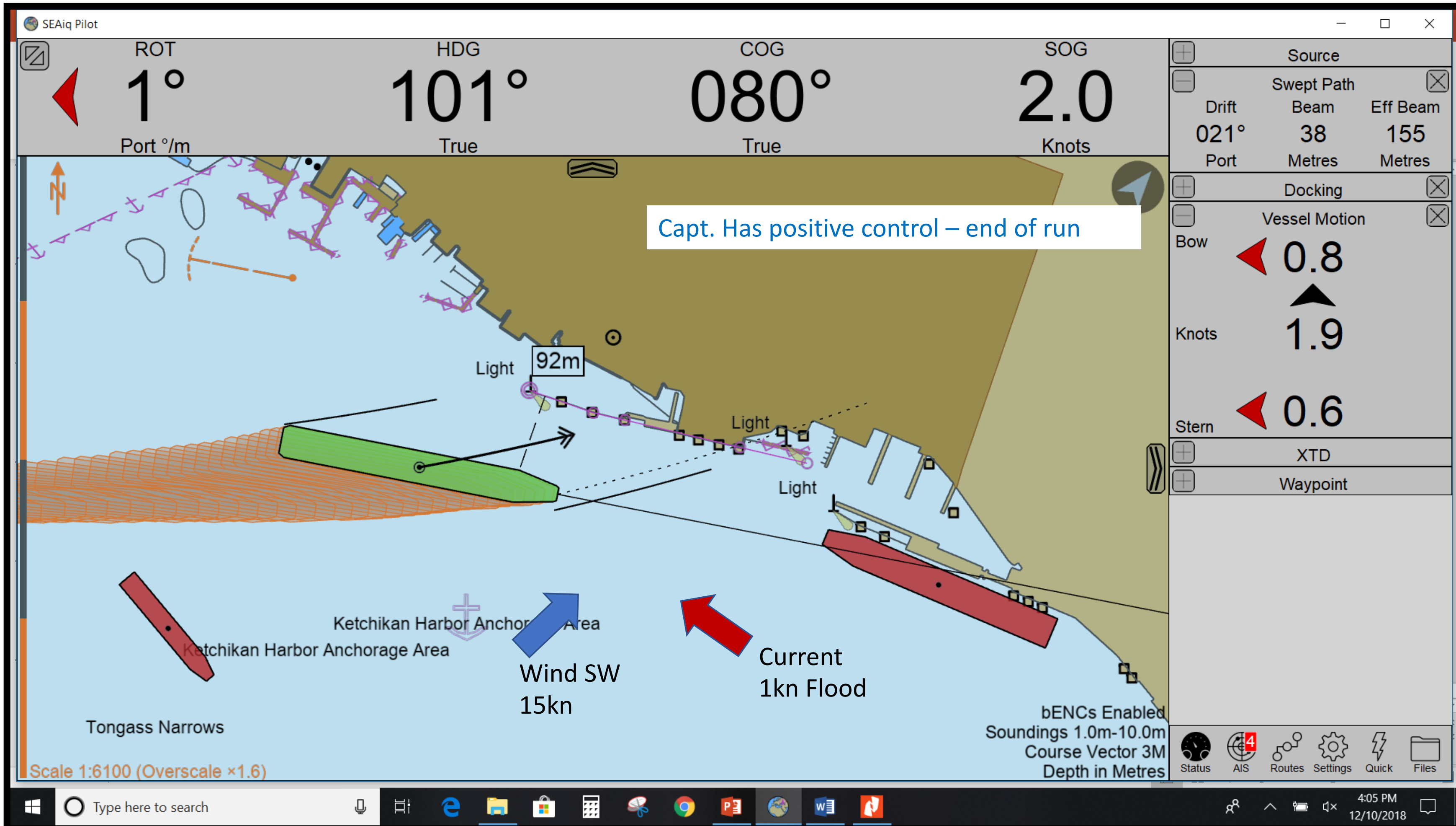
1.7b SW15 1kn Flood, North Approach to Ketchikan

Monday 12/10/2018

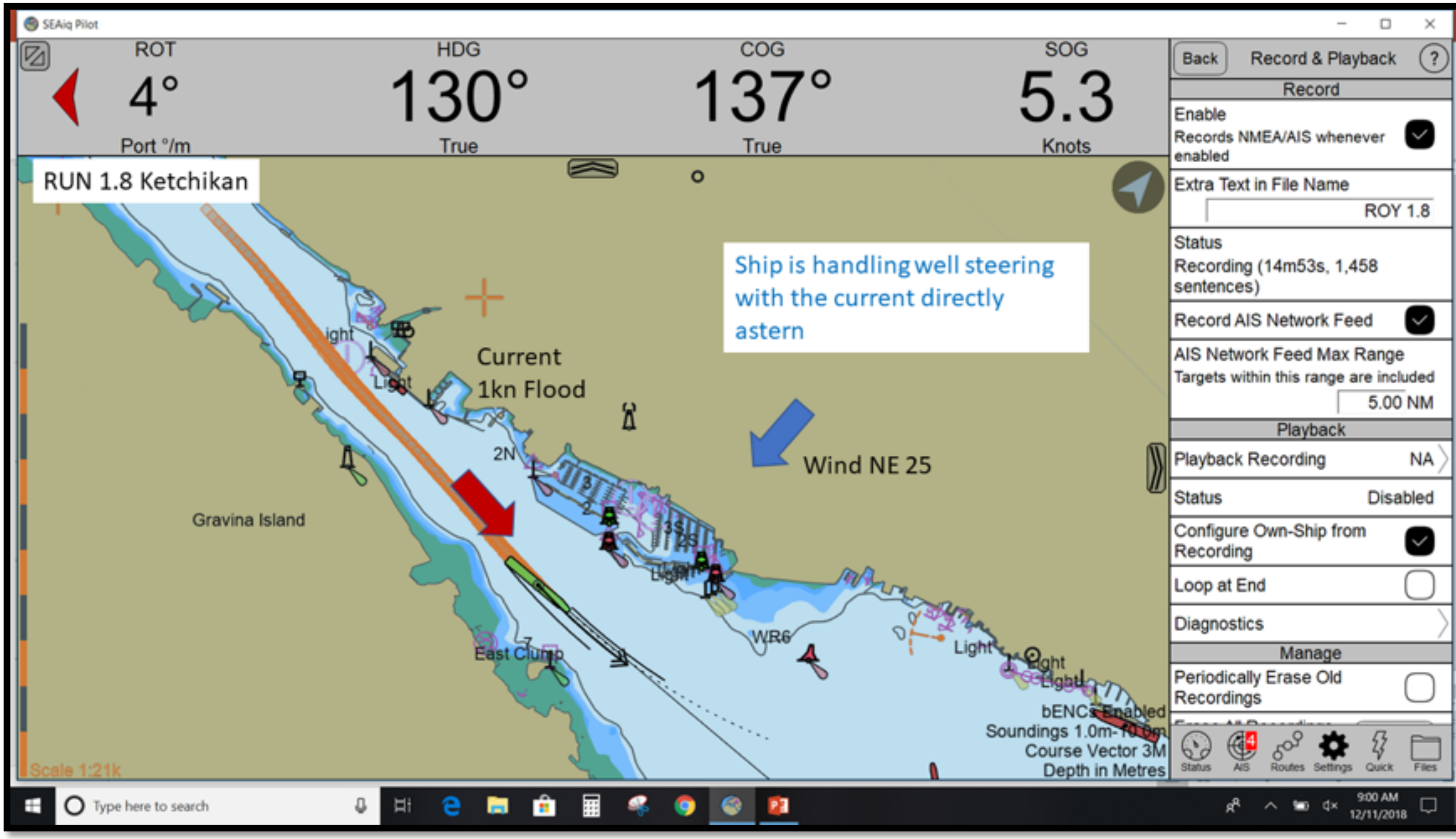
6th Run

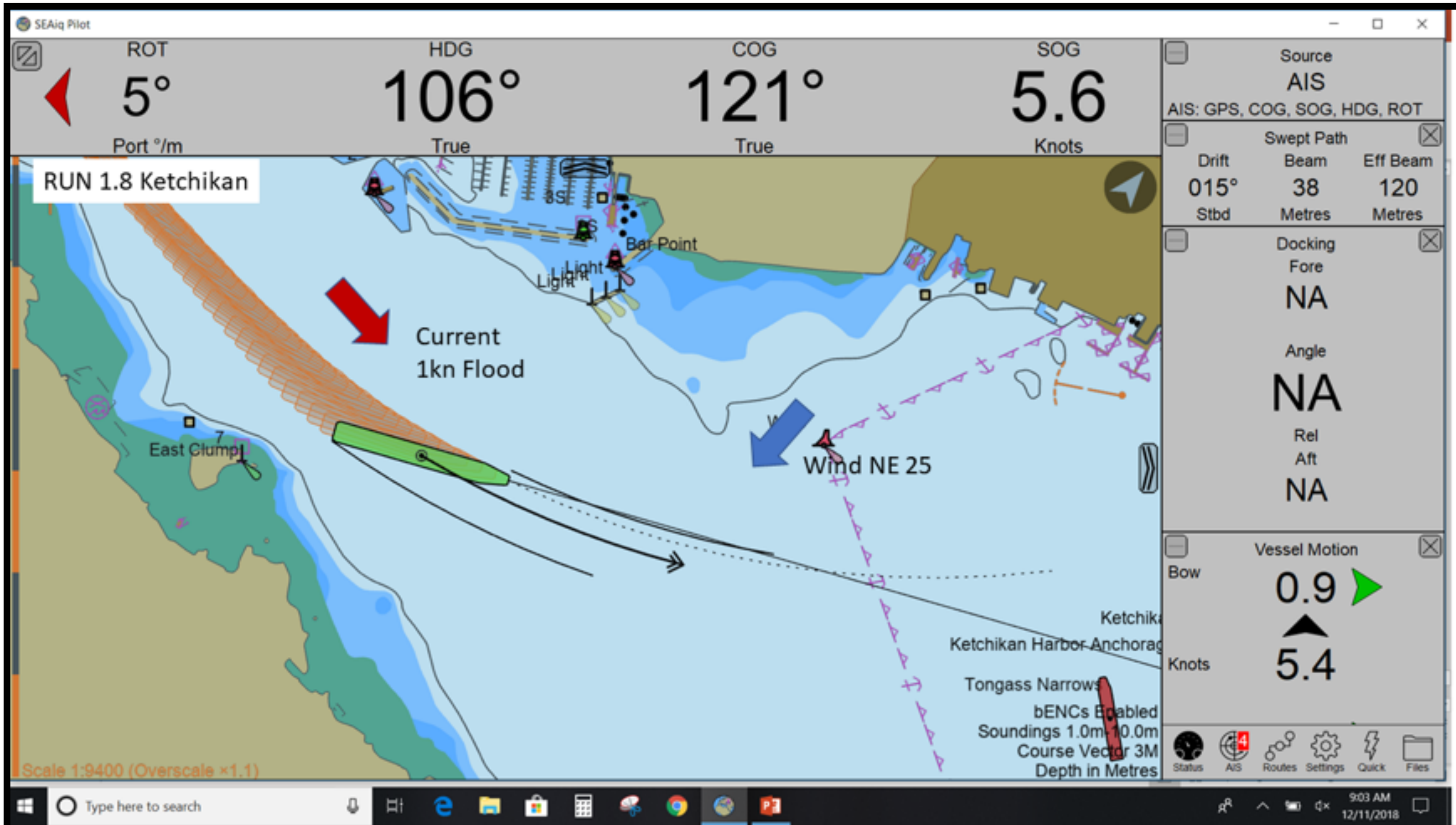

SEAiq Pilot
ROT
0°
°/m
HDG
137°
True
COG
133°
True
SOG
7.2
Knots
Source
Swept Path
Drift
004°
Port
Beam
38
Metres
Eff Beam
59
Metres
Docking
Vessel Motion
Bow
0.5
Knots
7.2
Stern
0.5
XTD
Waypoint
RUN 1.7b Ketchikan
Capt. – 'Positive control of the ship'
Revillagigedo Island
Current
1kn Flood
Wind SW
15kn
Scale 1:22k
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:39 PM
12/10/2018

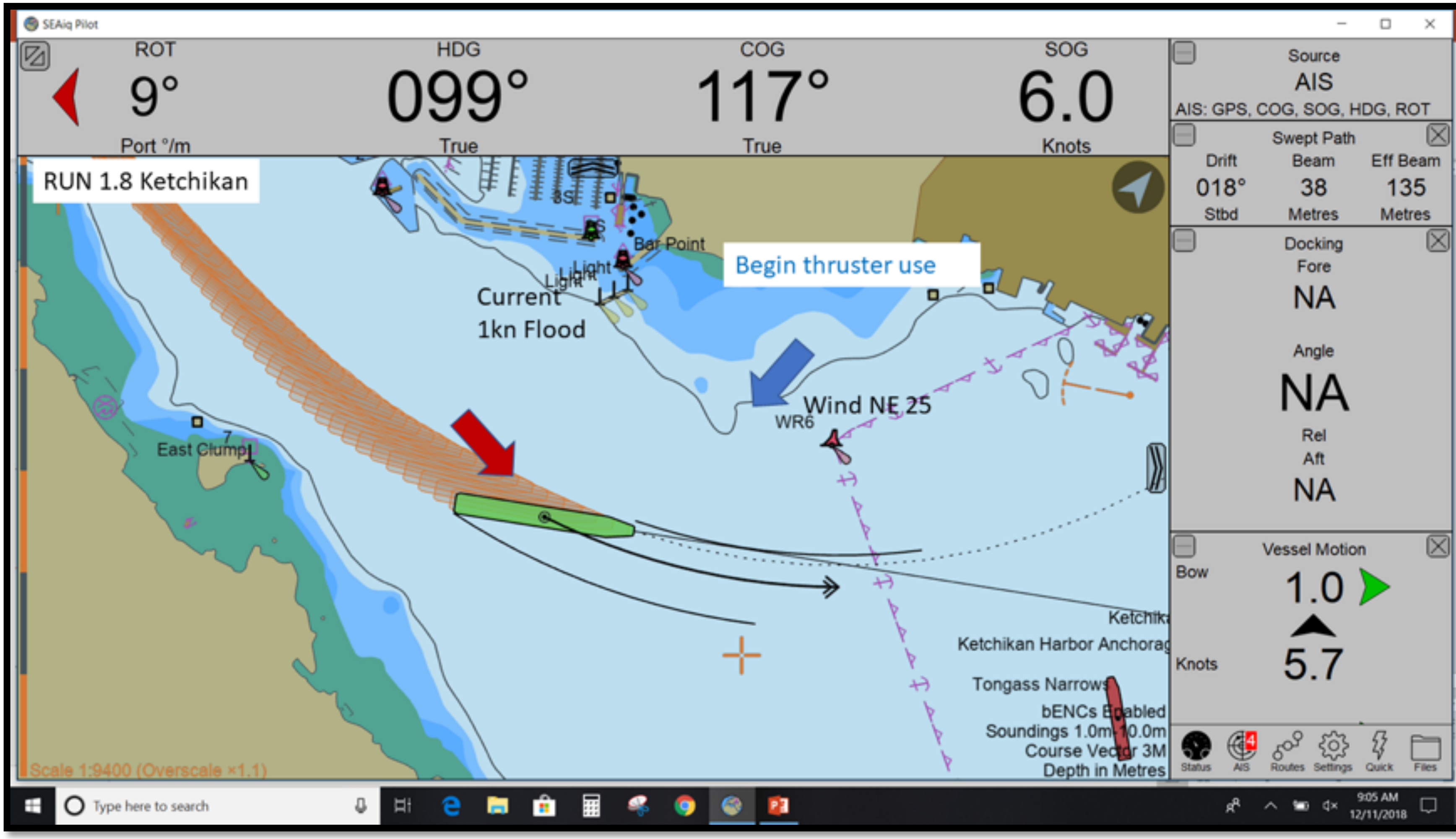

SEAiq Pilot
ROT
5°
Port °/m
HDG
095°
True
COG
091°
True
SOG
4.9
Knots
Source
Swept Path
Drift
005°
Port
Beam
38
Metres
Eff Beam
64
Metres
Docking
Vessel Motion
Bow
0.9
Knots
4.9
Stern
0.1
XTD
Waypoint
RUN 1.7b Ketchikan
Capt. – Pilot handover
WR6
East Clump
Light
Wind SW
15kn
Ketchikan Harbor Anchorage Area
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:12k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:59 PM
12/10/2018

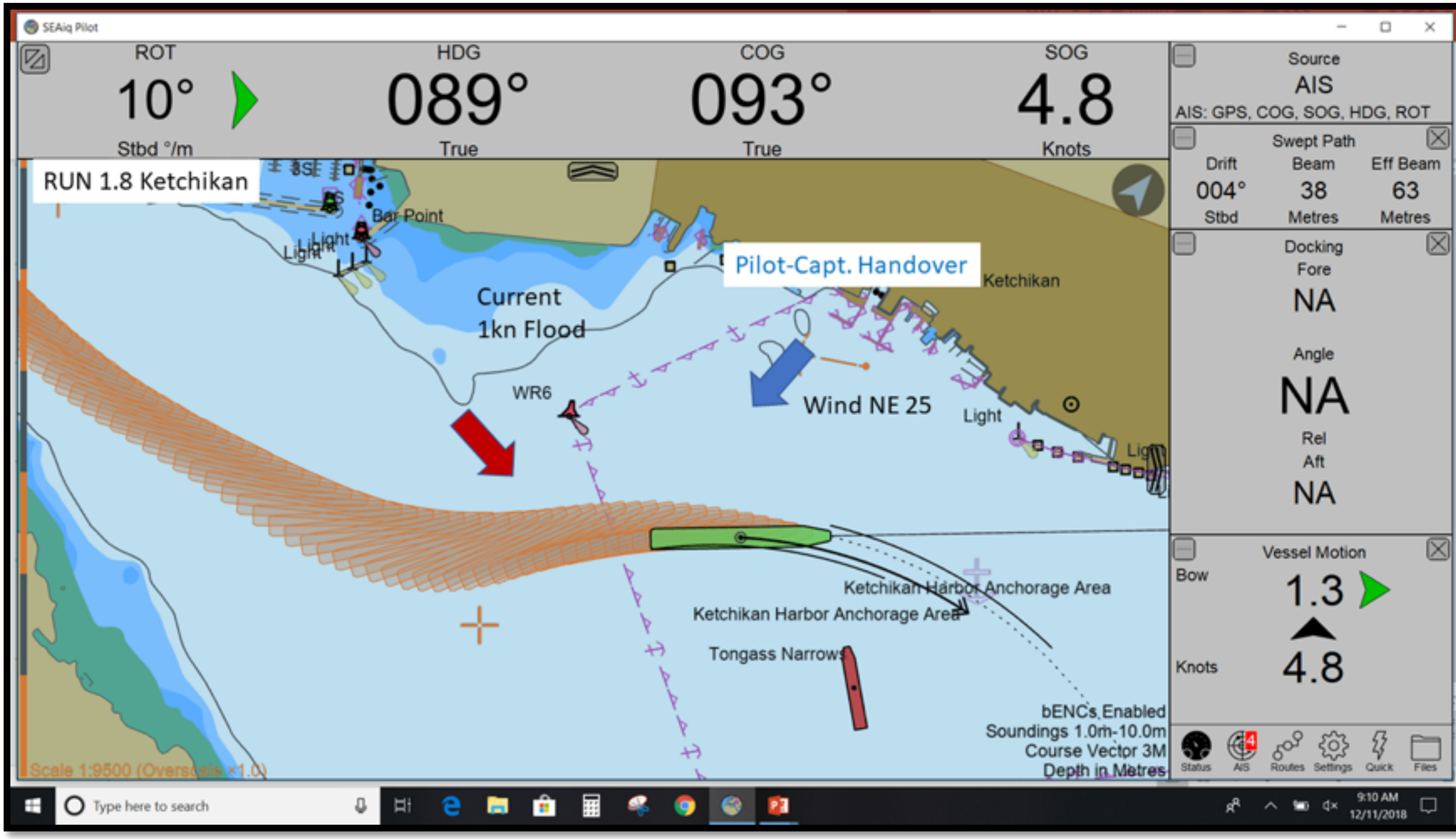

SEAiq Pilot
ROT
1°
Port °/m
HDG
101°
True
COG
080°
True
SOG
2.0
Knots
Source
Swept Path
Drift
021°
Port
Beam
38
Metres
Eff Beam
155
Metres
Docking
Vessel Motion
Bow
0.8
Knots
1.9
Stern
0.6
XTD
Waypoint
Capt. Has positive control – end of run
92m
Light
Light
Light
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Wind SW
15kn
Current
1kn Flood
Tongass Narrows
Scale 1:6100 (Overscale ×1.6)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:05 PM
12/10/2018

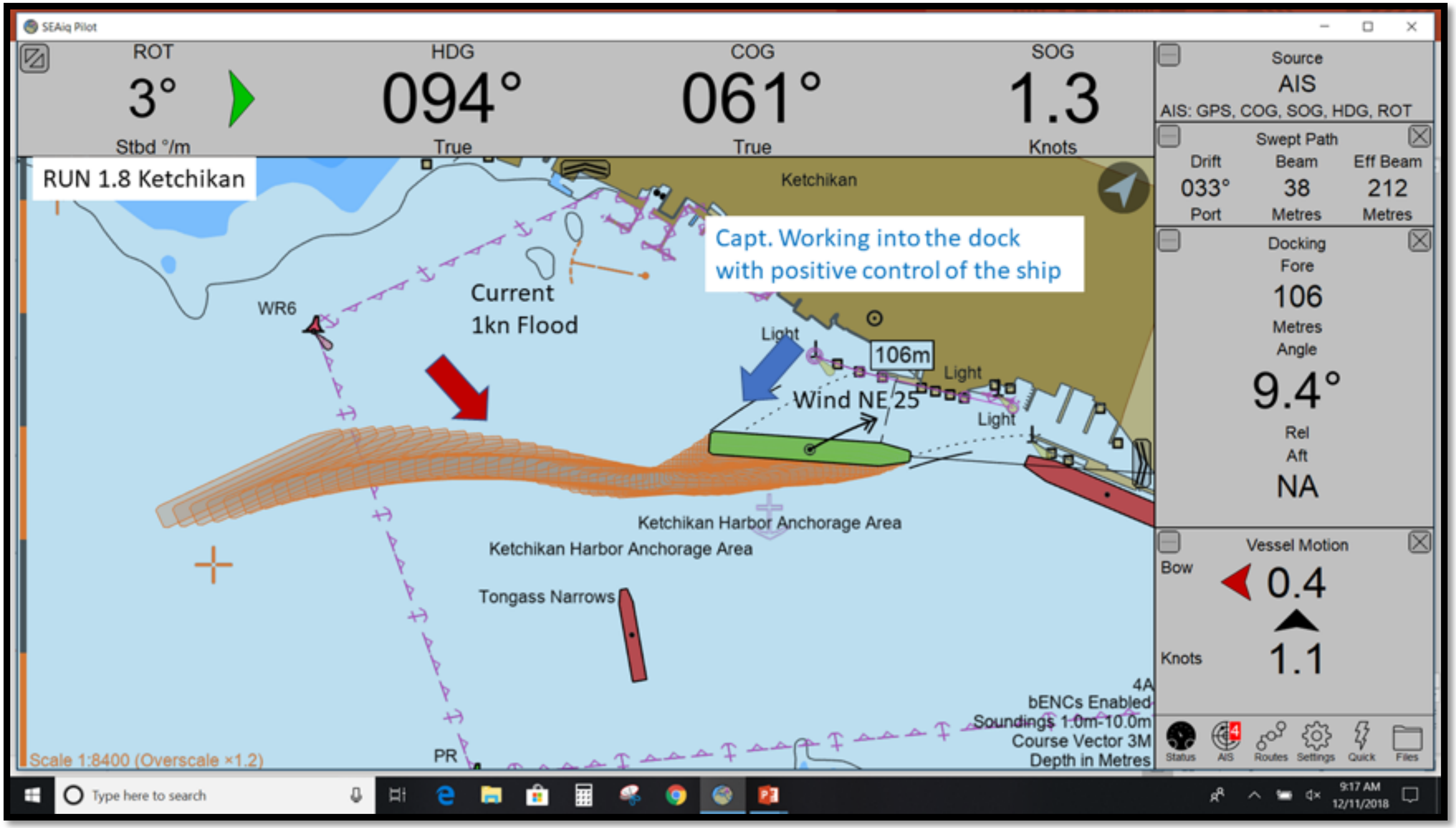
Run 1.8 Ketchikan, North Approach, SE25kn, 1kn Ebb


SEAiq Pilot
ROT
4°
Port °/m
HDG
130°
True
COG
137°
True
SOG
5.3
Knots
RUN 1.8 Ketchikan
Ship is handling well steering with the current directly astern
Current 1kn Flood
Wind NE 25
Gravina Island
East Clump
WR6
2N
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:21k
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 1.8
Status
Recording (14m53s, 1,458 sentences)
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:00 AM
12/11/2018


SEAiq Pilot
ROT
5°
Port °/m
HDG
106°
True
COG
121°
True
SOG
5.6
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
015°
Stbd
Beam
38
Metres
Eff Beam
120
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
0.9
Knots
5.4
RUN 1.8 Ketchikan
Current
1kn Flood
Wind NE 25
Bar Point
East Clump
Ketchikan Harbor Anchorag
Tongass Narrows
bENCs Enabled
Soundings 1.0m 10.0m
Course Vector 3M
Depth in Metres
Scale 1:9400 (Overscale ×1.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:03 AM
12/11/2018


SEAiq Pilot
ROT
9°
Port °/m
HDG
099°
True
COG
117°
True
SOG
6.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
018°
Stbd
Beam
38
Metres
Eff Beam
135
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.0
Knots
5.7
RUN 1.8 Ketchikan
Begin thruster use
Current
1kn Flood
Wind NE 25
Bar Point
WR6
East Clump
Ketchikan Harbor Anchorag
Tongass Narrows
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:9400 (Overscale ×1.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:05 AM
12/11/2018


SEAiq Pilot
ROT
10°
Stbd °/m
HDG
089°
True
COG
093°
True
SOG
4.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
004°
Stbd
Beam
38
Metres
Eff Beam
63
Metres
Docking
Fore
NA
Angle
NA
Rel
Aft
NA
Vessel Motion
Bow
1.3
Knots
4.8
RUN 1.8 Ketchikan
Bar Point
Light
Current
1kn Flood
Pilot-Capt. Handover
Ketchikan
WR6
Wind NE 25
Light
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:9500 (Overscale x1.0)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:10 AM
12/11/2018

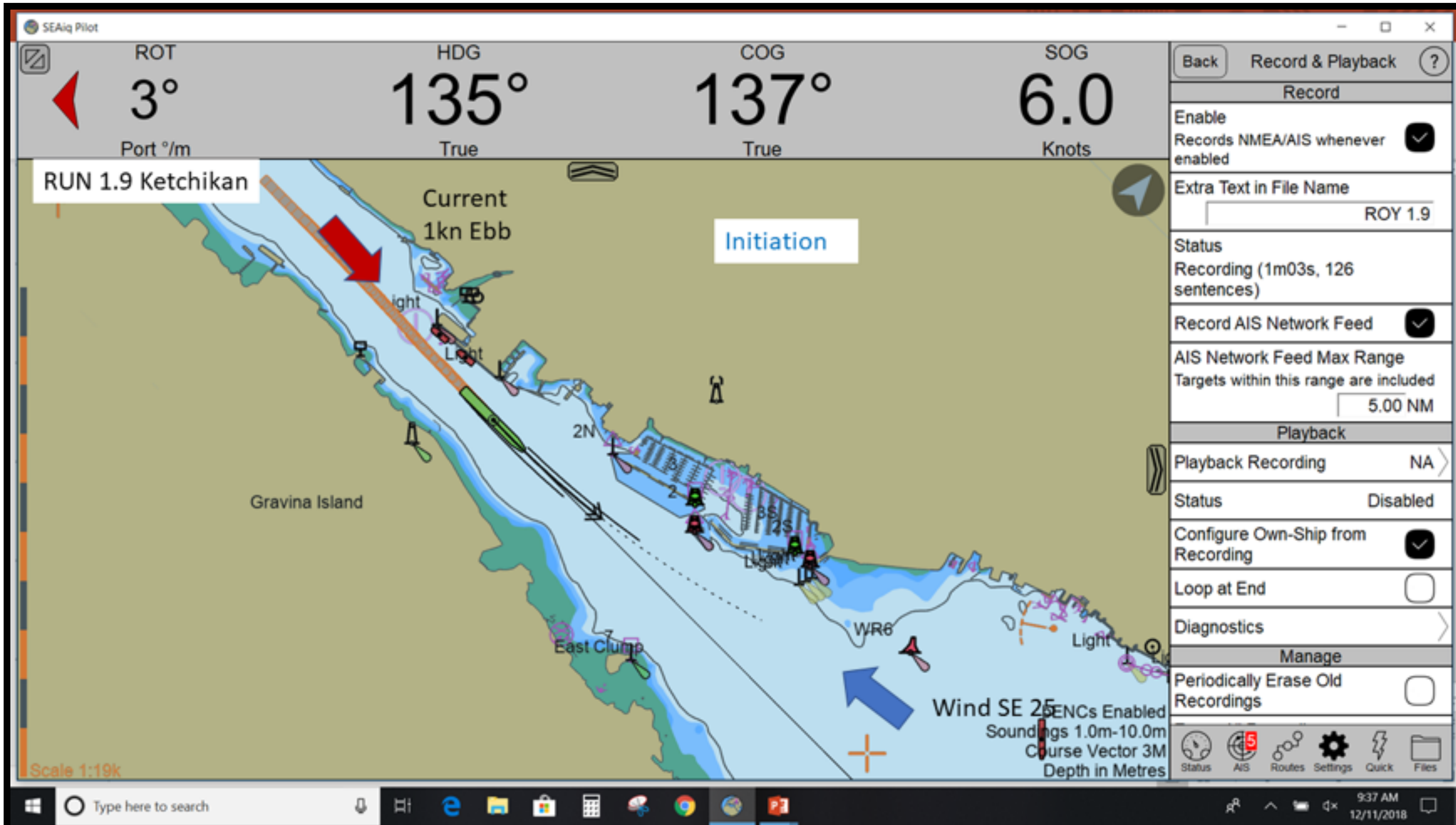

SEAiq Pilot
ROT
3°
Stbd °/m
HDG
094°
True
COG
061°
True
SOG
1.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
033°
Port
Beam
38
Metres
Eff Beam
212
Metres
Docking
Fore
106
Metres
Angle
9.4°
Rel
Aft
NA
Vessel Motion
Bow
0.4
Knots
1.1
RUN 1.8 Ketchikan
Ketchikan
Capt. Working into the dock
with positive control of the ship
Current
1kn Flood
WR6
Light
106m
Light
Wind NE 25
Light
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
4A
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8400 (Overscale ×1.2)
PR
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:17 AM
12/11/2018

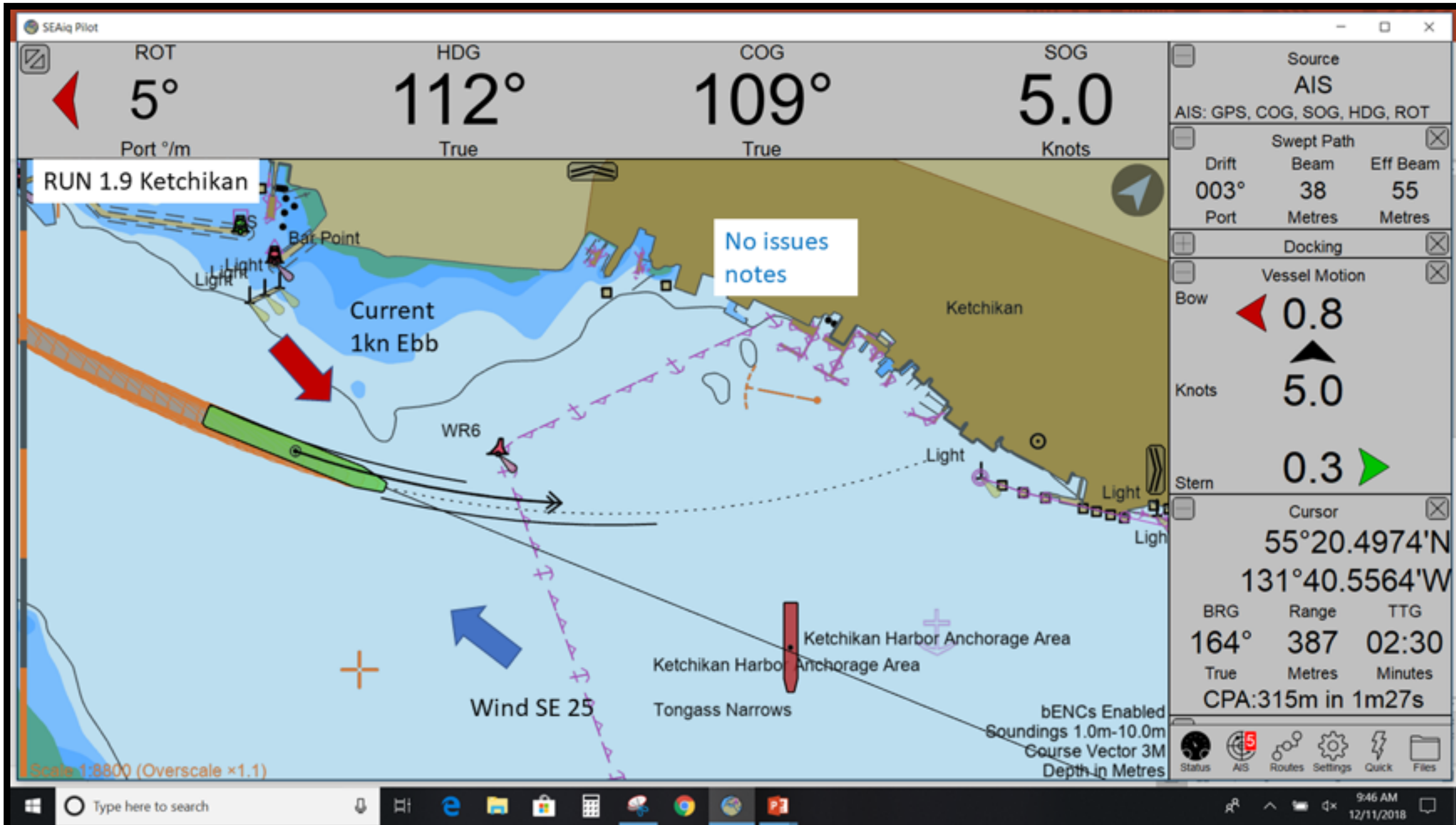
Run 1.9 Ketchikan, North Approach, SE25, 1kn Ebb

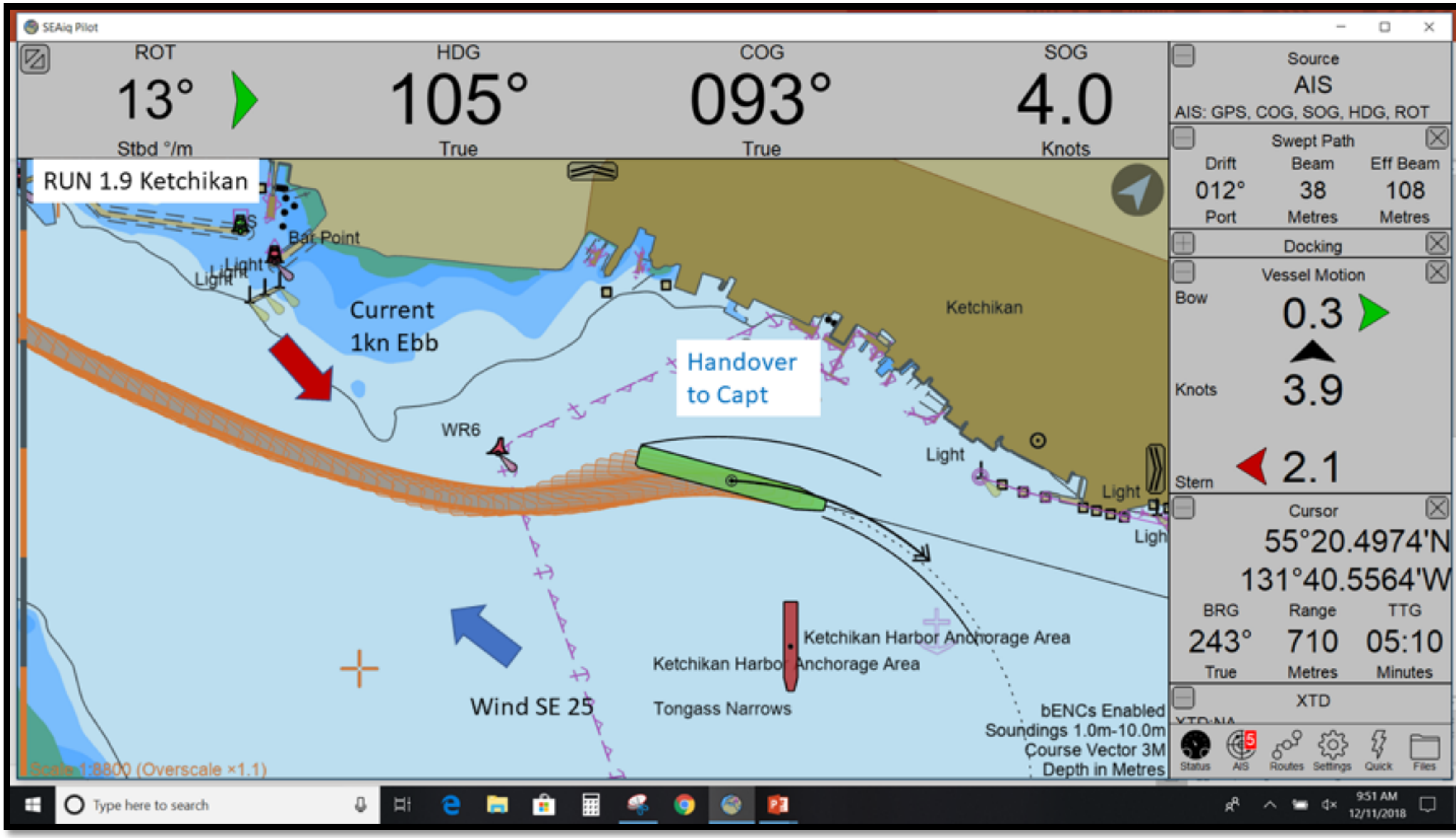
1.9 SE25 1kn Ebb, North Approach to Ketchikan

Tuesday 12/11/2018

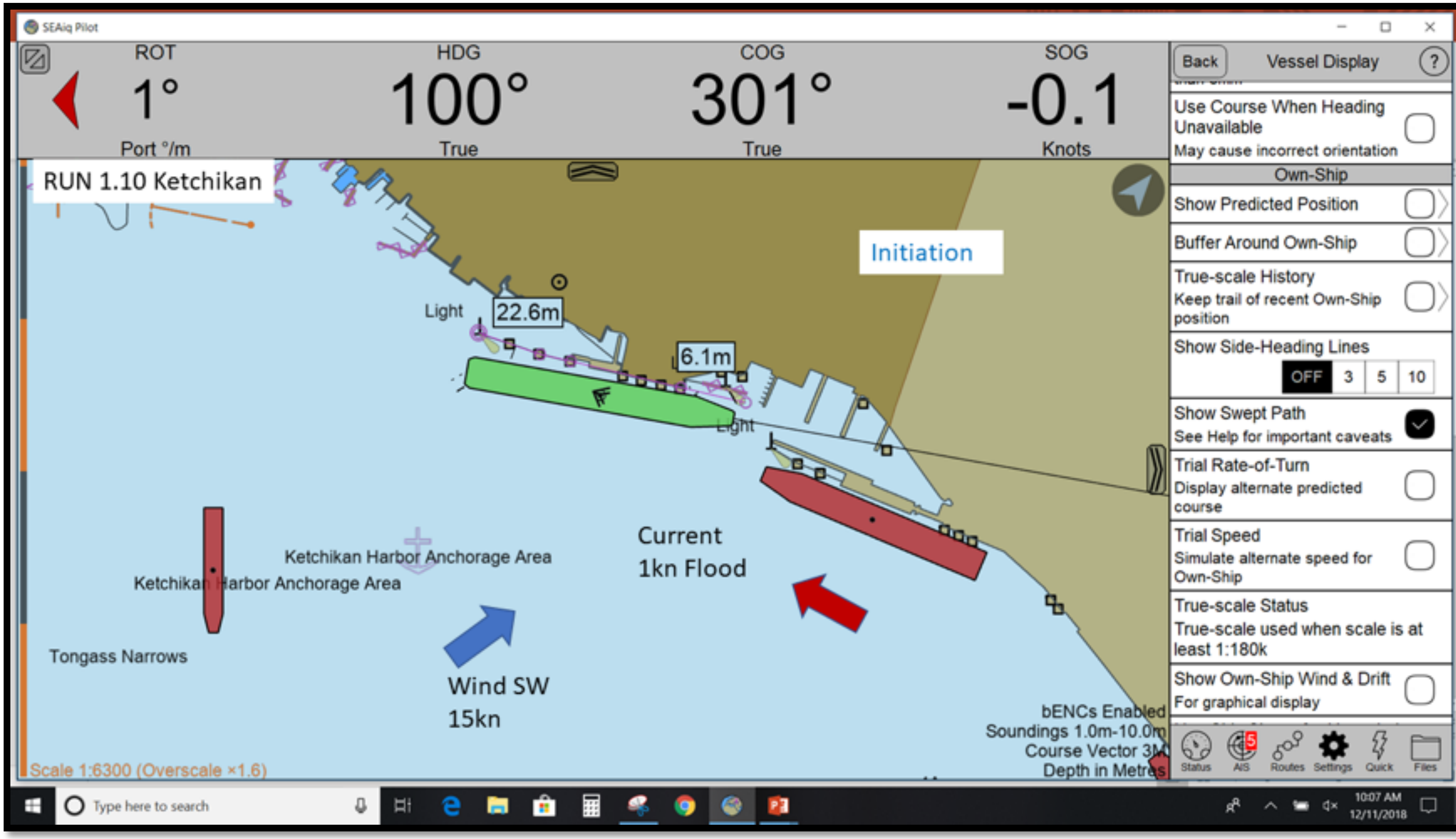
2nd Run

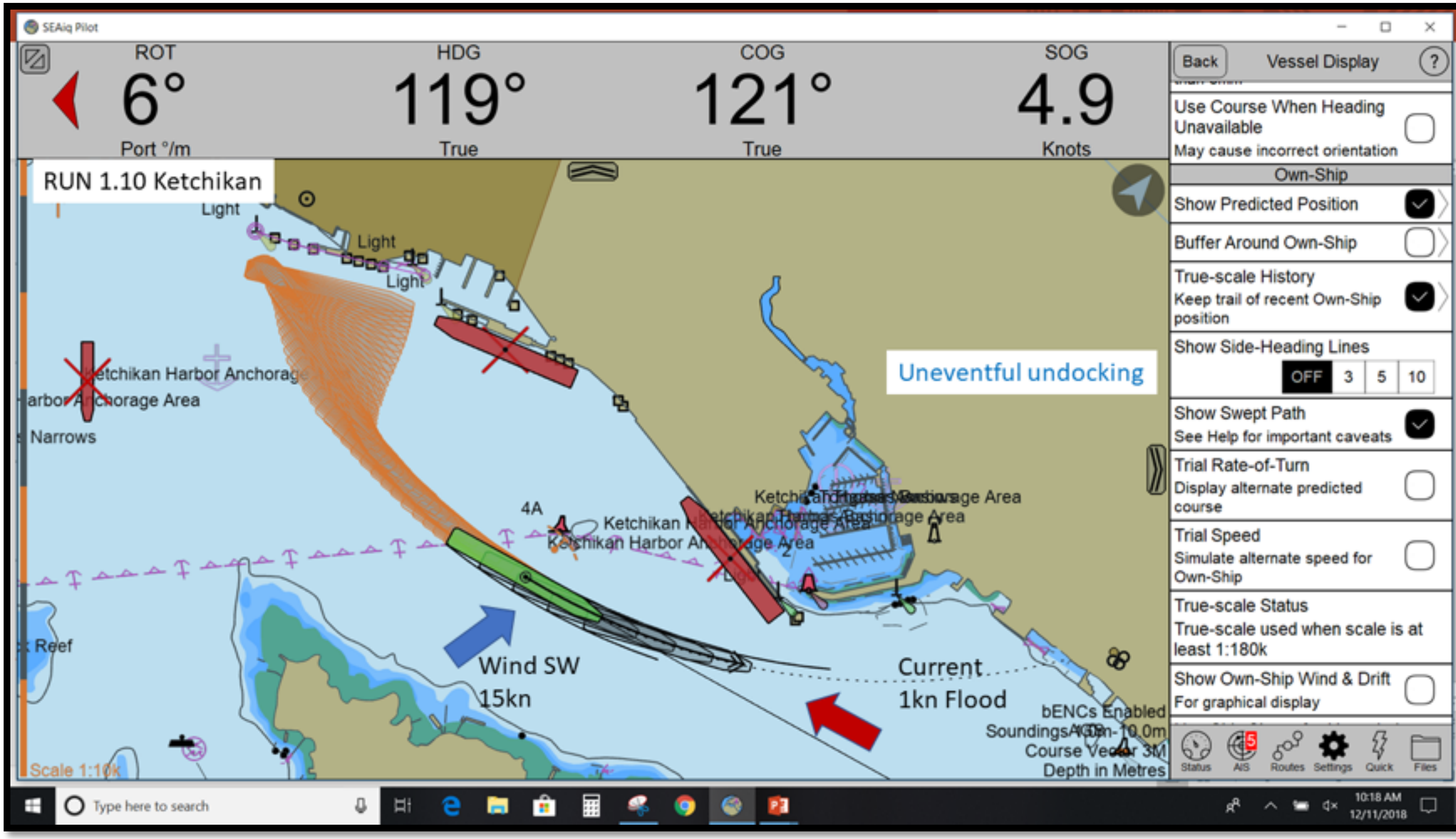

SEAiq Pilot
ROT
3°
Port °/m
HDG
135°
True
COG
137°
True
SOG
6.0
Knots
RUN 1.9 Ketchikan
Current
1kn Ebb
Initiation
Gravina Island
East Clump
Wind SE 25
ENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:19k
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 1.9
Status
Recording (1m03s, 126 sentences)
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:37 AM
12/11/2018

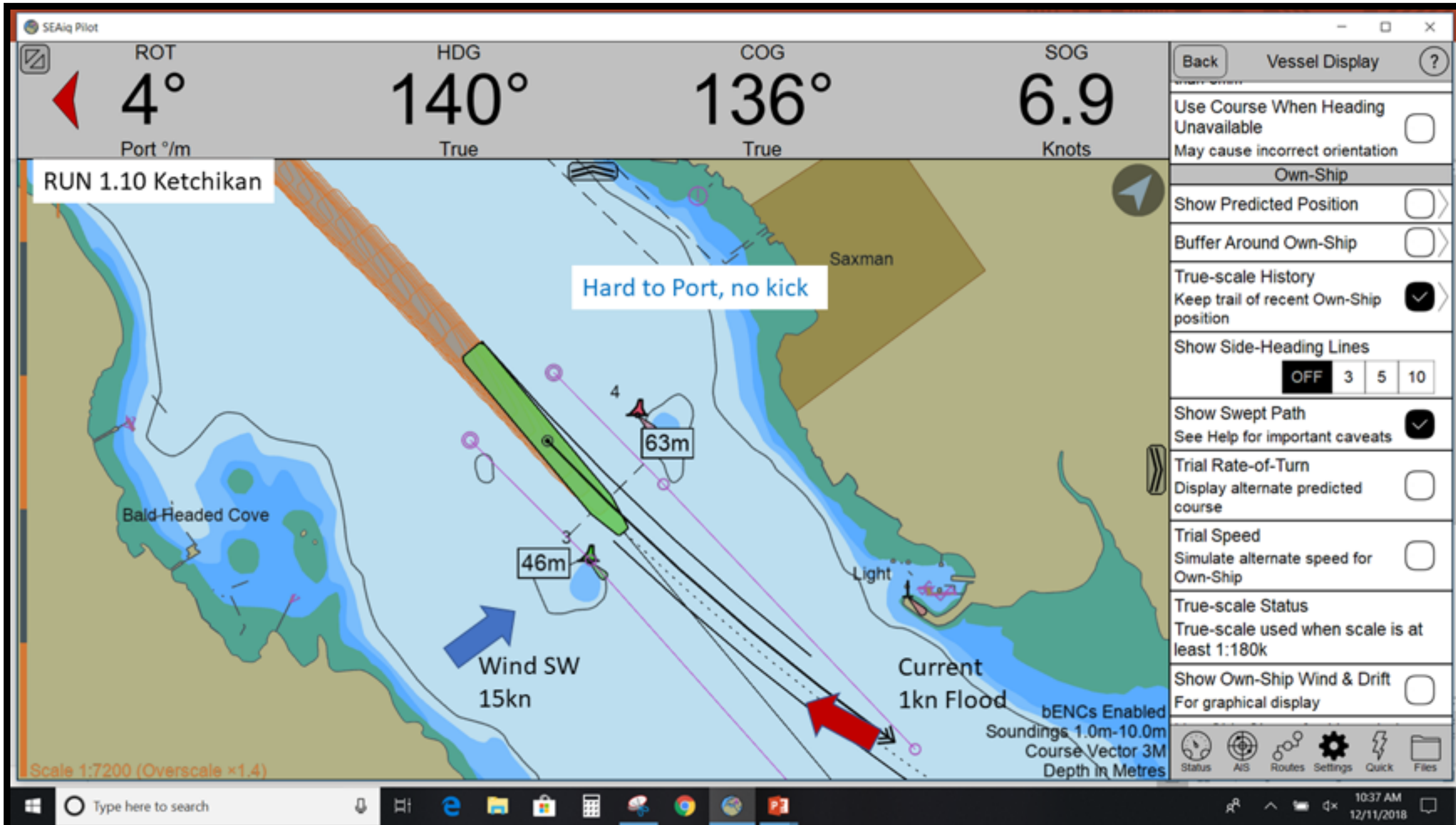

SEAiq Pilot
ROT
5°
Port °/m
HDG
112°
True
COG
109°
True
SOG
5.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
003°
Port
Beam
38
Metres
Eff Beam
55
Metres
Docking
Vessel Motion
Bow
0.8
Knots
5.0
Stern
0.3
Cursor
55°20.4974'N
131°40.5564'W
BRG
164°
True
Range
387
Metres
TTG
02:30
Minutes
CPA:315m in 1m27s
RUN 1.9 Ketchikan
No issues notes
Current 1kn Ebb
Bar Point
Light
Ketchikan
WR6
Wind SE 25
Ketchikan Harbor Anchorage Area
Tongass Narrows
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8800 (Overscale ×1.1)
Type here to search
9:46 AM
12/11/2018

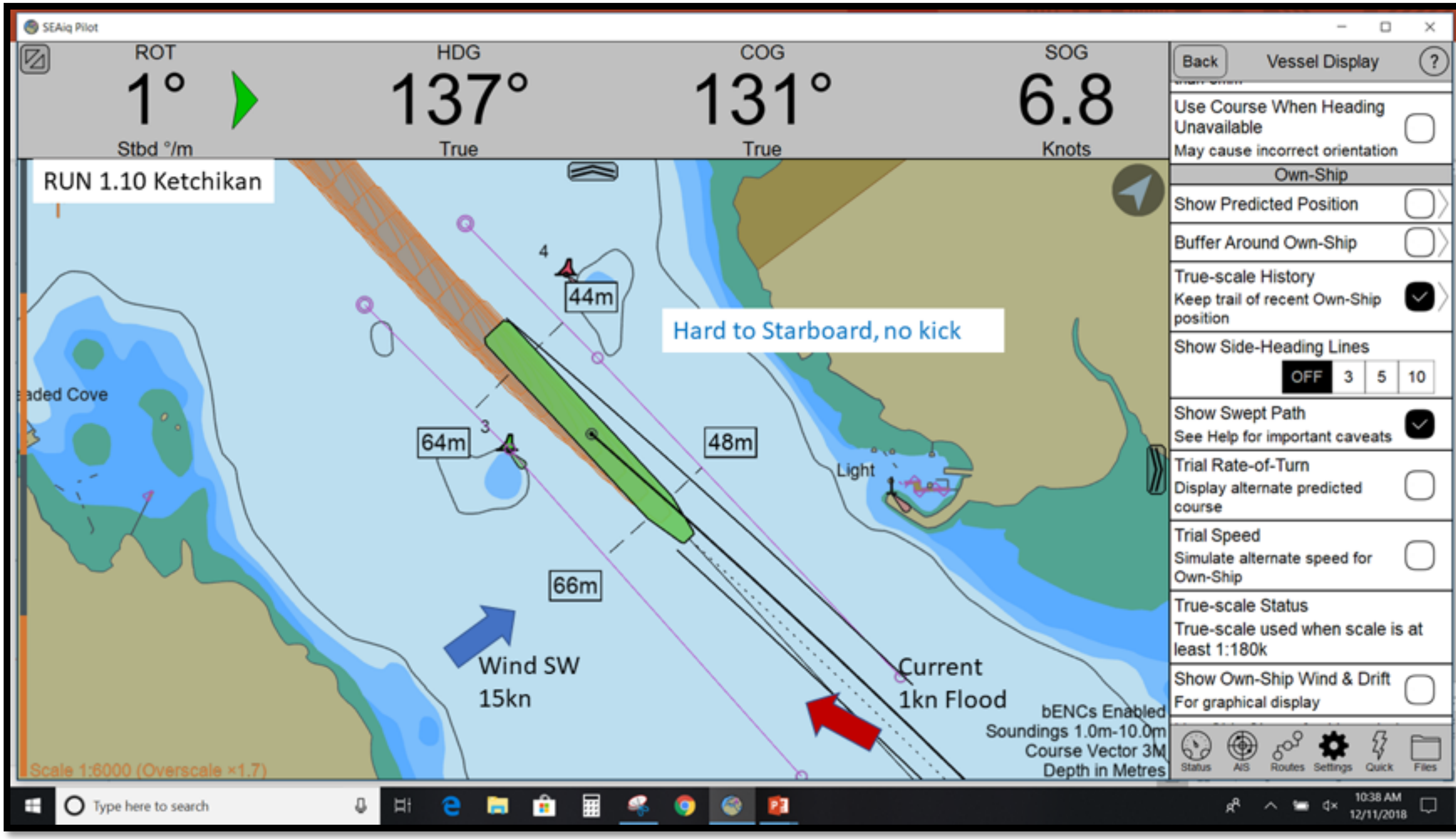

SEAiq Pilot
ROT
13°
Stbd °/m
HDG
105°
True
COG
093°
True
SOG
4.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
012°
Port
Beam
38
Metres
Eff Beam
108
Metres
Docking
Vessel Motion
Bow
0.3
Knots
3.9
Stern
2.1
Cursor
55°20.4974'N
131°40.5564'W
BRG
243°
True
Range
710
Metres
TTG
05:10
Minutes
XTD
RUN 1.9 Ketchikan
Bar Point
Current
1kn Ebb
Ketchikan
Handover
to Capt
WR6
Light
Wind SE 25
Ketchikan Harbor Anchorage Area
Tongass Narrows
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8800 (Overscale ×1.1)
Type here to search
9:51 AM
12/11/2018

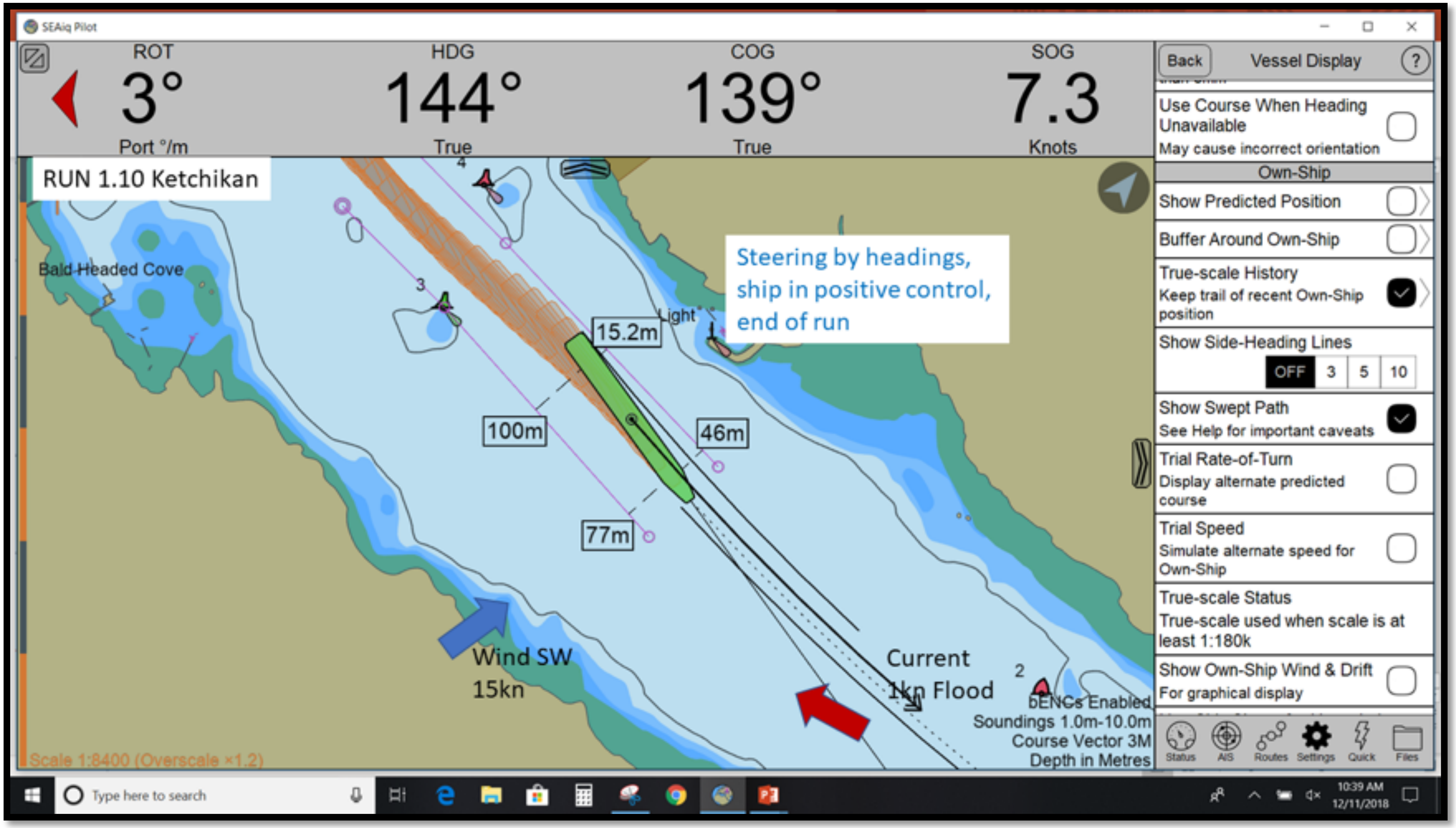
Run 1.10 Ketchikan, North Departure, SW15kn, 1kn Flood


SEAiq Pilot
ROT
1°
Port °/m
HDG
100°
True
COG
301°
True
SOG
-0.1
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
RUN 1.10 Ketchikan
Initiation
Light
22.6m
6.1m
Light
Current
1kn Flood
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
Wind SW
15kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6300 (Overscale ×1.6)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:07 AM
12/11/2018


SEAiq Pilot
ROT
6°
Port °/m
HDG
119°
True
COG
121°
True
SOG
4.9
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
RUN 1.10 Ketchikan
Uneventful undocking
Wind SW
15kn
Current
1kn Flood
bENCs Enabled
Course Vector 3M
Depth in Metres
Narrows
Reef
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:18 AM
12/11/2018


SEAiq Pilot
ROT
4°
Port °/m
HDG
140°
True
COG
136°
True
SOG
6.9
Knots
RUN 1.10 Ketchikan
Hard to Port, no kick
Saxman
Bald Headed Cove
63m
46m
Light
Wind SW
15kn
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:7200 (Overscale ×1.4)
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:37 AM
12/11/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
137°
True
COG
131°
True
SOG
6.8
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
Status AIS Routes Settings Quick Files
RUN 1.10 Ketchikan
Hard to Starboard, no kick
44m
64m
48m
66m
Light
Wind SW
15kn
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6000 (Overscale ×1.7)
Type here to search
10:38 AM
12/11/2018

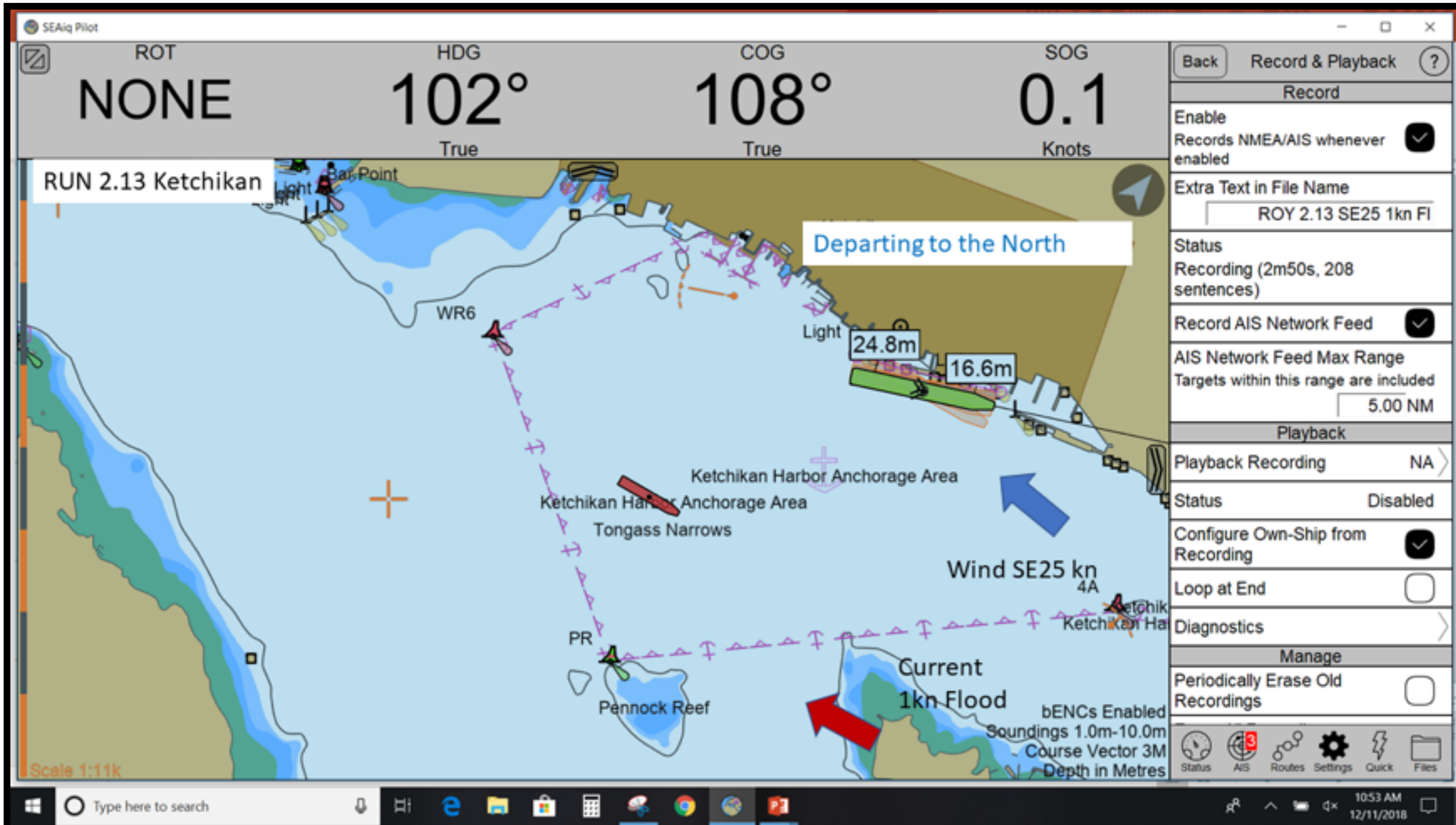

SEAiq Pilot
ROT
3°
Port °/m
HDG
144°
True
COG
139°
True
SOG
7.3
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
Status AIS Routes Settings Quick Files
RUN 1.10 Ketchikan
Bald Headed Cove
Steering by headings, ship in positive control, end of run
15.2m
Light
100m
46m
77m
Wind SW
15kn
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8400 (Overscale ×1.2)
Type here to search
10:39 AM
12/11/2018

Run 2.13 Ketchikan, North Departure, SE@%, 1kn Flood

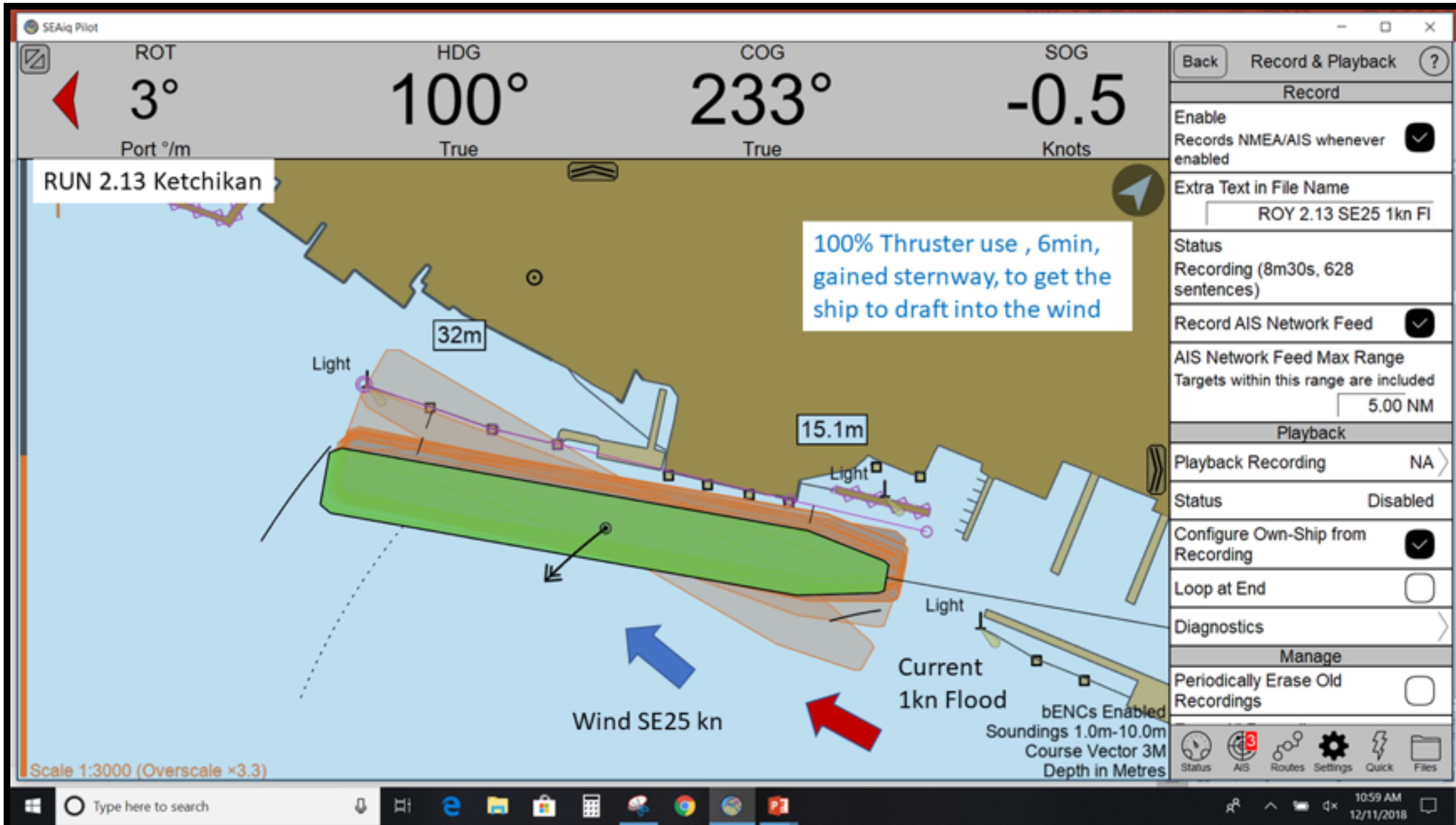
2.13 SE25 1kn Flood, North Departure Ketchikan

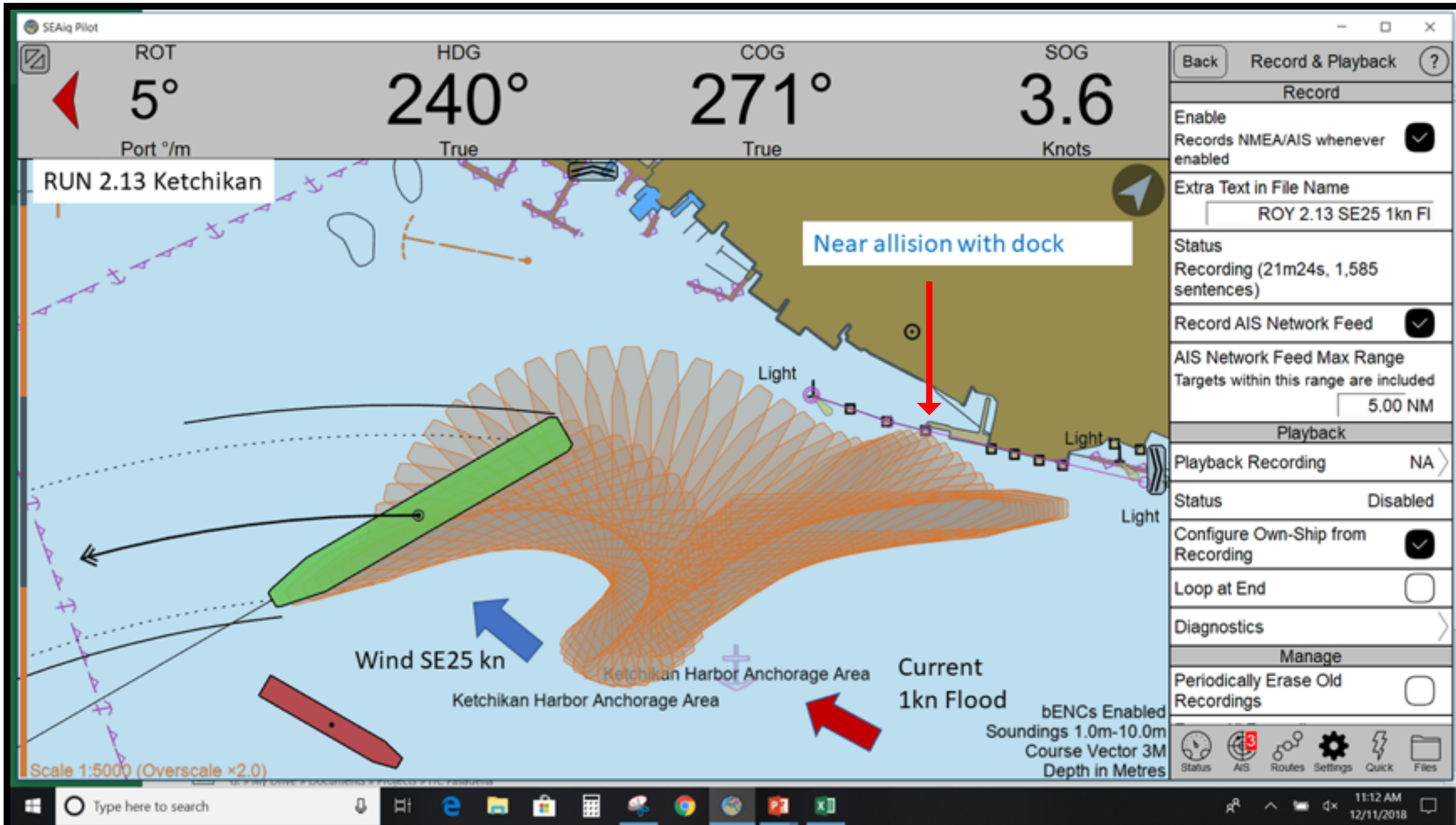
Tuesday 12/11/2018

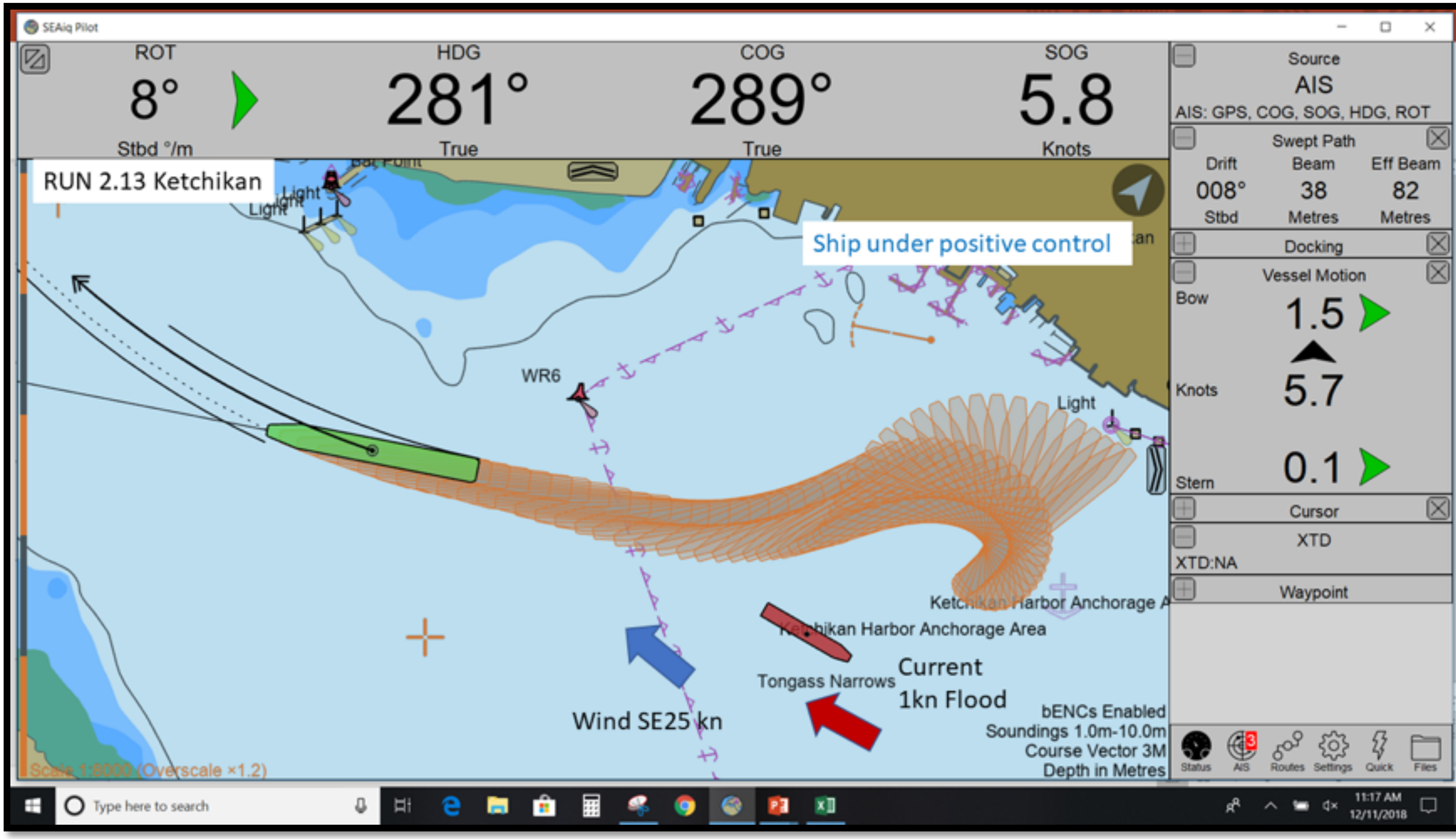
4th Run

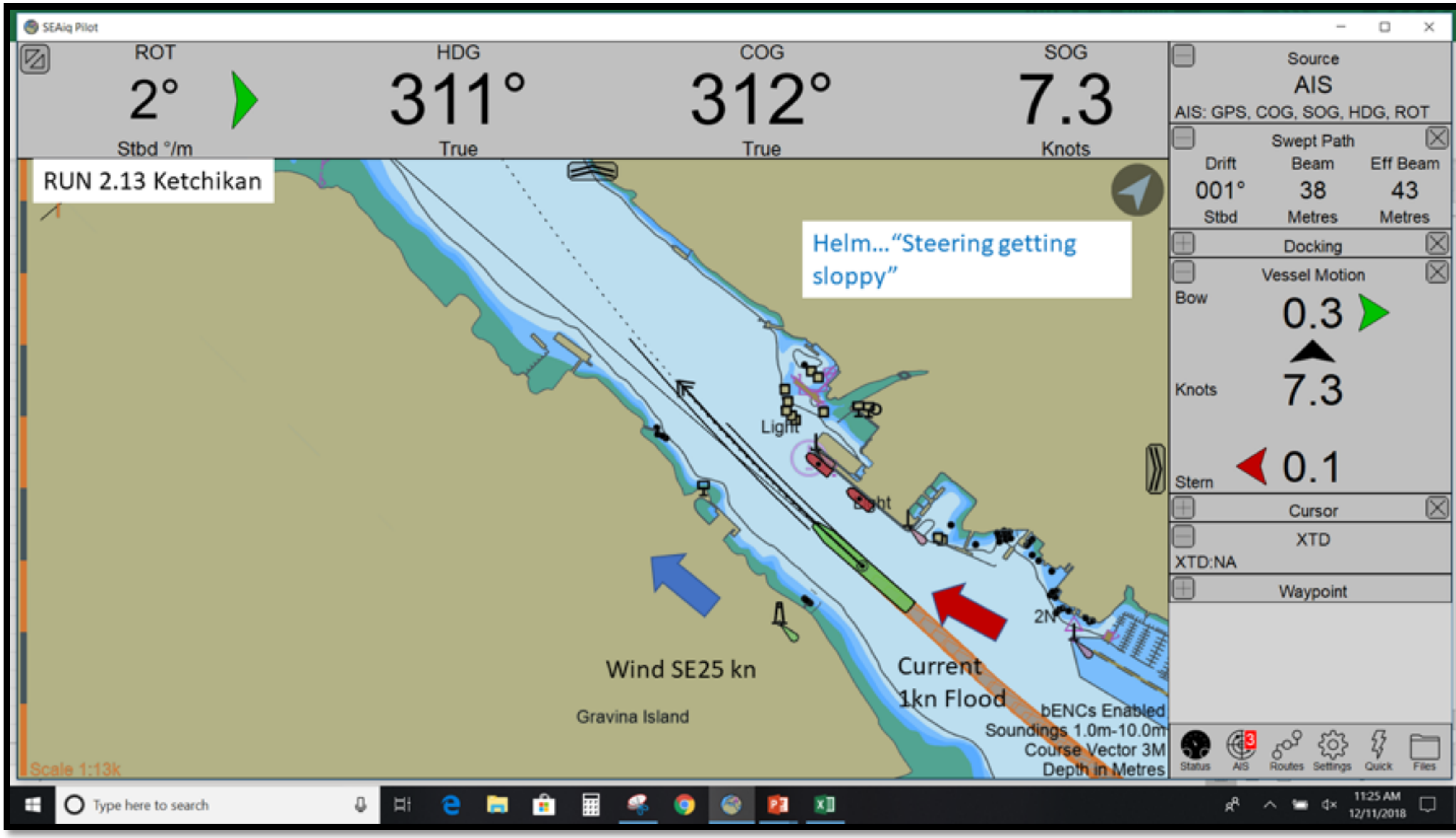


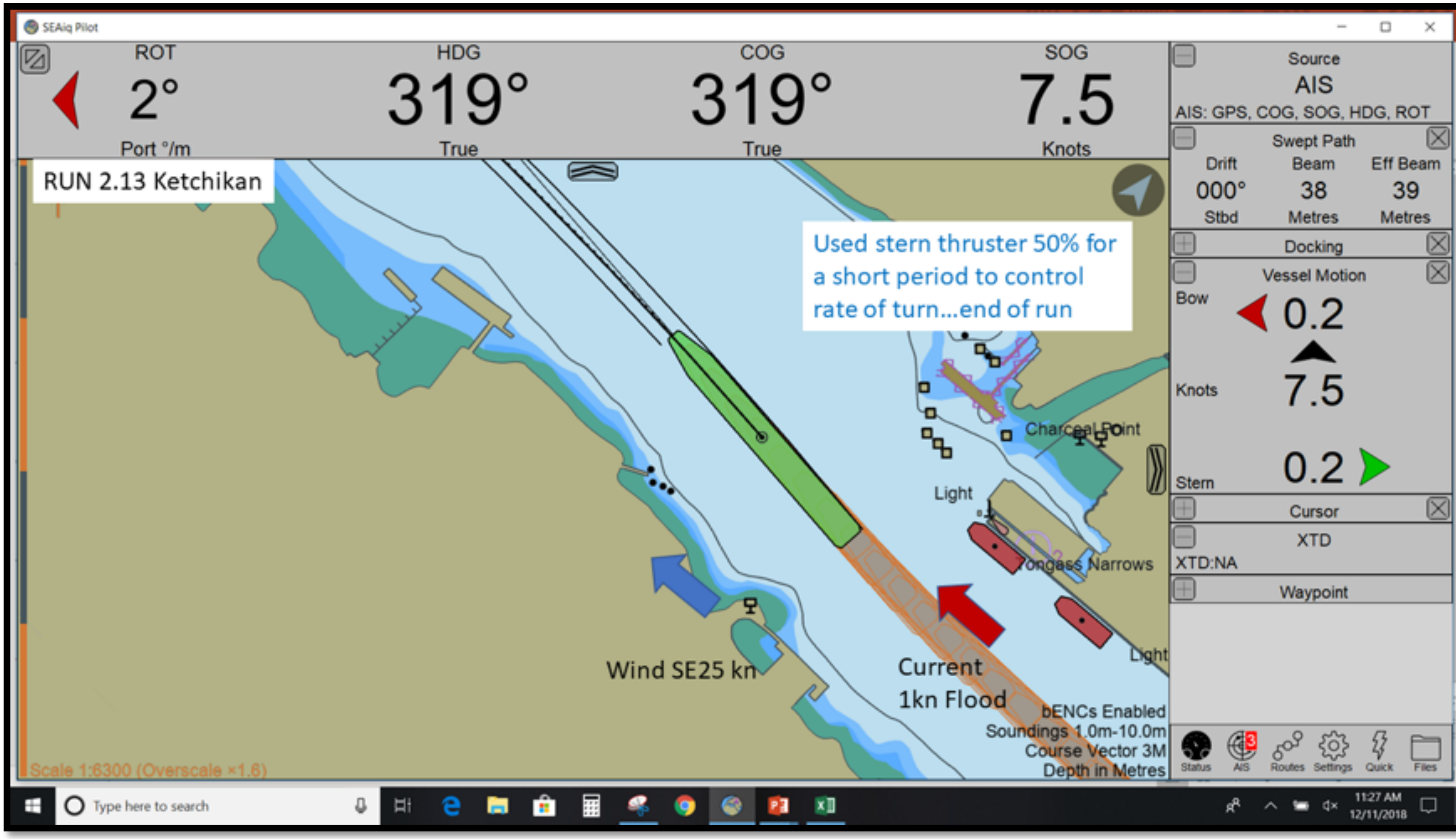
SEAiq Pilot
ROT
NONE
HDG
102°
True
COG
108°
True
SOG
0.1
Knots
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 2.13 SE25 1kn Fl
Status
Recording (2m50s, 208 sentences)
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
RUN 2.13 Ketchikan
Departing to the North
Bar Point
WR6
Light
24.8m
16.6m
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
Tongass Narrows
Wind SE25 kn
4A
PR
Current
1kn Flood
Pennock Reef
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:11k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:53 AM
12/11/2018


SEAiq Pilot
ROT
3°
Port °/m
HDG
100°
True
COG
233°
True
SOG
-0.5
Knots
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 2.13 SE25 1kn Fl
Status
Recording (8m30s, 628 sentences)
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
RUN 2.13 Ketchikan
100% Thruster use , 6min, gained sternway, to get the ship to draft into the wind
32m
15.1m
Light
Light
Light
Wind SE25 kn
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:3000 (Overscale ×3.3)
Type here to search
10:59 AM
12/11/2018


SEAiq Pilot
ROT
5°
Port °/m
HDG
240°
True
COG
271°
True
SOG
3.6
Knots
RUN 2.13 Ketchikan
Near allision with dock
Light
Light
Light
Wind SE25 kn
Current
1kn Flood
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:5000 (Overscale ×2.0)
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 2.13 SE25 1kn Fl
Status
Recording (21m24s, 1,585 sentences)
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:12 AM
12/11/2018


SEAiq Pilot
ROT
8°
Stbd °/m
HDG
281°
True
COG
289°
True
SOG
5.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
82
Metres
Docking
Vessel Motion
Bow
1.5
Knots
5.7
Stern
0.1
Cursor
XTD
XTD:NA
Waypoint
RUN 2.13 Ketchikan
Ship under positive control
WR6
Light
Ketchikan Harbor Anchorage Area
Tongass Narrows
Current
1kn Flood
Wind SE25 kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8000 (Overscale ×1.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:17 AM
12/11/2018


SEAiq Pilot
ROT
2°
Stbd °/m
HDG
311°
True
COG
312°
True
SOG
7.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
001°
Stbd
Beam
38
Metres
Eff Beam
43
Metres
Docking
Vessel Motion
Bow
0.3
Knots
7.3
Stern
0.1
Cursor
XTD
XTD:NA
Waypoint
RUN 2.13 Ketchikan
Helm…"Steering getting sloppy"
Wind SE25 kn
Current
1kn Flood
Gravina Island
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:13k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:25 AM
12/11/2018

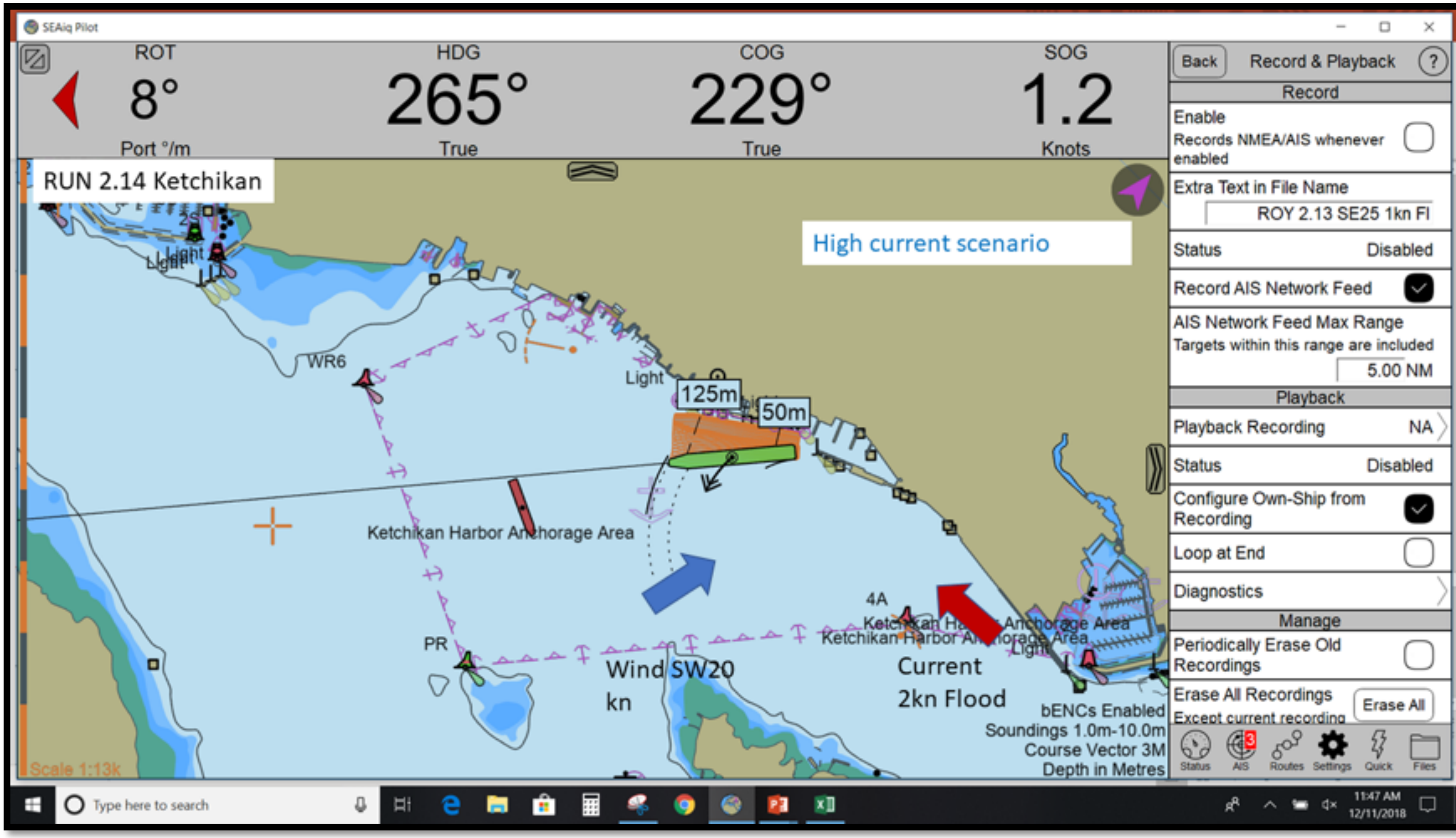

SEAiq Pilot
ROT
2°
Port °/m
HDG
319°
True
COG
319°
True
SOG
7.5
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Stbd
Beam
38
Metres
Eff Beam
39
Metres
Docking
Vessel Motion
Bow
0.2
Knots
7.5
0.2
Stern
Cursor
XTD
XTD:NA
Waypoint
RUN 2.13 Ketchikan
Used stern thruster 50% for a short period to control rate of turn…end of run
Charcoal Point
Light
Tongass Narrows
Light
Wind SE25 kn
Current
1kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6300 (Overscale ×1.6)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:27 AM
12/11/2018

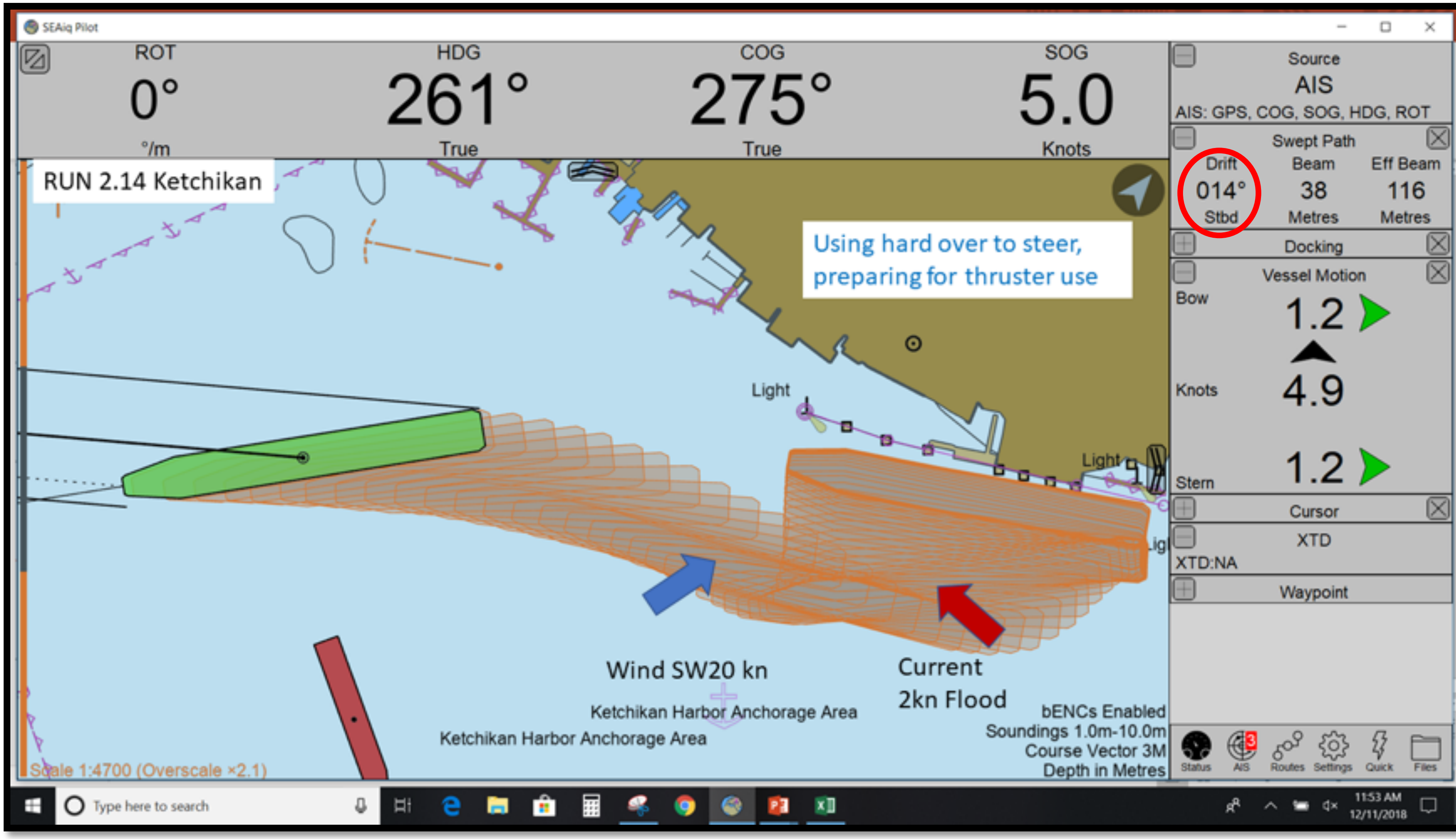
Run 2.14 Ketchikan, North Departure, SW20kn, 2.0kn Flood

2.14 SW20 2.0 Flood, North Depart Ketchikan

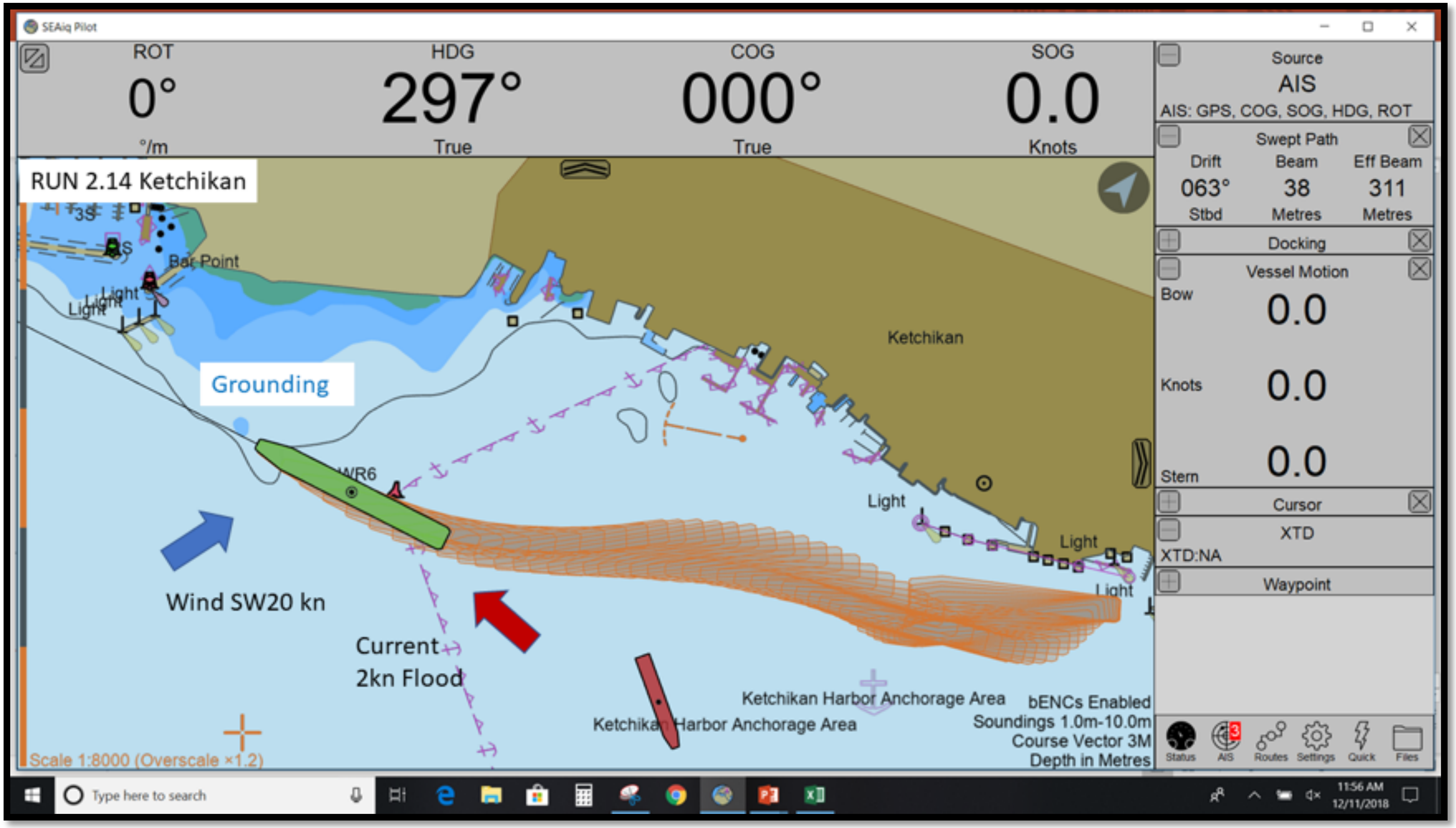
Tuesday 12/11/2018

5th Run


SEAiq Pilot
ROT
8°
Port °/m
HDG
265°
True
COG
229°
True
SOG
1.2
Knots
RUN 2.14 Ketchikan
High current scenario
WR6
Light
125m
50m
Ketchikan Harbor Anchorage Area
PR
4A
Wind SW20
kn
Current
2kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 2.13 SE25 1kn Fl
Status
Disabled
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Erase All Recordings
Erase All
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:47 AM
12/11/2018


RUN 2.14 Ketchikan
ROT
0°
°/m
HDG
261°
True
COG
275°
True
SOG
5.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
014°
Stbd
Beam
38
Metres
Eff Beam
116
Metres
Docking
Vessel Motion
Bow
1.2
Knots
4.9
Stern
1.2
Cursor
XTD
XTD:NA
Waypoint
Using hard over to steer, preparing for thruster use
Light
Light
Wind SW20 kn
Current
2kn Flood
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:4700 (Overscale ×2.1)


SEAiq Pilot
ROT
22°
Stbd °/m
HDG
294°
True
COG
294°
True
SOG
7.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Port
Beam
38
Metres
Eff Beam
39
Metres
Docking
Vessel Motion
Bow
2.0
Knots
7.4
Stern
2.0
Cursor
XTD
XTD:NA
Waypoint
RUN 2.14 Ketchikan
Bar Point
WR6
Current
2kn Flood
Wind SW20 kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6700 (Overscale ×1.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:55 AM
12/11/2018

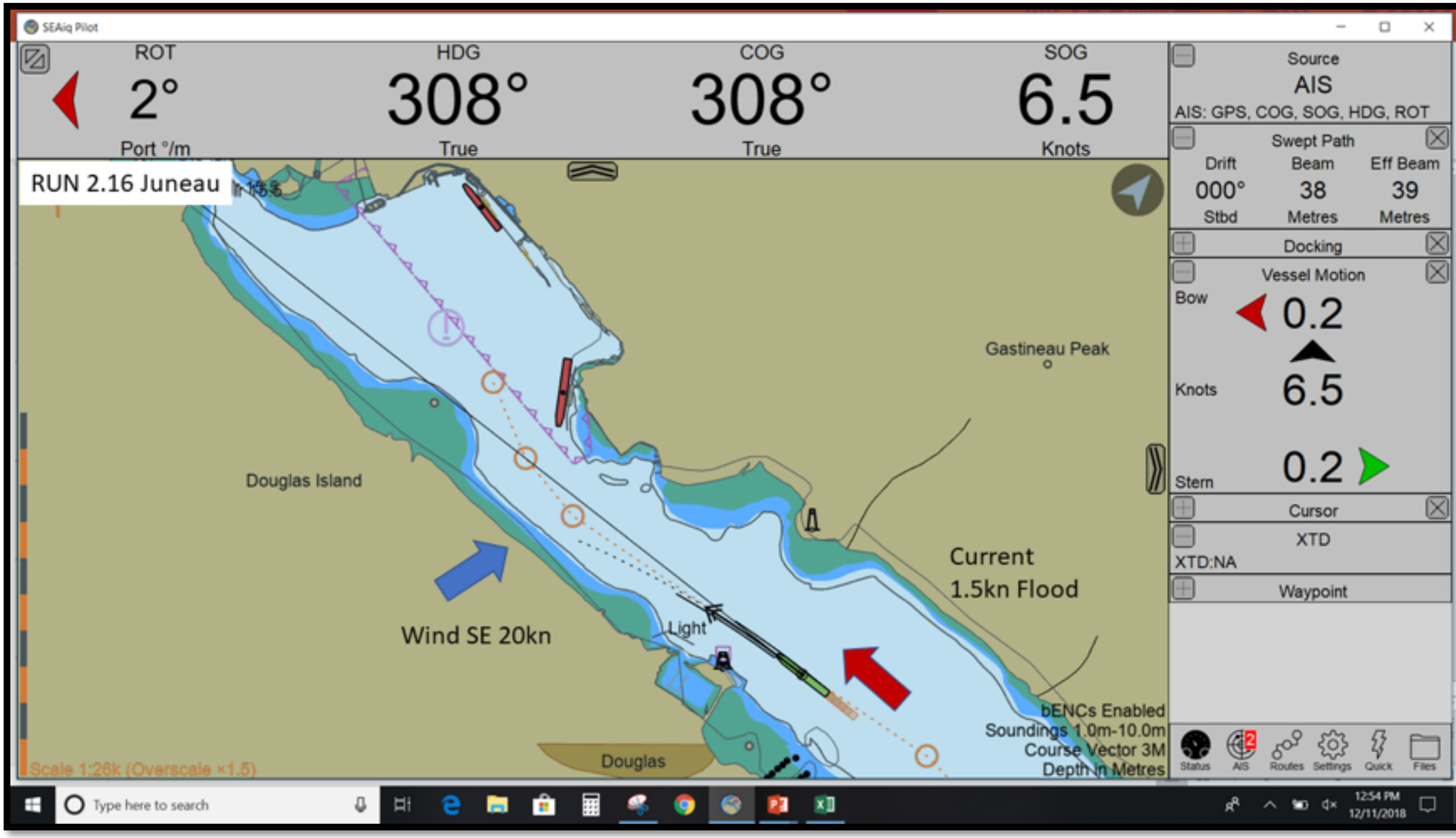

SEAiq Pilot
ROT
0°
°/m
HDG
297°
True
COG
000°
True
SOG
0.0
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
063°
Stbd
Beam
38
Metres
Eff Beam
311
Metres
Docking
Vessel Motion
Bow
0.0
Knots
0.0
Stern
0.0
Cursor
XTD
XTD:NA
Waypoint
RUN 2.14 Ketchikan
Bar Point
Grounding
WR6
Ketchikan
Light
Wind SW20 kn
Current
2kn Flood
Ketchikan Harbor Anchorage Area
Ketchikan Harbor Anchorage Area
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8000 (Overscale ×1.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:56 AM
12/11/2018

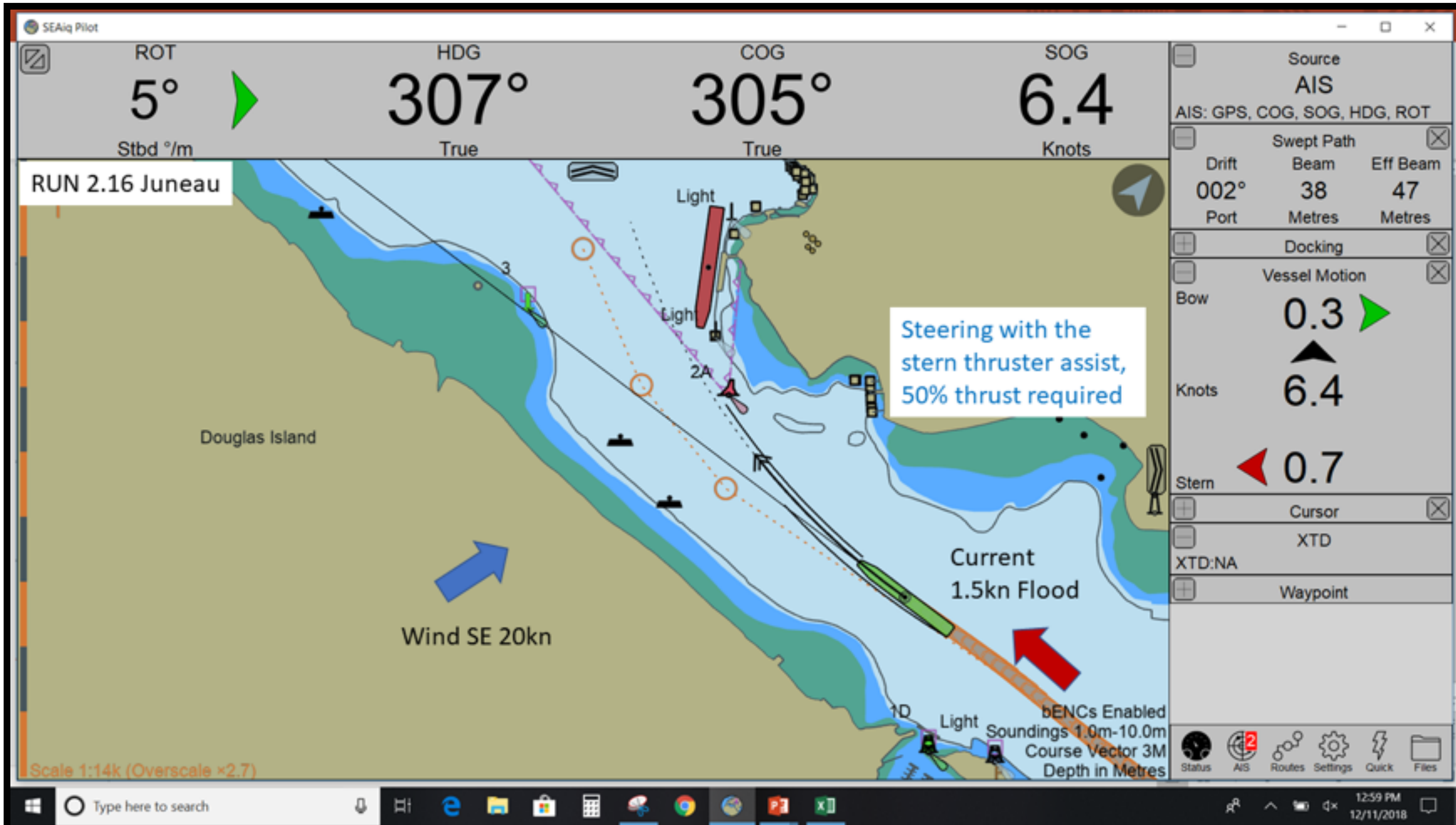
Run 2.16 Juneau, Arrival, SE20kn, 1.5Flood

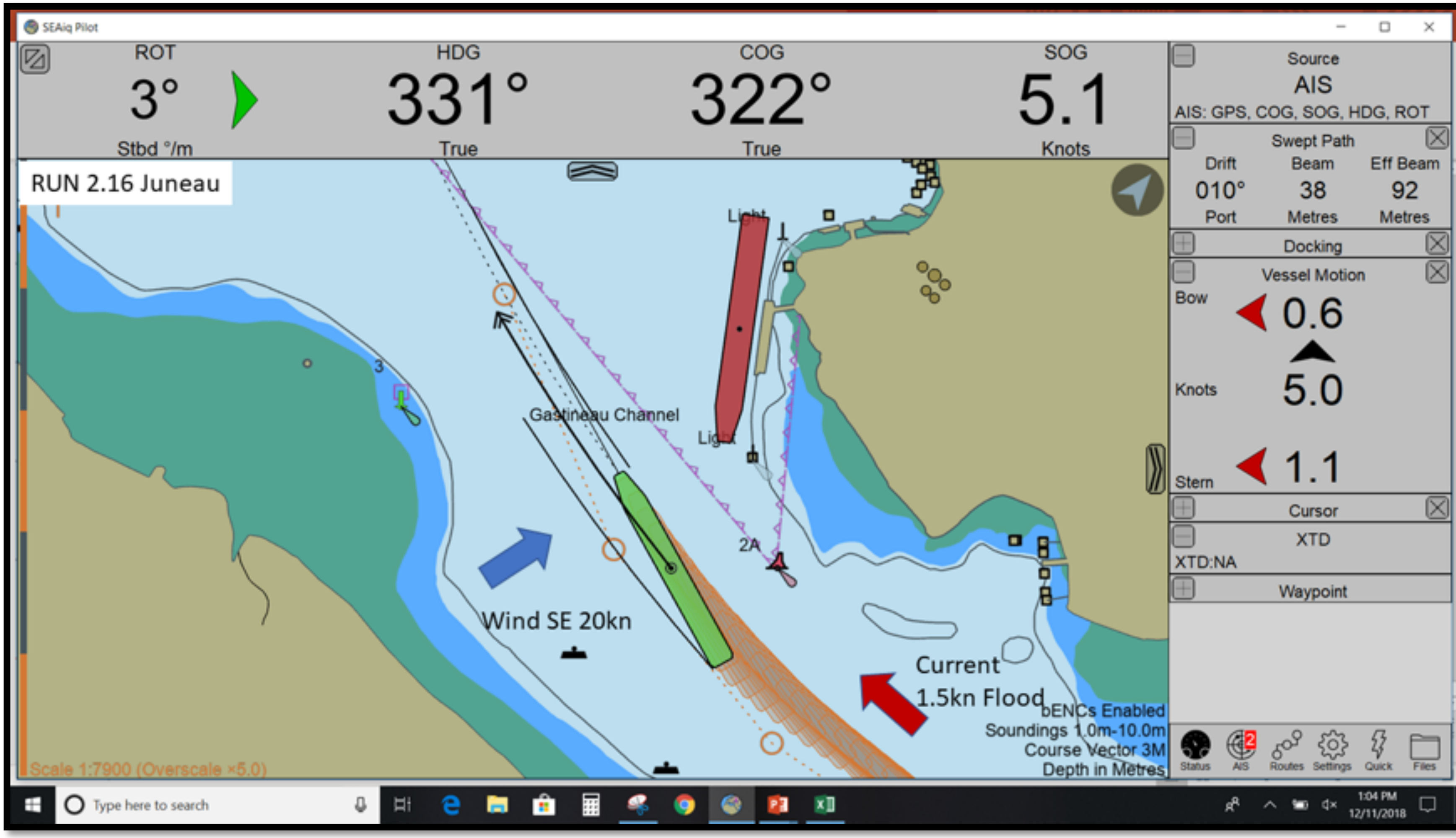
2.16 SE20 1.5Flood, Arrival Juneau

Tuesday 12/11/2018

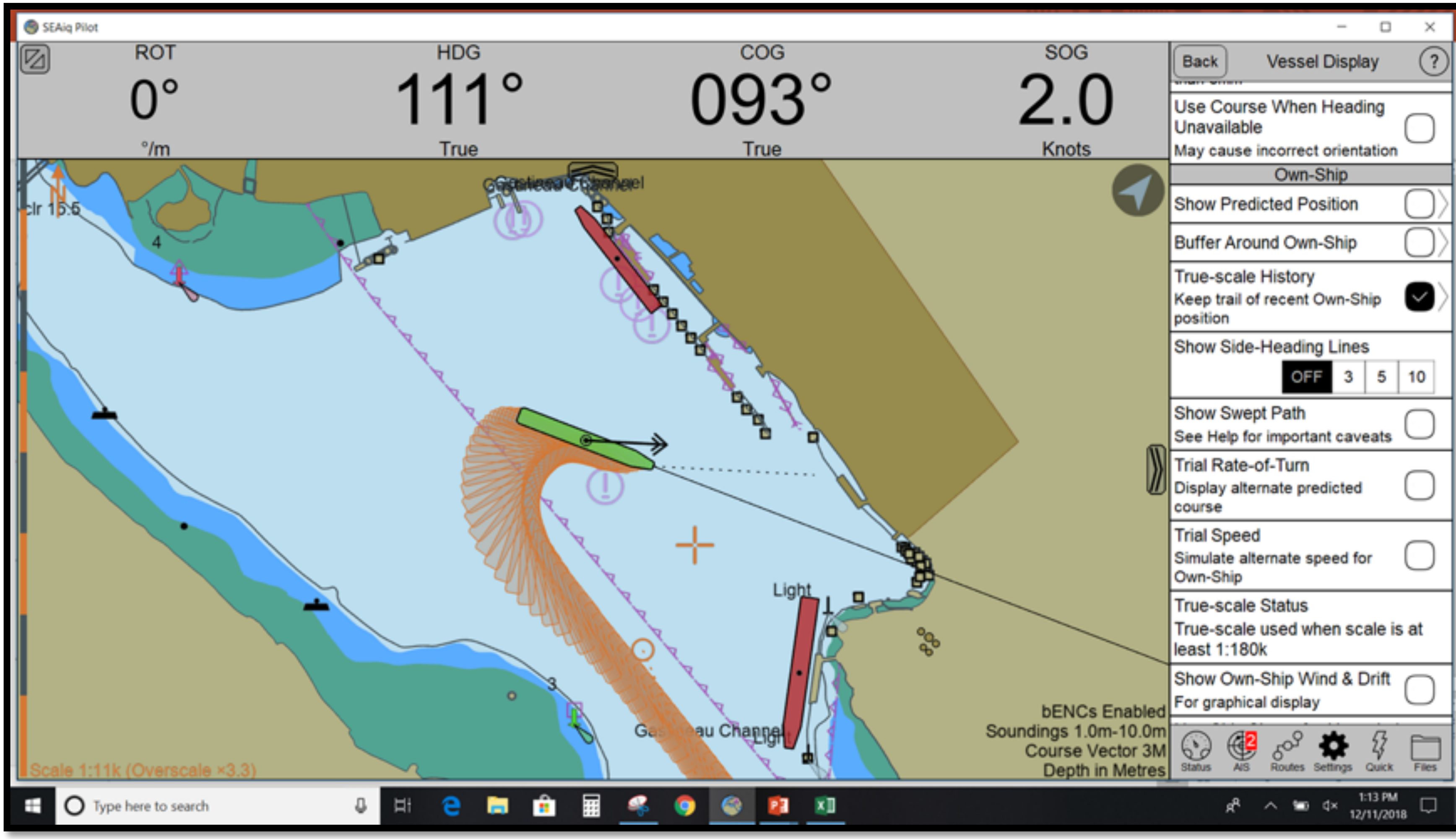
6th Run


SEAiq Pilot
ROT
2°
Port °/m
HDG
308°
True
COG
308°
True
SOG
6.5
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
000°
Stbd
Beam
38
Metres
Eff Beam
39
Metres
Docking
Vessel Motion
Bow
0.2
Knots
6.5
Stern
0.2
Cursor
XTD
XTD:NA
Waypoint
RUN 2.16 Juneau
Gastineau Peak
Douglas Island
Current
1.5kn Flood
Wind SE 20kn
Light
Douglas
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:26k (Overscale ×1.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
12:54 PM
12/11/2018


SEAiq Pilot
ROT
5°
Stbd °/m
HDG
307°
True
COG
305°
True
SOG
6.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
47
Metres
Docking
Vessel Motion
Bow
0.3
6.4
Knots
Stern
0.7
Cursor
XTD
XTD:NA
Waypoint
RUN 2.16 Juneau
Douglas Island
Light
Steering with the stern thruster assist, 50% thrust required
Current 1.5kn Flood
Wind SE 20kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:14k (Overscale ×2.7)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
12:59 PM
12/11/2018

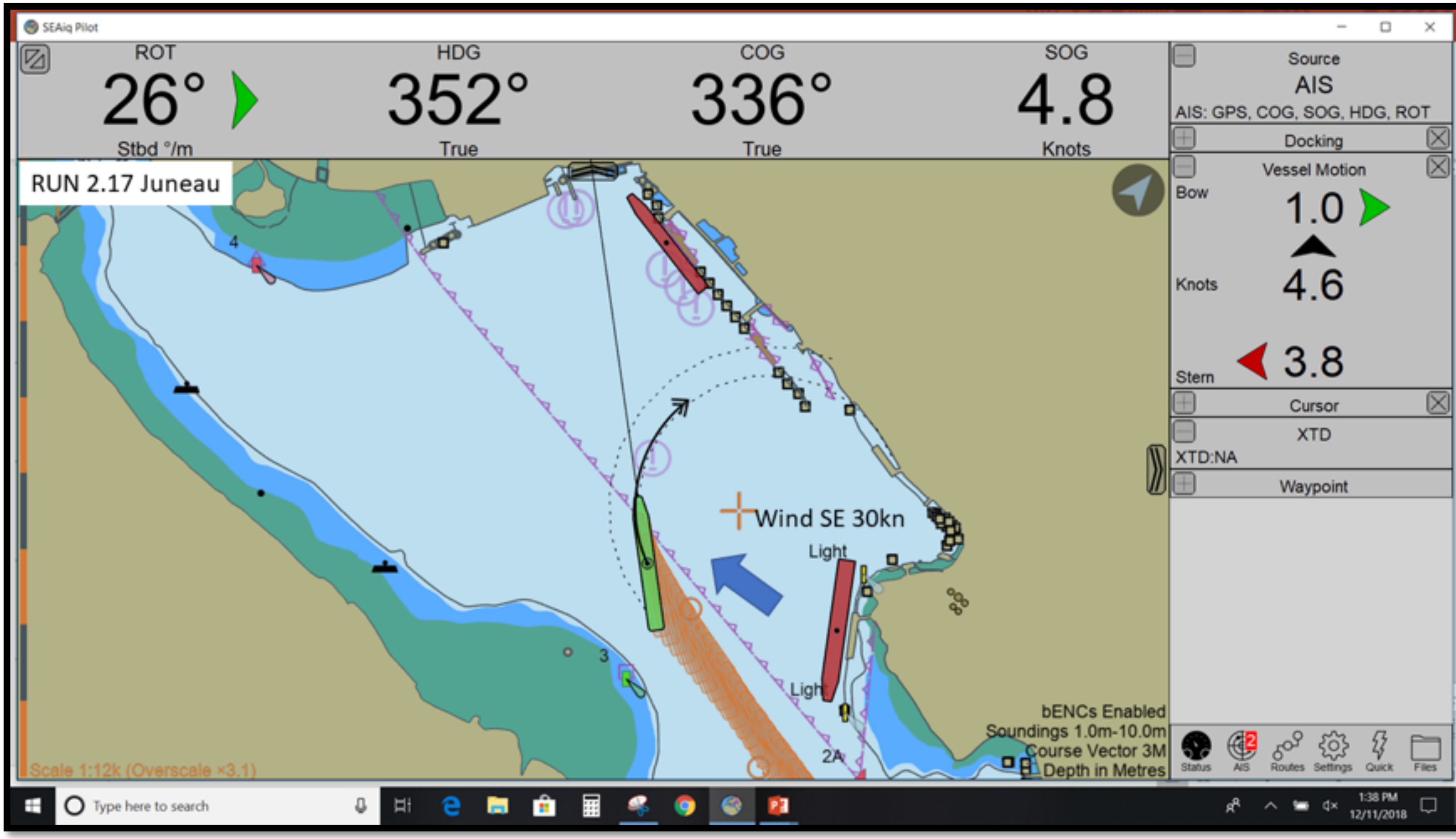

SEAiq Pilot
ROT
3°
Stbd °/m
HDG
331°
True
COG
322°
True
SOG
5.1
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
010°
Port
Beam
38
Metres
Eff Beam
92
Metres
Docking
Vessel Motion
Bow
0.6
Knots
5.0
Stern
1.1
Cursor
XTD
XTD:NA
Waypoint
RUN 2.16 Juneau
Gastineau Channel
Light
Wind SE 20kn
Current
1.5kn Flood
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:7900 (Overscale x5.0)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:04 PM
12/11/2018

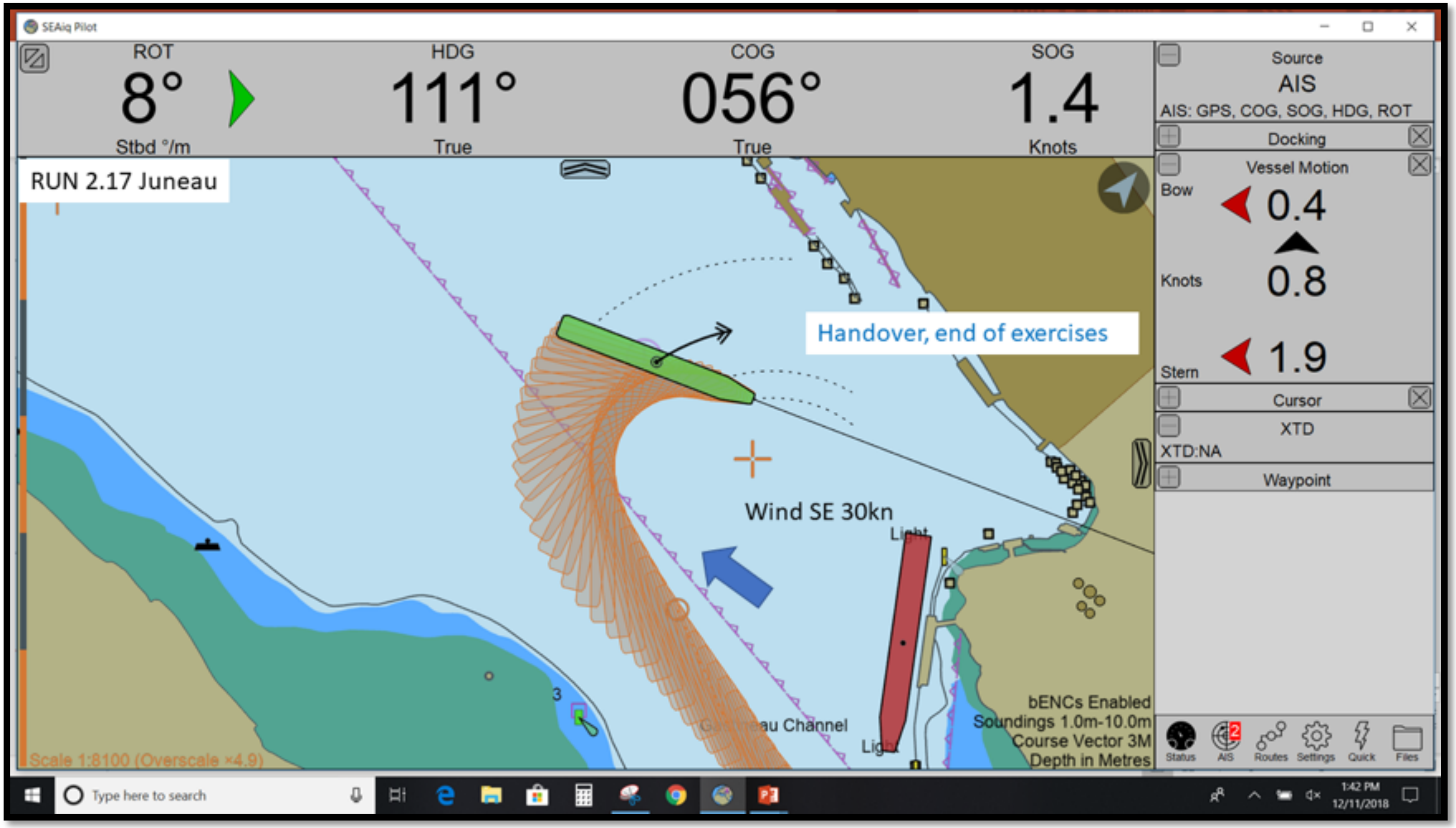

SEAiq Pilot
ROT
49°
Stbd °/m
HDG
024°
True
COG
355°
True
SOG
3.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
029°
Port
Beam
38
Metres
Eff Beam
191
Metres
Docking
Vessel Motion
Bow
2.7
Knots
3.3
Stern
6.4
Cursor
XTD
XTD:NA
Waypoint
RUN 2.16 Juneau
Wind SE 20kn
Current
1.5kn Flood
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:13k (Overscale ×3.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:10 PM
12/11/2018


SEAiq Pilot
ROT
0°
°/m
HDG
111°
True
COG
093°
True
SOG
2.0
Knots
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
Buffer Around Own-Ship
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF
3
5
10
Show Swept Path
See Help for important caveats
Trial Rate-of-Turn
Display alternate predicted course
Trial Speed
Simulate alternate speed for Own-Ship
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
Status
AIS
Routes
Settings
Quick
Files
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:11k (Overscale ×3.3)
Type here to search
1:13 PM
12/11/2018

Run 2.17 Juneau, Arrival, SE30kn, 0 Flood

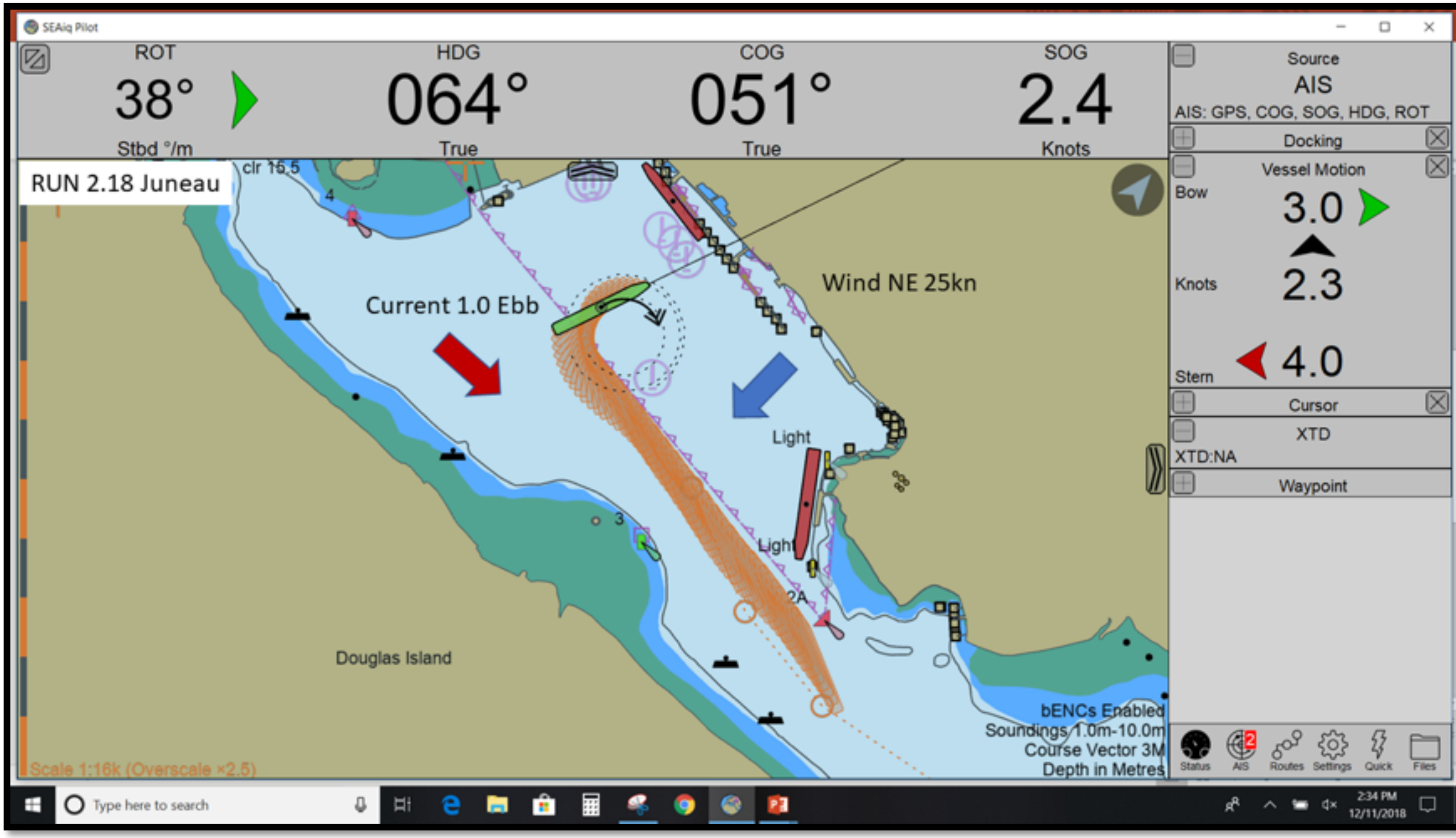

SEAiq Pilot
ROT
8°
Stbd °/m
HDG
323°
True
COG
314°
True
SOG
5.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Docking
Vessel Motion
Bow
0.1
Knots
5.2
Stern
1.5
Cursor
XTD
XTD:NA
Waypoint
RUN 2.17 Juneau
Light
Light
2A
3
Douglas Island
Wind SE 30kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:14k (Overscale ×2.7)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:33 PM
12/11/2018

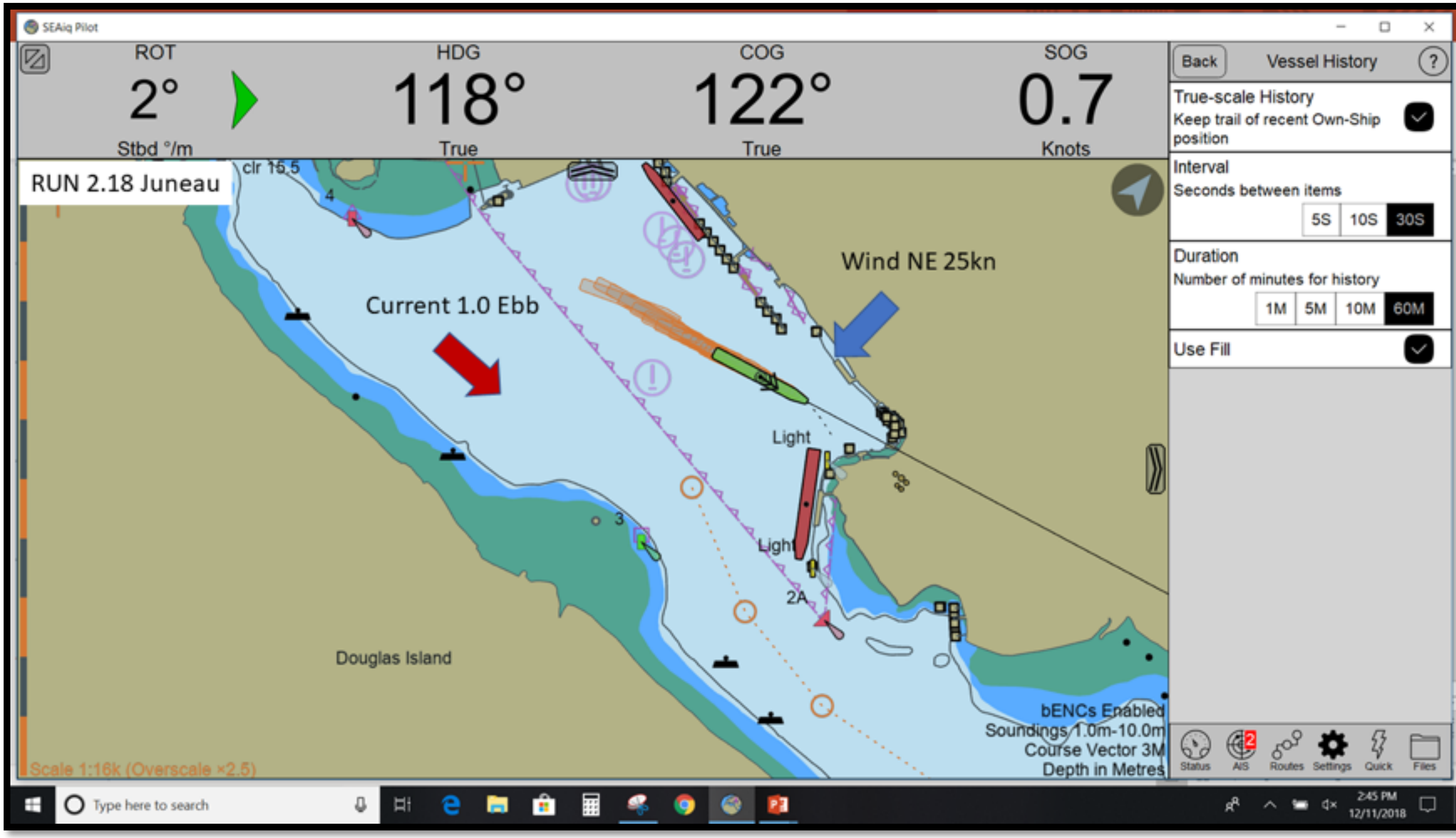

SEAiq Pilot
ROT
26°
Stbd °/m
HDG
352°
True
COG
336°
True
SOG
4.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Docking
Vessel Motion
Bow
1.0
Knots
4.6
Stern
3.8
Cursor
XTD
XTD:NA
Waypoint
RUN 2.17 Juneau
Wind SE 30kn
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:12k (Overscale ×3.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:38 PM
12/11/2018


SEAiq Pilot
ROT
8°
Stbd °/m
HDG
111°
True
COG
056°
True
SOG
1.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Docking
Vessel Motion
Bow
0.4
Knots
0.8
Stern
1.9
Cursor
XTD
XTD:NA
Waypoint
RUN 2.17 Juneau
Handover, end of exercises
Wind SE 30kn
Light
Channel
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8100 (Overscale ×4.9)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:42 PM
12/11/2018

Run 2.18 Juneau, Arrival, NE25kn, 1kn Ebb


SEAiq Pilot
ROT
6°
Port °/m
HDG
311°
True
COG
308°
True
SOG
6.9
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Docking
Vessel Motion
Bow
1.0
Knots
6.9
Stern
0.2
Cursor
XTD
XTD:NA
Waypoint
RUN 2.18 Juneau
Douglas Island
Current 1.0 Ebb
Wind NE 25kn
Light
2A
1D
Light
Douglas
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:15k (Overscale ×2.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:15 PM
12/11/2018


SEAiq Pilot
ROT
38°
Stbd °/m
HDG
064°
True
COG
051°
True
SOG
2.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Docking
Vessel Motion
Bow
3.0
Knots
2.3
Stern
4.0
Cursor
XTD
XTD:NA
Waypoint
RUN 2.18 Juneau
Current 1.0 Ebb
Wind NE 25kn
Light
Light
Douglas Island
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:16k (Overscale ×2.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:34 PM
12/11/2018

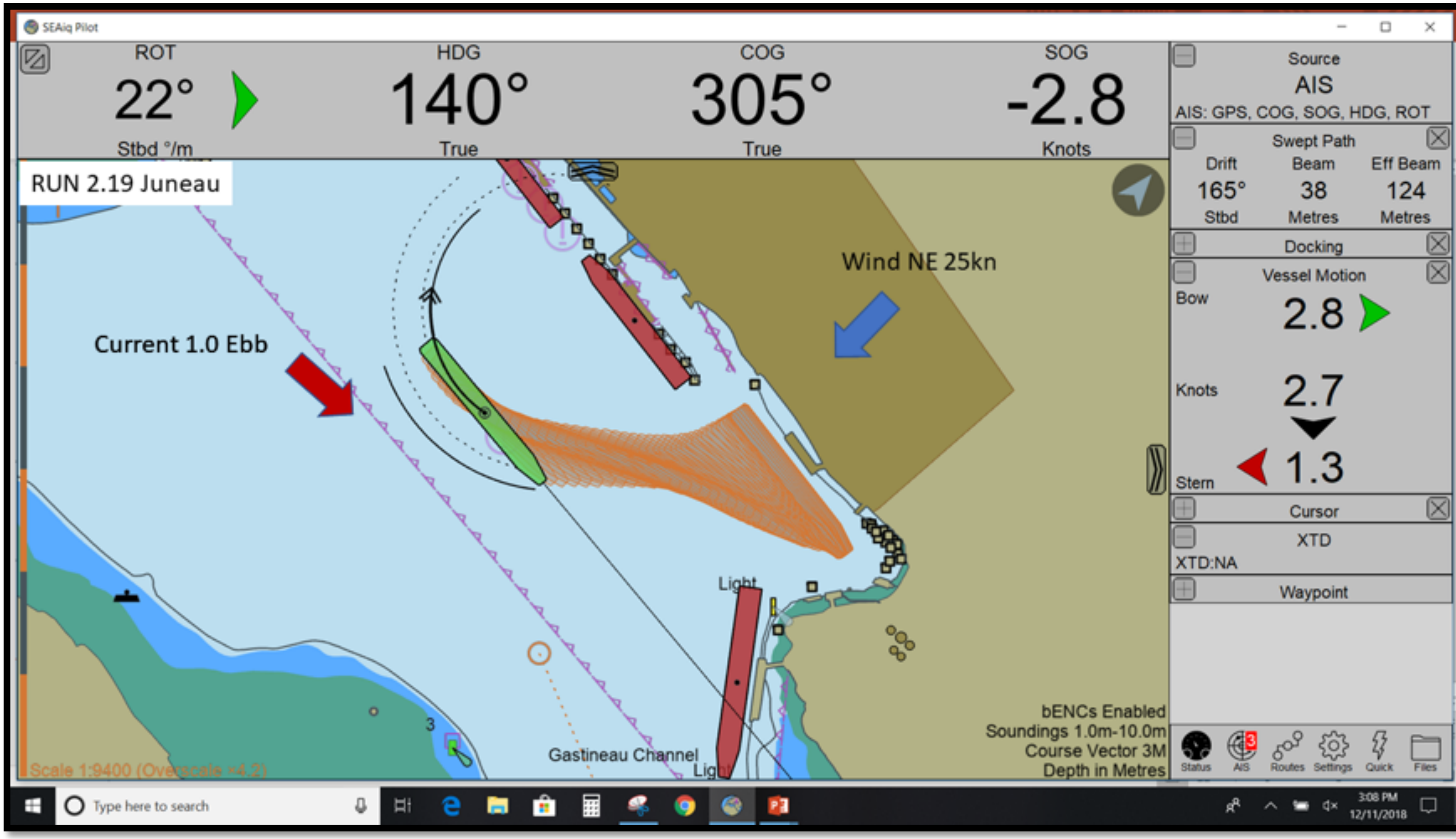

SEAiq Pilot
ROT
2°
Stbd °/m
HDG
118°
True
COG
122°
True
SOG
0.7
Knots
Back
Vessel History
True-scale History
Keep trail of recent Own-Ship position
Interval
Seconds between items
5S
10S
30S
Duration
Number of minutes for history
1M
5M
10M
60M
Use Fill
RUN 2.18 Juneau
clr 15.5
Current 1.0 Ebb
Wind NE 25kn
Light
Light
2A
Douglas Island
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:16k (Overscale ×2.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:45 PM
12/11/2018

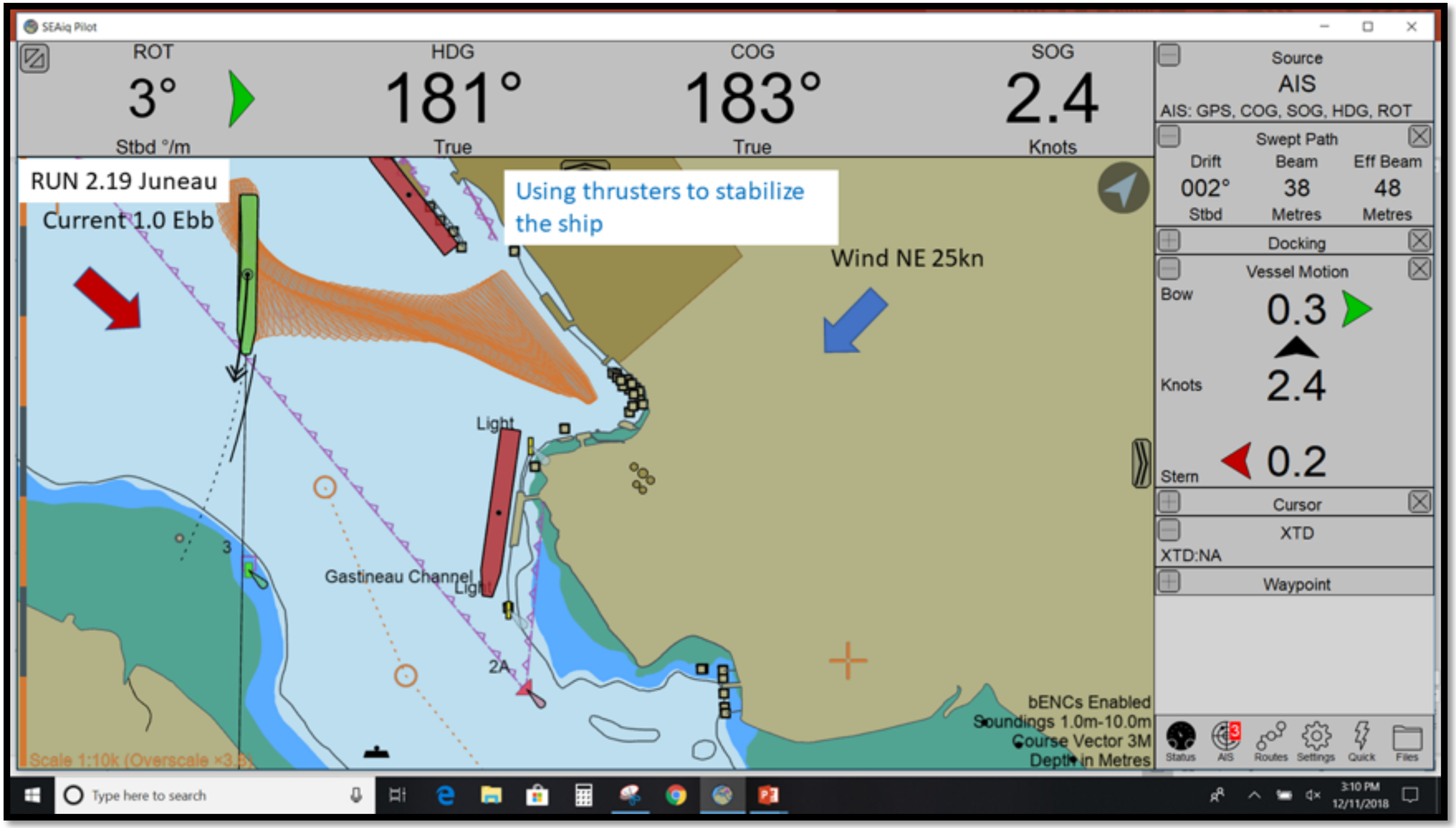
Run 2.19 Juneau, Arrival, NE 25Kn, 1kn Ebb

2.19 NE 25kn, 1kn Ebb, Juneau Departure

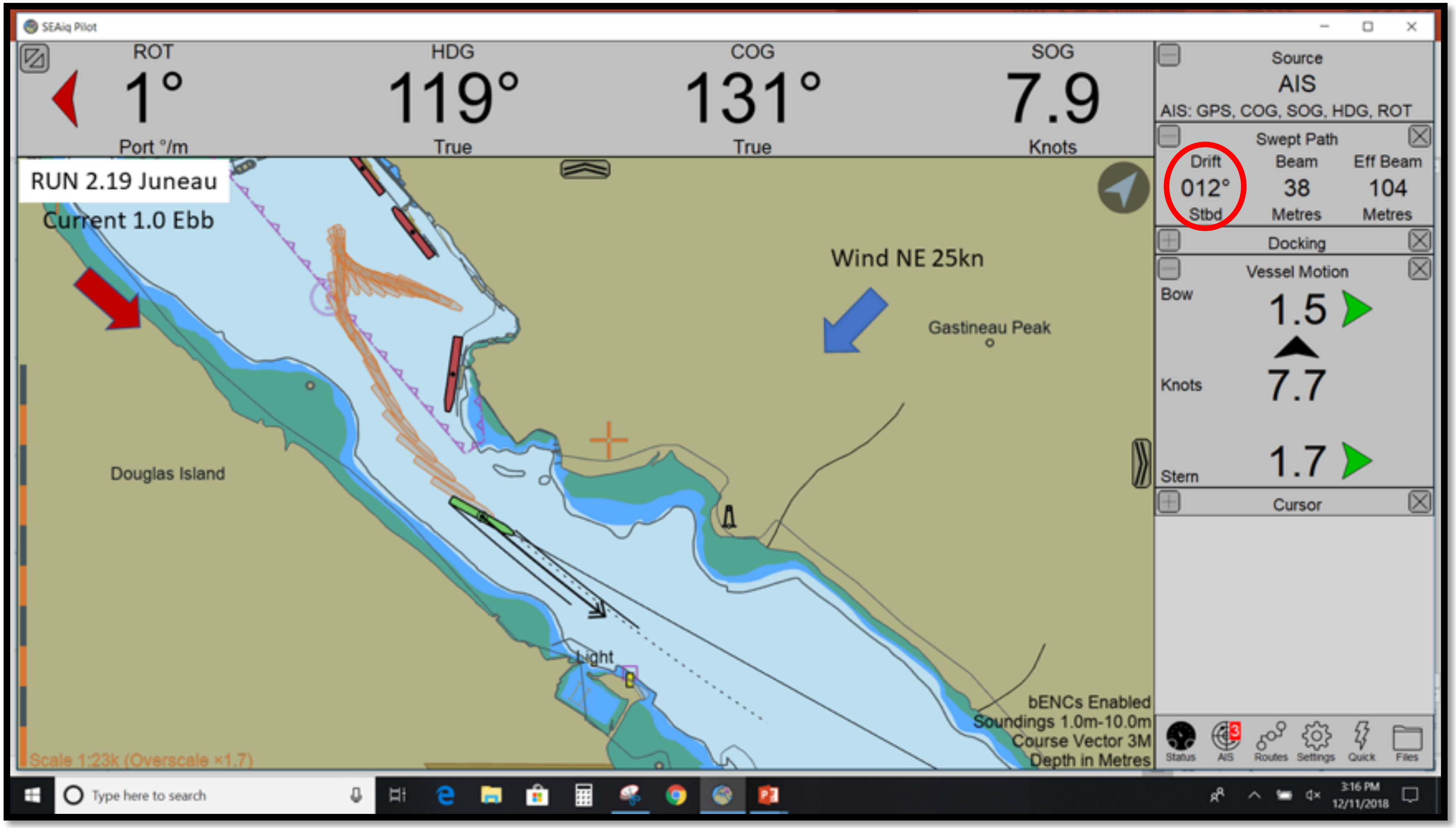
Tuesday 12/11/2018

9th Run


SEAiq Pilot
ROT
22°
Stbd °/m
HDG
140°
True
COG
305°
True
SOG
-2.8
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
165°
Stbd
Beam
38
Metres
Eff Beam
124
Metres
Docking
Vessel Motion
Bow
2.8
Knots
2.7
Stern
1.3
Cursor
XTD
XTD:NA
Waypoint
RUN 2.19 Juneau
Wind NE 25kn
Current 1.0 Ebb
Light
Gastineau Channel
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:08 PM
12/11/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
181°
True
COG
183°
True
SOG
2.4
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
002°
Stbd
Beam
38
Metres
Eff Beam
48
Metres
Docking
Vessel Motion
Bow
0.3
Knots
2.4
Stern
0.2
Cursor
XTD
XTD:NA
Waypoint
RUN 2.19 Juneau
Current 1.0 Ebb
Using thrusters to stabilize the ship
Wind NE 25kn
Light
Gastineau Channel
2A
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:10 PM
12/11/2018


SEAiq Pilot
ROT
14°
Port °/m
HDG
146°
True
COG
151°
True
SOG
5.3
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
005°
Stbd
Beam
38
Metres
Eff Beam
69
Metres
Docking
Vessel Motion
Bow
0.9
Knots
5.3
Stern
1.8
Cursor
XTD
XTD:NA
Waypoint
RUN 2.19 Juneau
Current 1.0 Ebb
Wind NE 25kn
Light
Gastineau Channel
2A
3
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:10k (Overscale ×3.8)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:12 PM
12/11/2018

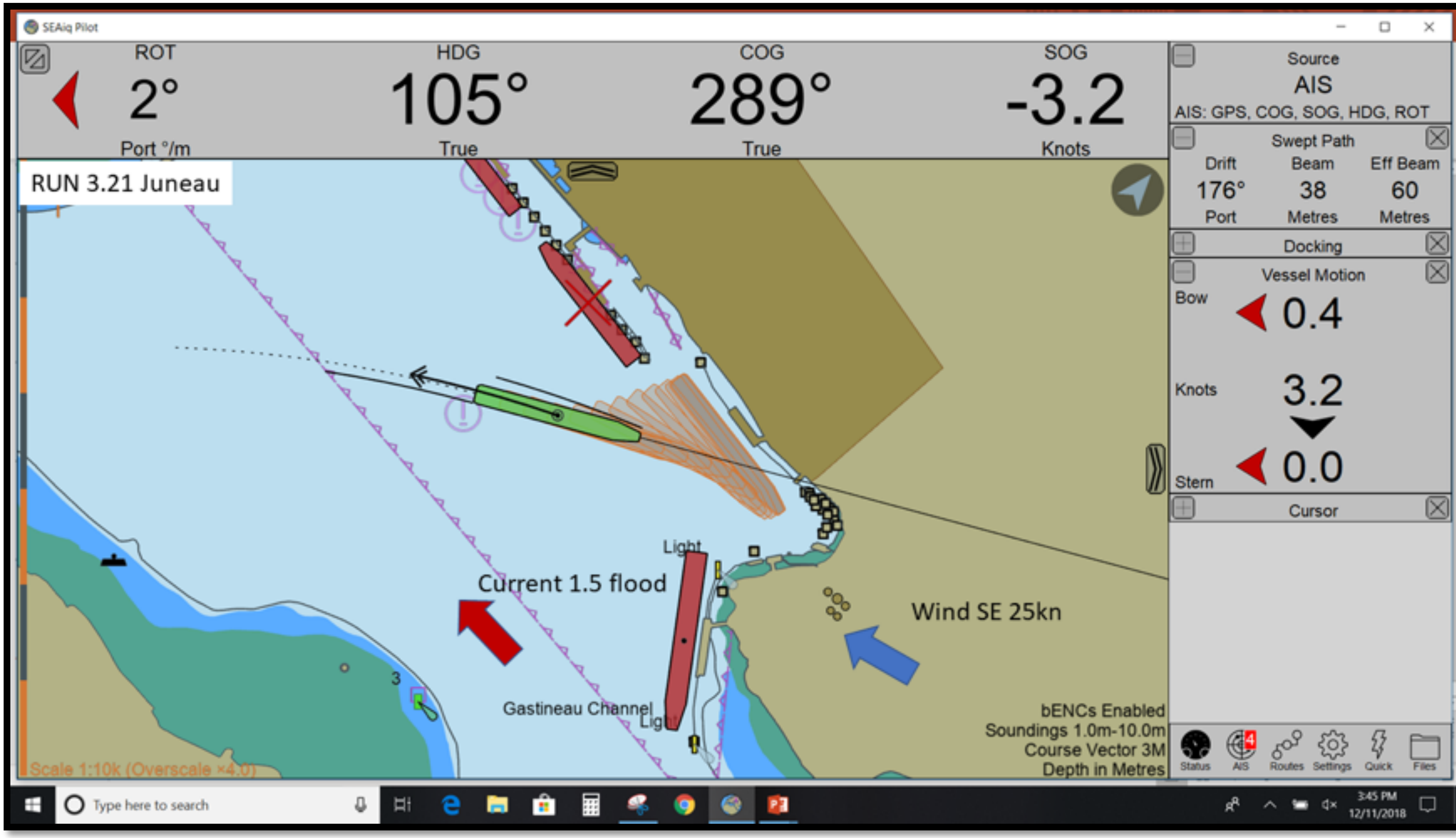

SEAiq Pilot
ROT
1°
Port °/m
HDG
119°
True
COG
131°
True
SOG
7.9
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
012°
Stbd
Beam
38
Metres
Eff Beam
104
Metres
Docking
Vessel Motion
Bow
1.5
Knots
7.7
1.7
Stern
Cursor
RUN 2.19 Juneau
Current 1.0 Ebb
Wind NE 25kn
Gastineau Peak
Douglas Island
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:23k (Overscale ×1.7)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:16 PM
12/11/2018

Run 3.21 Juneau, Departure, SE25, 1.5 Flood

3.21 SE 25 Flood 1.5kn, Juneau Departure

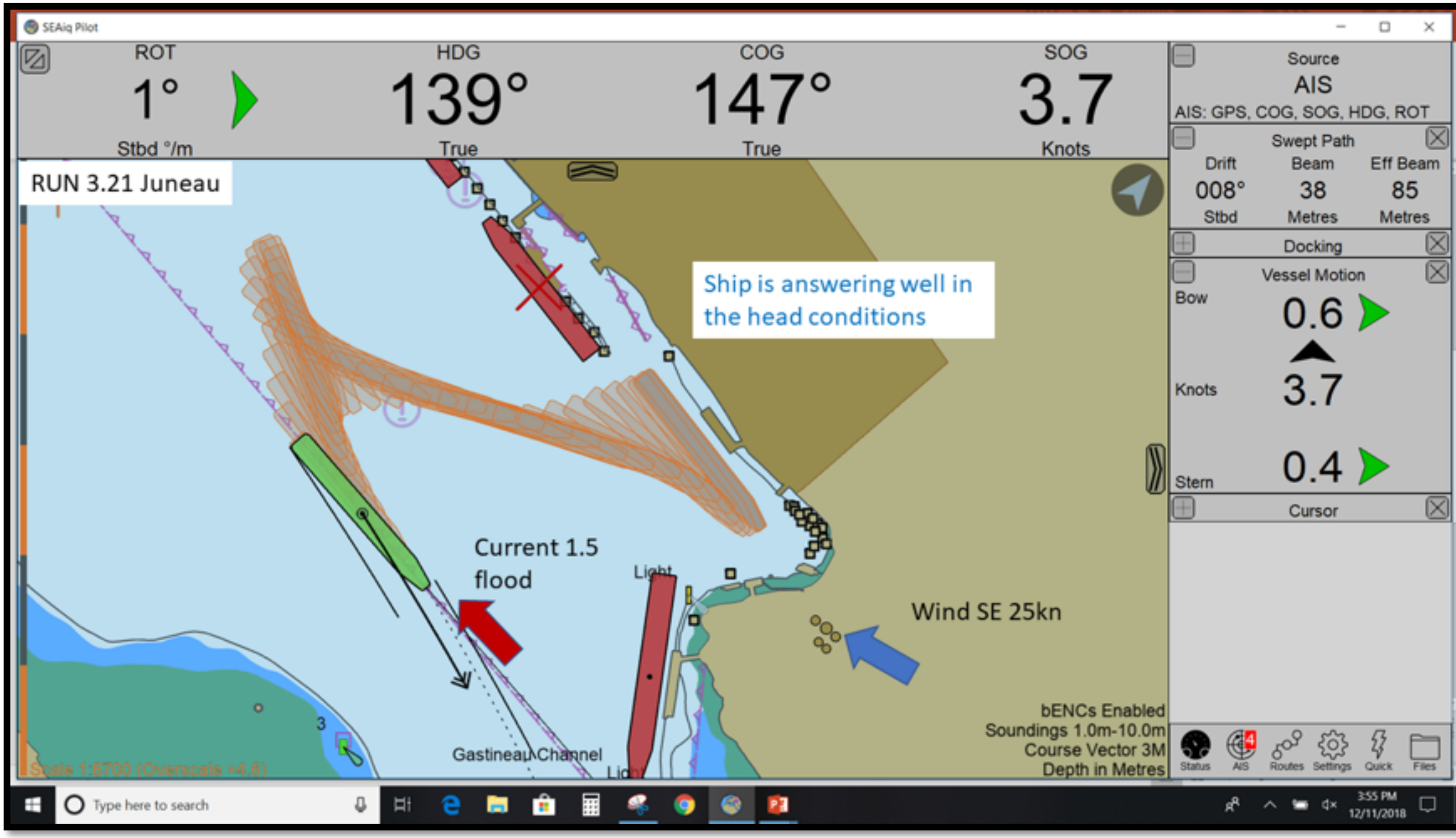
Tuesday 12/11/2018

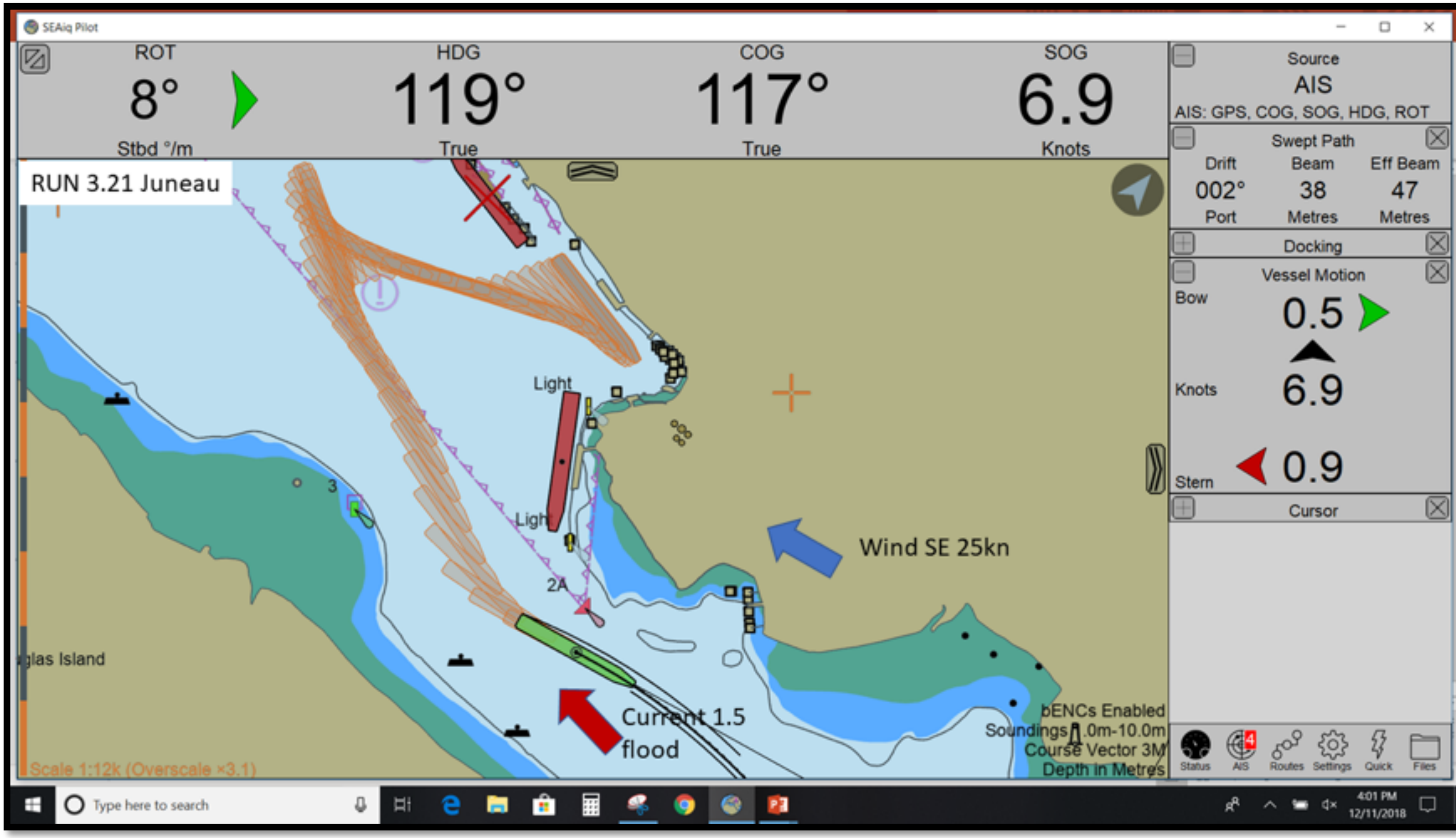
10th Run



SEAiq Pilot
ROT
2°
Port °/m
HDG
105°
True
COG
289°
True
SOG
-3.2
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
176°
Port
Beam
38
Metres
Eff Beam
60
Metres
Docking
Vessel Motion
Bow
0.4
Knots
3.2
Stern
0.0
Cursor
RUN 3.21 Juneau
Current 1.5 flood
Wind SE 25kn
Light
Gastineau Channel
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:45 PM
12/11/2018


SEAiq Pilot
ROT
11°
Stbd °/m
HDG
154°
True
COG
285°
True
SOG
-0.1
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
131°
Stbd
Beam
38
Metres
Eff Beam
274
Metres
Docking
Vessel Motion
Bow
1.1
Knots
0.1
Stern
1.0
Cursor
RUN 3.21 Juneau
Rudders were hard to starboard and 60RPM ahead with 3kn of sternway on the ship.
Current 1.5 flood
Wind SE 25kn
Gastineau Channel
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:50 PM
12/11/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
139°
True
COG
147°
True
SOG
3.7
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
85
Metres
Docking
Vessel Motion
Bow
0.6
Knots
3.7
Stern
0.4
Cursor
RUN 3.21 Juneau
Ship is answering well in the head conditions
Current 1.5 flood
Wind SE 25kn
Gastineau Channel
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
3:55 PM
12/11/2018

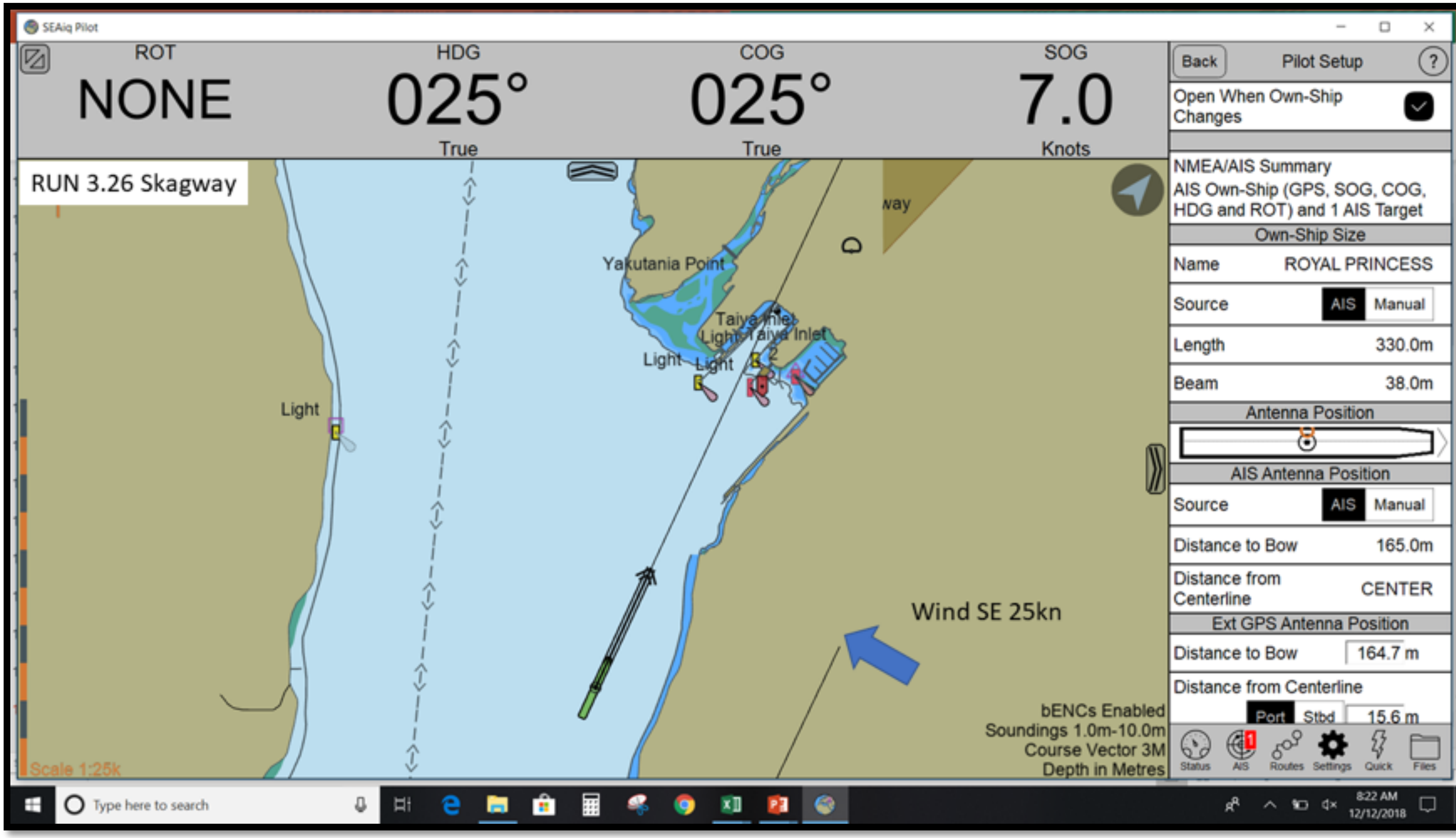

SEAiq Pilot
ROT
8°
Stbd °/m
HDG
119°
True
COG
117°
True
SOG
6.9
Knots
Source
AIS
AIS: GPS, COG, SOG, HDG, ROT
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
47
Metres
Docking
Vessel Motion
Bow
0.5
6.9
Knots
Stern
0.9
Cursor
RUN 3.21 Juneau
Light
Wind SE 25kn
Current 1.5
flood
glas Island
Scale 1:12k (Overscale ×3.1)
bENCs Enabled
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
4:01 PM
12/11/2018

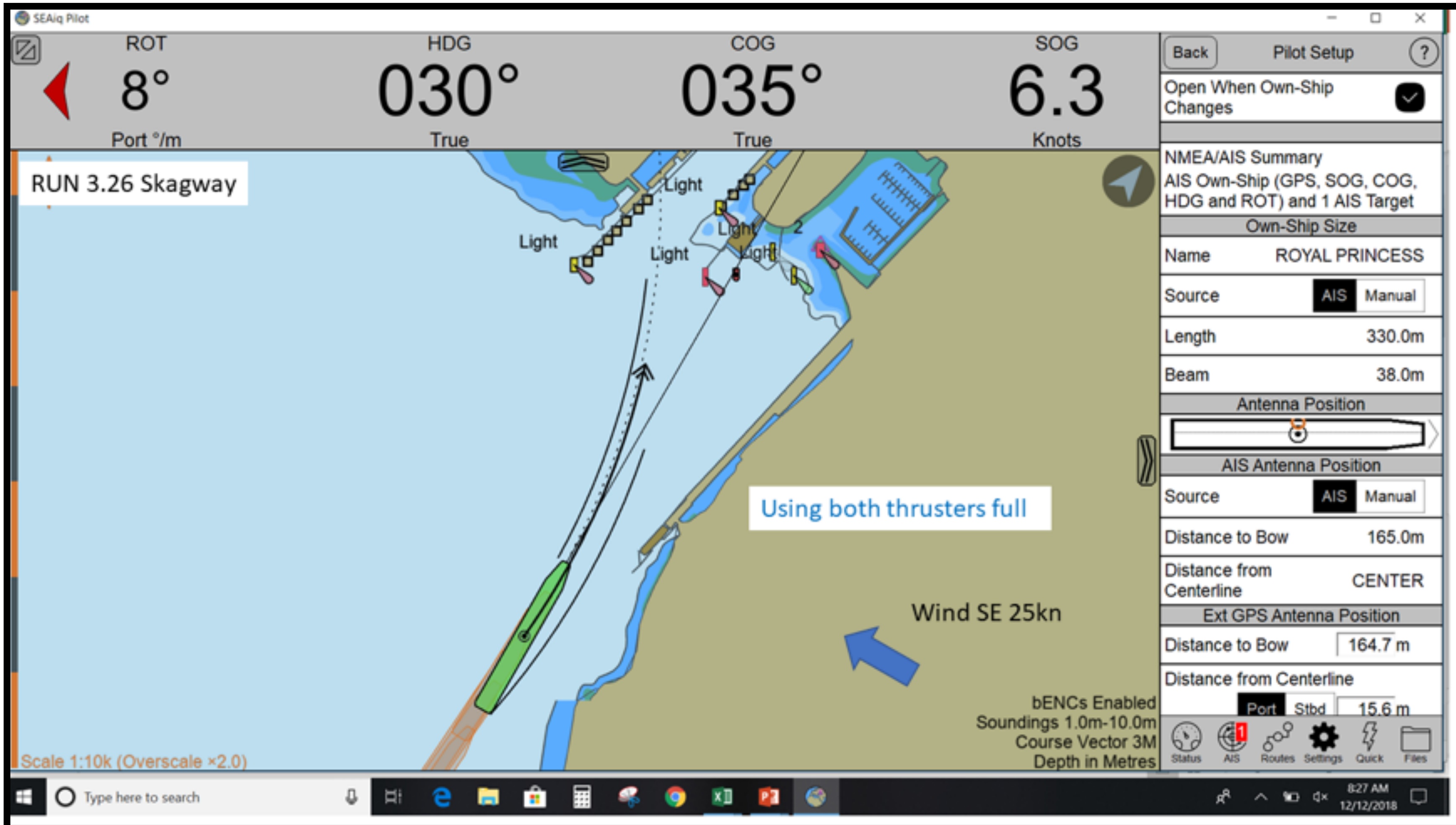
Run 3.26, Skagway, SE 25kn

3.26 SE 25kn, No Current, Skagway Arriving

Wednesday 12/12/2018

1st Run


SEAiq Pilot
ROT
NONE
HDG
025°
True
COG
025°
True
SOG
7.0
Knots
RUN 3.26 Skagway
Yakutania Point
Taiya Inlet
Light
Wind SE 25kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Back
Pilot Setup
Open When Own-Ship Changes
NMEA/AIS Summary
AIS Own-Ship (GPS, SOG, COG, HDG and ROT) and 1 AIS Target
Own-Ship Size
Name ROYAL PRINCESS
Source AIS Manual
Length 330.0m
Beam 38.0m
Antenna Position
AIS Antenna Position
Source AIS Manual
Distance to Bow 165.0m
Distance from Centerline CENTER
Ext GPS Antenna Position
Distance to Bow 164.7 m
Distance from Centerline
Port Stbd 15.6 m
Status AIS Routes Settings Quick Files
Type here to search
8:22 AM
12/12/2018


SEAiq Pilot
ROT
8°
Port °/m
HDG
030°
True
COG
035°
True
SOG
6.3
Knots
RUN 3.26 Skagway
Light
Light
Light
Using both thrusters full
Wind SE 25kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:10k (Overscale ×2.0)
Back
Pilot Setup
Open When Own-Ship Changes
NMEA/AIS Summary
AIS Own-Ship (GPS, SOG, COG, HDG and ROT) and 1 AIS Target
Own-Ship Size
Name ROYAL PRINCESS
Source AIS Manual
Length 330.0m
Beam 38.0m
Antenna Position
AIS Antenna Position
Source AIS Manual
Distance to Bow 165.0m
Distance from Centerline CENTER
Ext GPS Antenna Position
Distance to Bow 164.7 m
Distance from Centerline
Port Stbd 15.6 m
Status AIS Routes Settings Quick Files
Type here to search
8:27 AM
12/12/2018


SEAiq Pilot
ROT
11°
Stbd °/m
HDG
031°
True
COG
040°
True
SOG
4.8
Knots
Back
Pilot Setup
Open When Own-Ship Changes
NMEA/AIS Summary
AIS Own-Ship (GPS, SOG, COG, HDG and ROT) and 1 AIS Target
Own-Ship Size
Name ROYAL PRINCESS
Source AIS Manual
Length 330.0m
Beam 38.0m
Antenna Position
AIS Antenna Position
Source AIS Manual
Distance to Bow 165.0m
Distance from Centerline CENTER
Ext GPS Antenna Position
Distance to Bow 164.7 m
Distance from Centerline
Port Stbd 15.6 m
RUN 3.26 Skagway
60 astern on both
Wind SE 25kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:5300 (Overscale ×3.7)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:29 AM
12/12/2018


SEAiq Pilot
ROT
8°
Stbd °/m
HDG
042°
True
COG
060°
True
SOG
1.9
Knots
Source
Alarms
Swept Path
Drift
018°
Stbd
Beam
38
Metres
Eff Beam
135
Metres
Docking
Vessel Motion
Bow
1.3
Knots
1.8
Stern
0.1
Cursor
59°26.7337'N
135°19.2531'W
BRG
102°
True
Range
293
Metres
TTG
03:38
Minutes
CPA:199m in 3m40s
RUN 3.26 Skagway
Light
54m
54m
Wind SE 25kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:5300 (Overscale ×3.7)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:31 AM
12/12/2018

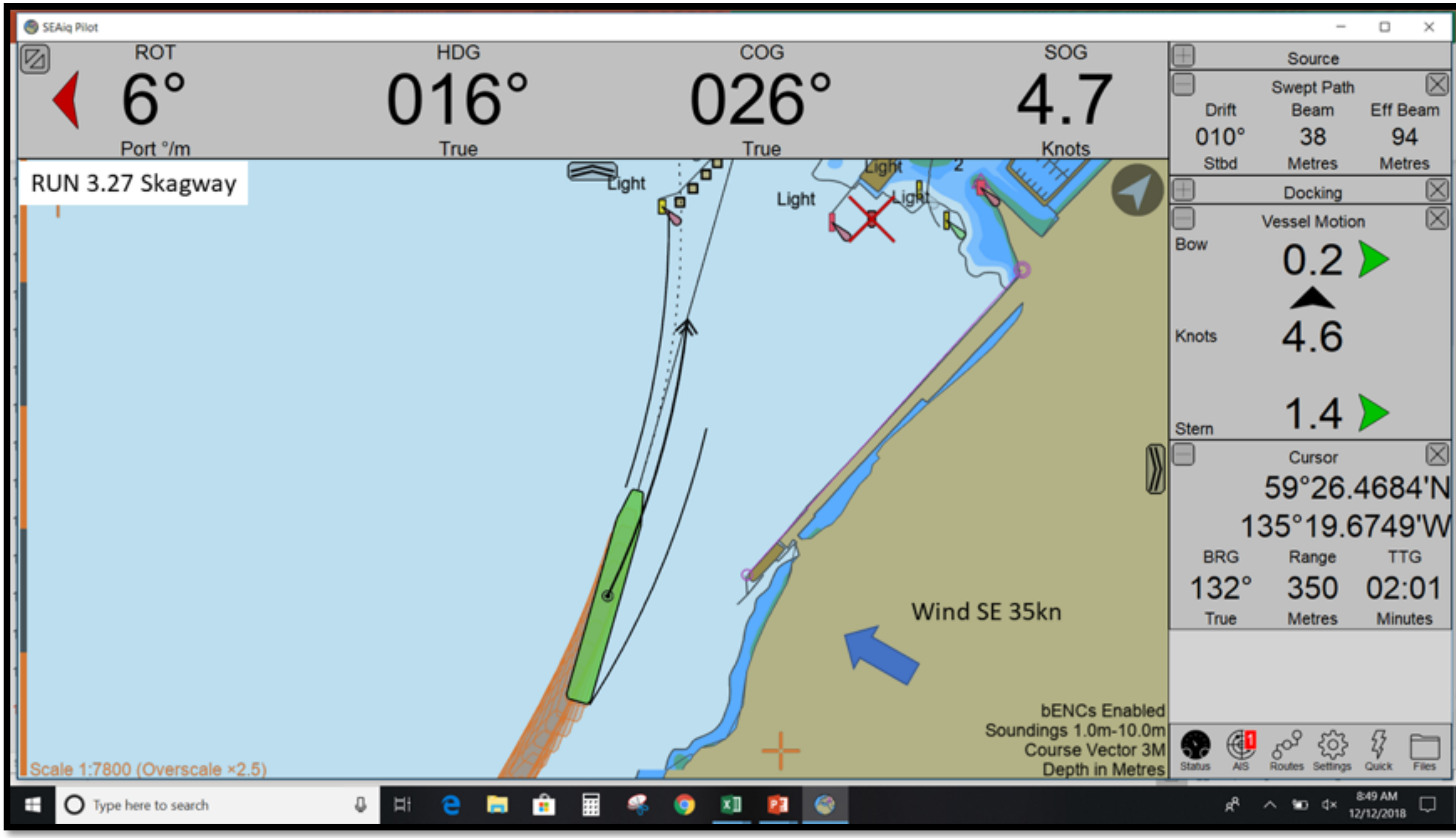
Run 3.27, Skagway, SE 35kn

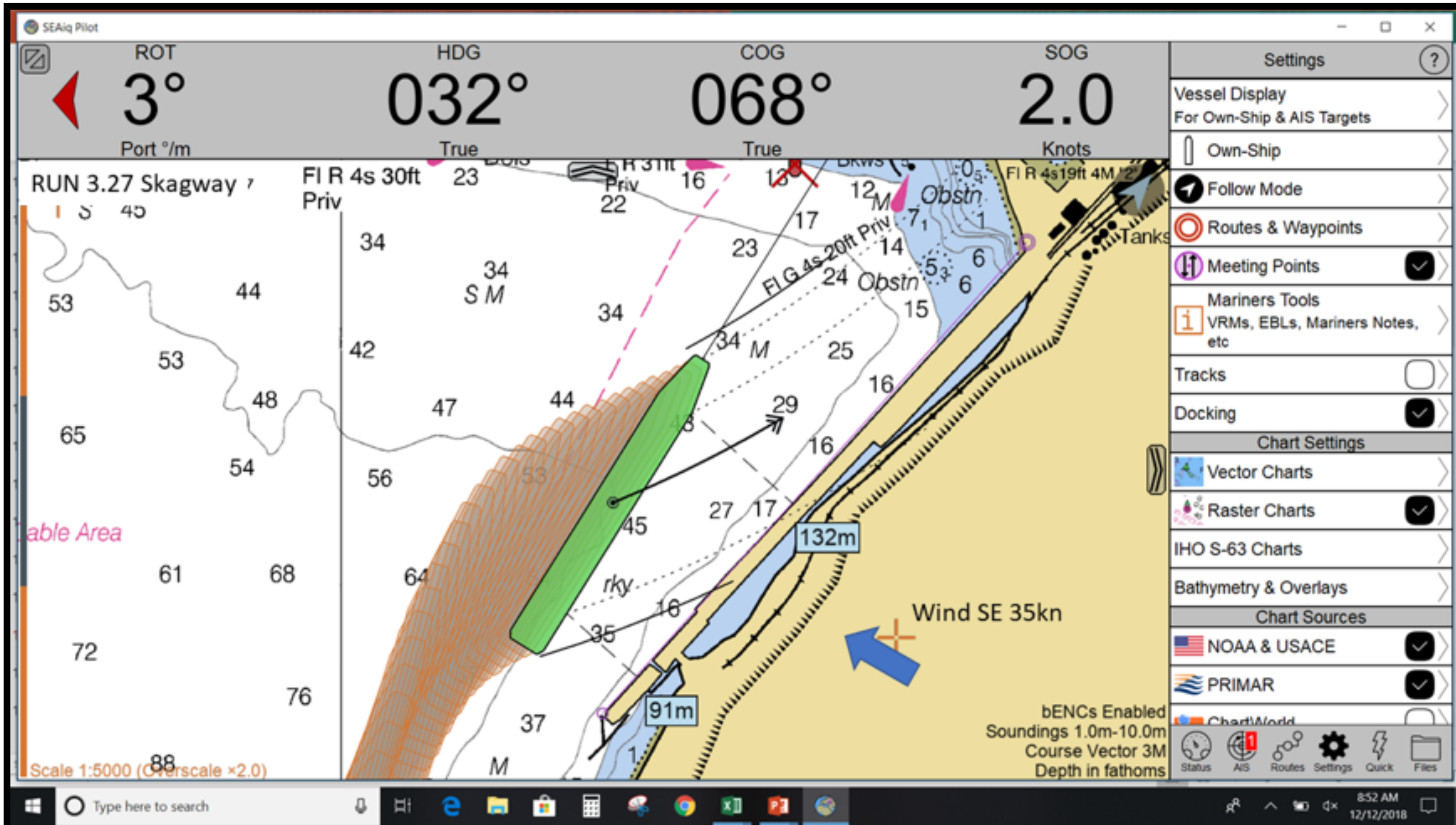
3.27 SE 35kn, No Current, Skagway Arriving

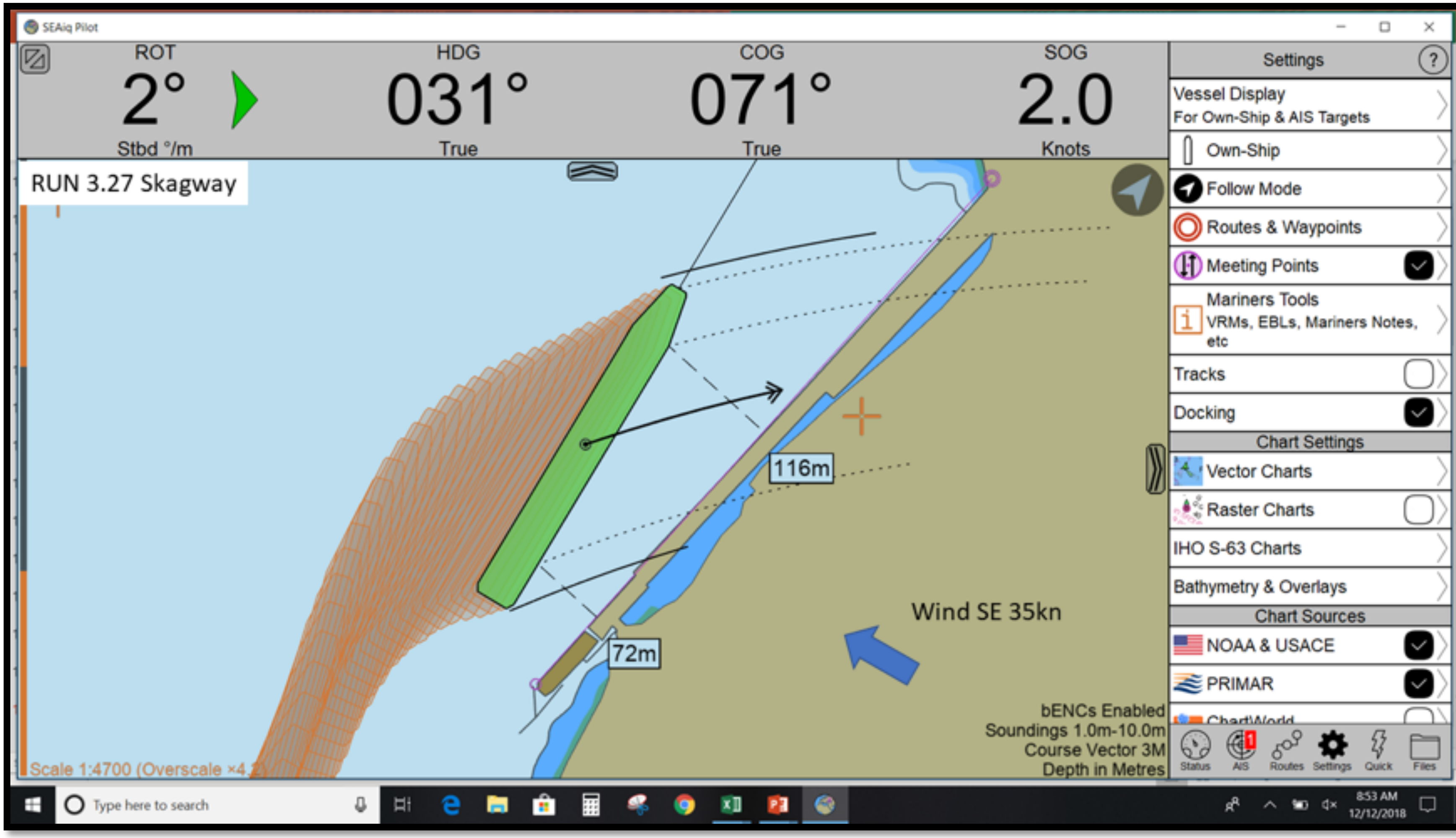
Wednesday 12/12/2018

2nd Run


SEAiq Pilot
ROT
8°
Port °/m
HDG
030°
True
COG
028°
True
SOG
6.4
Knots
RUN 3.27 Skagway
Light
Source
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
50
Metres
Docking
Vessel Motion
Bow
0.9
Knots
6.4
Stern
0.5
Cursor
59°26.1090'N
135°20.2645'W
BRG
195°
True
Range
716
Metres
TTG
03:22
Minutes
Wind SE 35kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:15k (Overscale ×5.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:47 AM
12/12/2018


SEAiq Pilot
ROT
6°
Port °/m
HDG
016°
True
COG
026°
True
SOG
4.7
Knots
RUN 3.27 Skagway
Light
Light
Light
Light
Wind SE 35kn
Scale 1:7800 (Overscale ×2.5)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Source
Swept Path
Drift
010°
Stbd
Beam
38
Metres
Eff Beam
94
Metres
Docking
Vessel Motion
Bow
0.2
Knots
4.6
Stern
1.4
Cursor
59°26.4684'N
135°19.6749'W
BRG
132°
True
Range
350
Metres
TTG
02:01
Minutes
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:49 AM
12/12/2018


SEAiq Pilot
ROT
3°
Port °/m
HDG
032°
True
COG
068°
True
SOG
2.0
Knots
RUN 3.27 Skagway
Wind SE 35kn
132m
91m
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in fathoms
Scale 1:5000 (Overscale ×2.0)
Settings
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Follow Mode
Routes & Waypoints
Meeting Points
Mariners Tools
VRMs, EBLs, Mariners Notes, etc
Tracks
Docking
Chart Settings
Vector Charts
Raster Charts
IHO S-63 Charts
Bathymetry & Overlays
Chart Sources
NOAA & USACE
PRIMAR
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:52 AM
12/12/2018


SEAiq Pilot
ROT
2°
Stbd °/m
HDG
031°
True
COG
071°
True
SOG
2.0
Knots
RUN 3.27 Skagway
116m
72m
Wind SE 35kn
Scale 1:4700 (Overscale ×4.3)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Settings
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Follow Mode
Routes & Waypoints
Meeting Points
Mariners Tools
VRMs, EBLs, Mariners Notes, etc
Tracks
Docking
Chart Settings
Vector Charts
Raster Charts
IHO S-63 Charts
Bathymetry & Overlays
Chart Sources
NOAA & USACE
PRIMAR
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:53 AM
12/12/2018

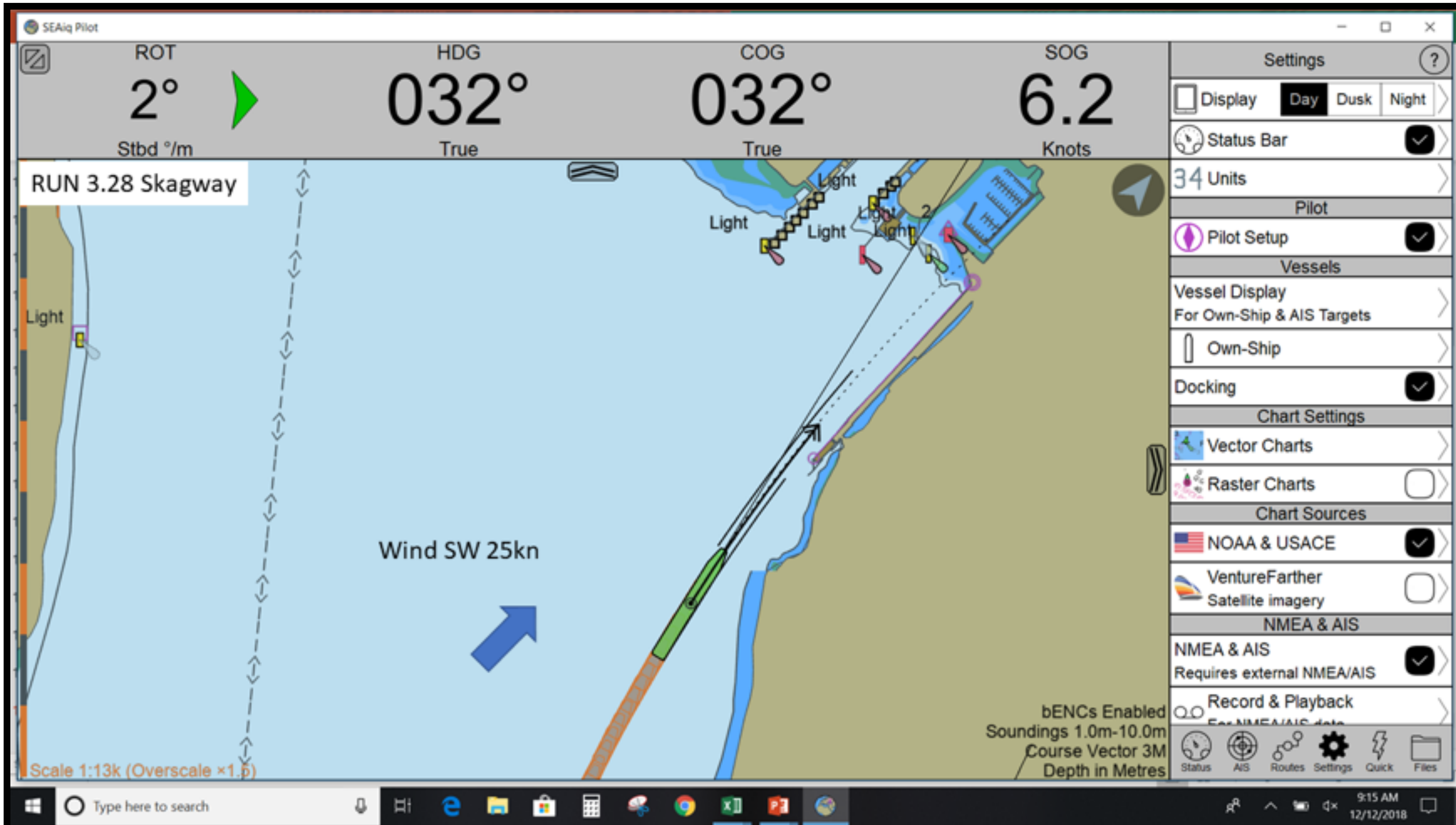

SEAiq Pilot
ROT
0°
°/m
HDG
043°
True
COG
060°
True
SOG
1.0
Knots
Source
Swept Path
Drift
017°
Stbd
Beam
38
Metres
Eff Beam
134
Metres
Docking
Vessel Motion
Bow
0.3
Knots
1.0
Stern
0.3
RUN 3.27 Skagway
42m
46m
Wind SE 35kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:5600 (Overscale ×3.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
8:56 AM
12/12/2018

Run 3.28, Skagway, SW 25kn

3.28 SW 25kn, No Current, Skagway Arriving

Wednesday 12/12/2018

3rd Run


SEAiq Pilot
ROT
2°
Stbd °/m
HDG
032°
True
COG
032°
True
SOG
6.2
Knots
RUN 3.28 Skagway
Light
Light
Light
Light
Light
Light
Wind SW 25kn
Scale 1:13k (Overscale ×1.5)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Settings
Display
Day
Dusk
Night
Status Bar
Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:15 AM
12/12/2018


SEAiq Pilot
ROT
4°
Stbd °/m
HDG
036°
True
COG
038°
True
SOG
4.3
Knots
RUN 3.28 Skagway
Wind SW 25kn
Handover
Scale 1:8300 (Overscale ×2.4)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Settings
Display
Day
Dusk
Night
Status Bar
34 Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:17 AM
12/12/2018

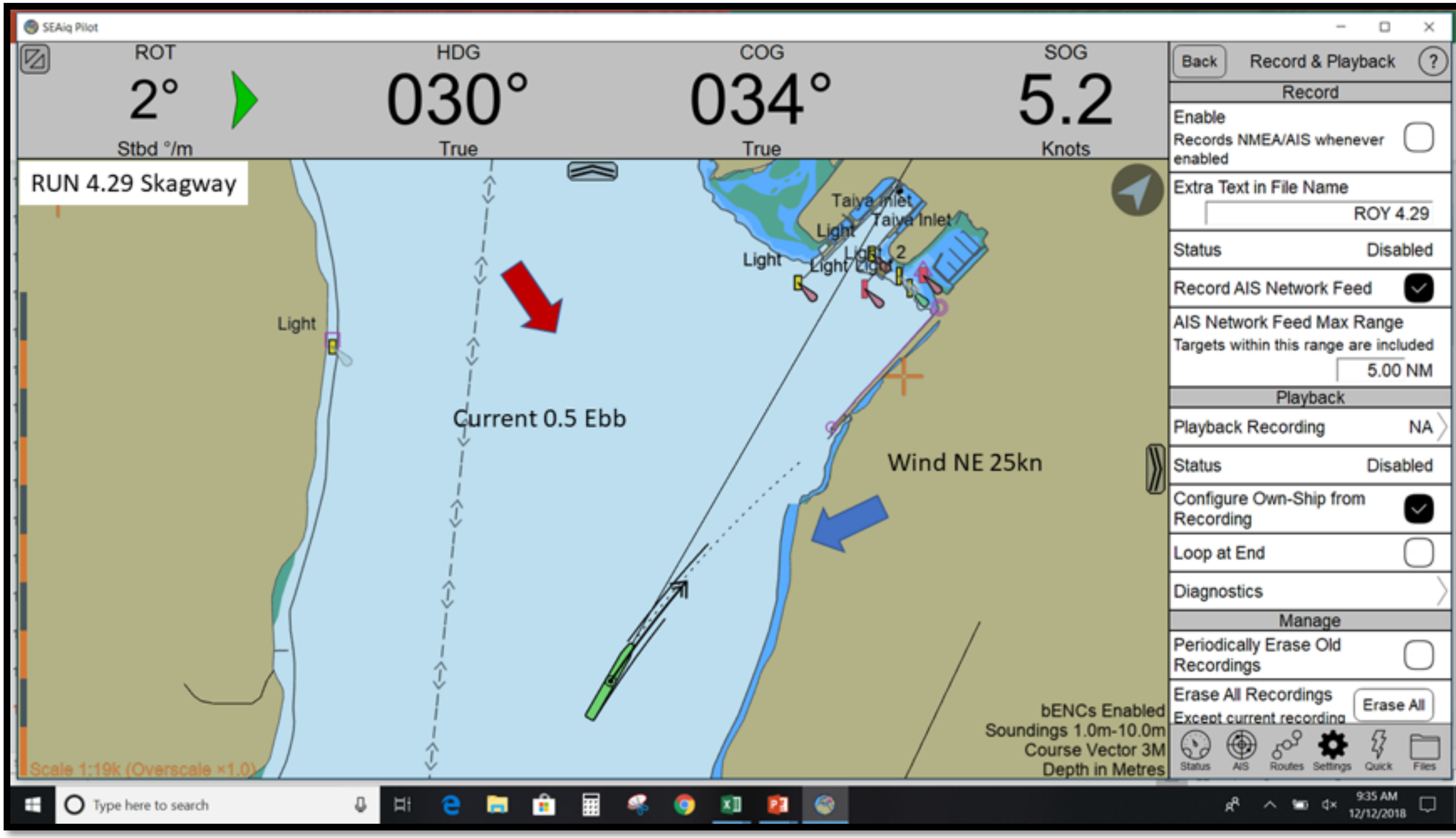

SEAiq Pilot
ROT
0°
°/m
HDG
044°
True
COG
050°
True
SOG
1.0
Knots
RUN 3.28 Skagway
Wind SW 25kn
28.7m
37m
Scale 1:5000 (Overscale ×4.0)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Settings
Display
Day
Dusk
Night
Status Bar
34 Units
Pilot
Pilot Setup
Vessels
Vessel Display
For Own-Ship & AIS Targets
Own-Ship
Docking
Chart Settings
Vector Charts
Raster Charts
Chart Sources
NOAA & USACE
VentureFarther
Satellite imagery
NMEA & AIS
NMEA & AIS
Requires external NMEA/AIS
Record & Playback
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:24 AM
12/12/2018

Run 4.29, Skagway, Arrival, NE 25kn

4.29 NE 25kn, 0.5 Ebb Current, Skagway Arriving

Wednesday 12/12/2018

4th Run



SEAiq Pilot
ROT
2°
Stbd °/m
HDG
030°
True
COG
034°
True
SOG
5.2
Knots
RUN 4.29 Skagway
Current 0.5 Ebb
Wind NE 25kn
Light
Taiya Inlet
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:19k (Overscale ×1.0)
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 4.29
Status
Disabled
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Erase All Recordings
Except current recording
Erase All
Status
AIS
Routes
Settings
Quick
Files
Type here to search
9:35 AM
12/12/2018

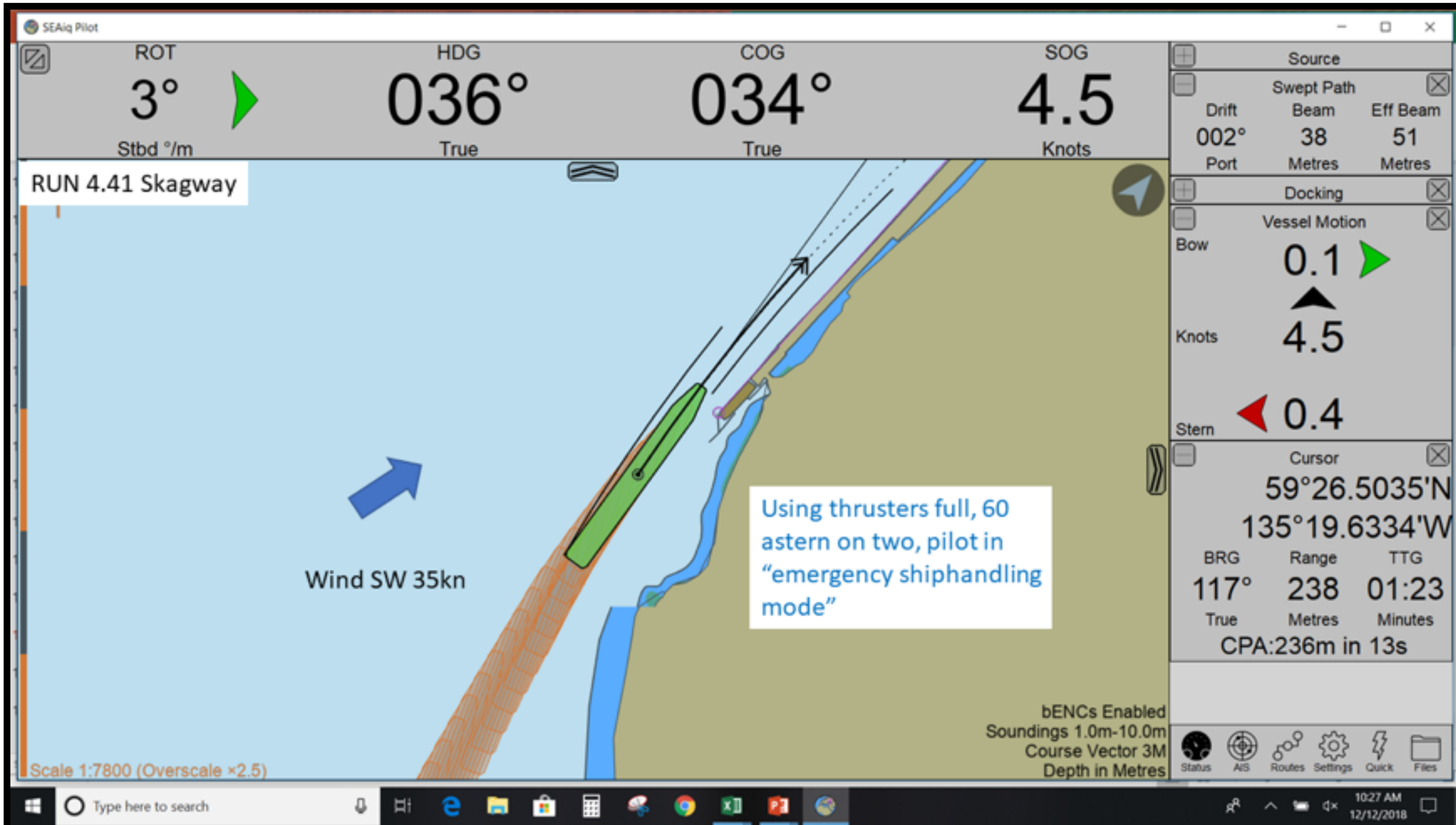
Run 4.41, Skagway, SW 35kn

4.41 SW 35kn, Wind Driven Current, Skagway Arriving

Wednesday 12/12/2018

5th Run


SEAiq Pilot
ROT
5°
Port °/m
HDG
022°
True
COG
030°
True
SOG
7.0
Knots
Source
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
84
Metres
Docking
Vessel Motion
Bow
0.5
Knots
6.9
Stern
1.5
Cursor
59°26.6899'N
135°19.2995'W
BRG
047°
True
Range
1267
Metres
TTG
05:52
Minutes
CPA:360m in 5m37s
RUN 4.41 Skagway
Light
Taiya Inlet
Wind SW 35kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:17k (Overscale ×1.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:24 AM
12/12/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
036°
True
COG
034°
True
SOG
4.5
Knots
Source
Swept Path
Drift
002°
Port
Beam
38
Metres
Eff Beam
51
Metres
Docking
Vessel Motion
Bow
0.1
Knots
4.5
Stern
0.4
Cursor
59°26.5035'N
135°19.6334'W
BRG
117°
True
Range
238
Metres
TTG
01:23
Minutes
CPA:236m in 13s
RUN 4.41 Skagway
Wind SW 35kn
Using thrusters full, 60 astern on two, pilot in "emergency shiphandling mode"
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:7800 (Overscale ×2.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:27 AM
12/12/2018


SEAiq Pilot
ROT
6°
Stbd °/m
HDG
038°
True
COG
038°
True
SOG
2.3
Knots
Source
Swept Path
Drift
001°
Port
Beam
38
Metres
Eff Beam
41
Metres
Docking
Vessel Motion
Bow
0.6
Knots
2.3
Stern
0.6
Cursor
59°26.5810'N
135°19.3244'W
BRG
114°
True
Range
399
Metres
TTG
04:04
Minutes
CPA:387m in 1m20s
RUN 4.41 Skagway
46m
Handover to Capt.
Wind SW 35kn
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6400 (Overscale ×3.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:30 AM
12/12/2018

Run 4.30, Skagway, SE 25kn

4.30 SE 25kn, No Current, Skagway Departure

Wednesday 12/12/2018

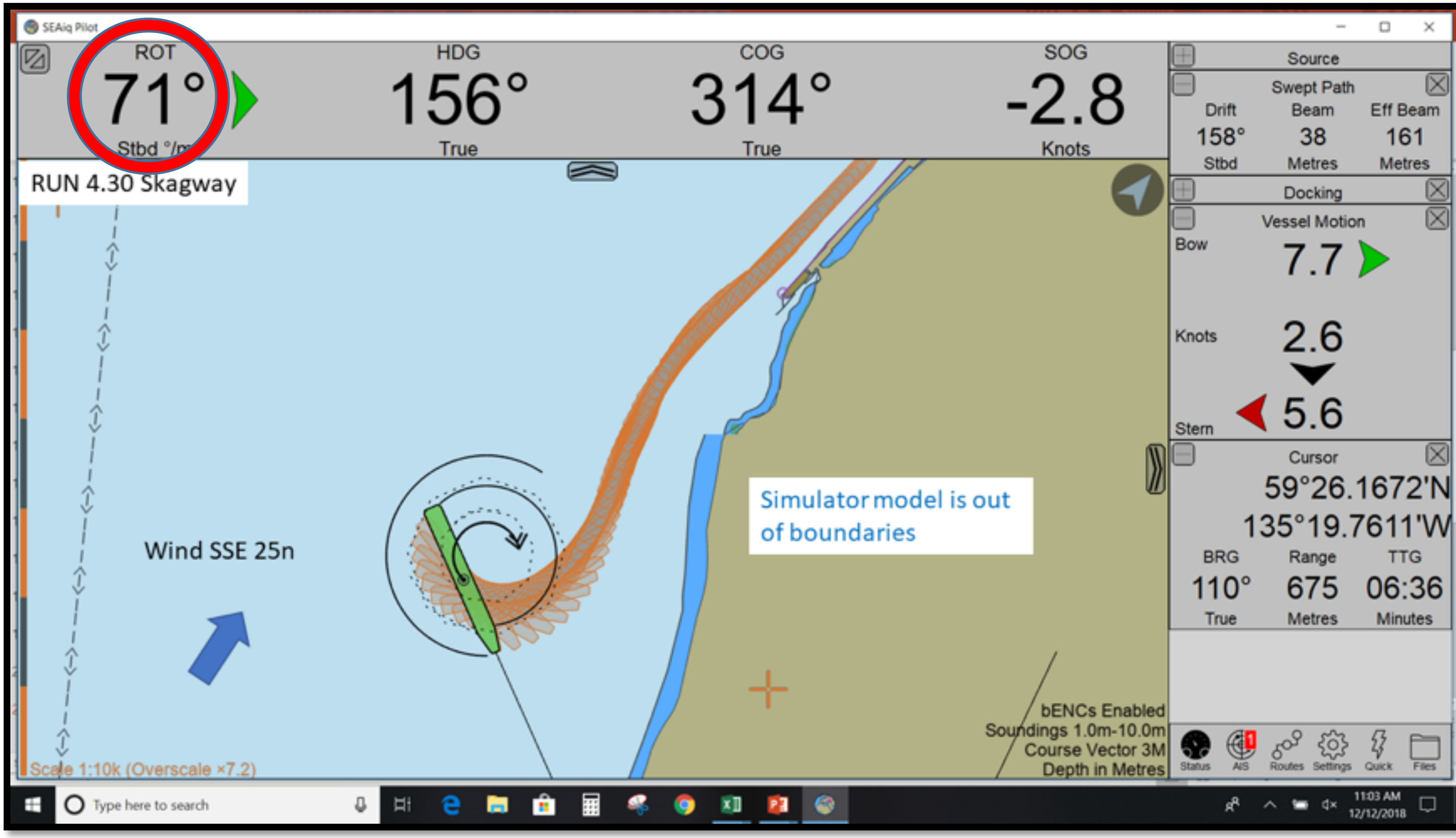
6th Run


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
045°
True
COG
279°
True
SOG
-0.6
Knots
RUN 4.30 Skagway
11.2m
23.0m
Wind SSE 25n
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6800 (Overscale ×2.9)
Back
Record & Playback
Record
Enable
Records NMEA/AIS whenever enabled
Extra Text in File Name
ROY 4.30
Status
Disabled
Record AIS Network Feed
AIS Network Feed Max Range
Targets within this range are included
5.00 NM
Playback
Playback Recording
NA
Status
Disabled
Configure Own-Ship from Recording
Loop at End
Diagnostics
Manage
Periodically Erase Old Recordings
Erase All Recordings
Except current recording
Erase All
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:49 AM
12/12/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
045°
True
COG
225°
True
SOG
-2.7
Knots
RUN 4.30 Skagway
33m
45m
Wind SSE 25n
Scale 1:6800 (Overscale ×2.9)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Back
Vessel Display
minutes
Shows courses at current speed/direction
0 1 3 6 12 60 1D
Variable Course Predictor
Allows fine tuning of course predictor lengths
Use Straight Course Vectors
Show Vessel Heading
Show Beam Lines
Show ship's beam lines
Use Fill for Vessels
True-scale
Use True-scale When Small
Use threshold of 1.5mm rather than 6mm
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
True-scale History
Keep trail of recent Own-Ship position
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:52 AM
12/12/2018


SEAiq Pilot
ROT
10°
Port °/m
HDG
040°
True
COG
224°
True
SOG
-4.0
Knots
Source
Swept Path
Drift
176°
Port
Beam
38
Metres
Eff Beam
58
Metres
Docking
Vessel Motion
Bow
1.2
Knots
4.0
0.7
Stern
RUN 4.30 Skagway
Wind SSE 25n
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:8700 (Overscale ×2.3)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:56 AM
12/12/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
026°
True
COG
204°
True
SOG
-4.0
Knots
RUN 4.30 Skagway
Wind SSE 25n
Scale 1:13k (Overscale ×5.9)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Source
Swept Path
Drift
178°
Stbd
Beam
38
Metres
Eff Beam
49
Metres
Docking
Vessel Motion
Bow
0.2
Knots
4.0
0.0
Stern
Cursor
59°26.5117'N
135°19.5444'W
BRG
068°
True
Range
565
Metres
TTG
04:36
Minutes
Status
AIS
Routes
Settings
Quick
Files
Type here to search
10:59 AM
12/12/2018


SEAiq Pilot
ROT
71°
Stbd °/m
HDG
156°
True
COG
314°
True
SOG
-2.8
Knots
Source
Swept Path
Drift
158°
Stbd
Beam
38
Metres
Eff Beam
161
Metres
Docking
Vessel Motion
Bow
7.7
Knots
2.6
Stern
5.6
Cursor
59°26.1672'N
135°19.7611'W
BRG
110°
True
Range
675
Metres
TTG
06:36
Minutes
RUN 4.30 Skagway
Wind SSE 25n
Simulator model is out of boundaries
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:10k (Overscale ×7.2)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:03 AM
12/12/2018

Run 4.31, Skagway, Departure, NE35kn, 1kn Ebb

4.31 NE 35kn, Ebb 1kn Current, Skagway Departure

Wednesday 12/12/2018

7th Run


SEAiq Pilot
ROT
2°
Stbd °/m
HDG
044°
True
COG
240°
True
SOG
-0.5
Knots
RUN 4.31 Skagway
Wind NE 35n
Current 1 Ebb
-3.2m
4.6m
Fail, unable to clear the dock with thrusters
Scale 1:6600 (Overscale ×3.0)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Back
Vessel Display
Use Course When Heading Unavailable
May cause incorrect orientation
Own-Ship
Show Predicted Position
True-scale History
Keep trail of recent Own-Ship position
Show Side-Heading Lines
OFF 3 5 10
Show Swept Path
See Help for important caveats
True-scale Status
True-scale used when scale is at least 1:180k
Show Own-Ship Wind & Drift
For graphical display
Use Green Fill for Own-Ship
AIS Targets
Use Red for Targets
Use non-standard color for AIS targets
Target Labels
Off Auto On
Hide Course Vectors for Tugs
Status AIS Routes Settings Quick Files
Type here to search
11:19 AM
12/12/2018

Run 4.32, Skagway, Departure, SW 35, 1kn Flood

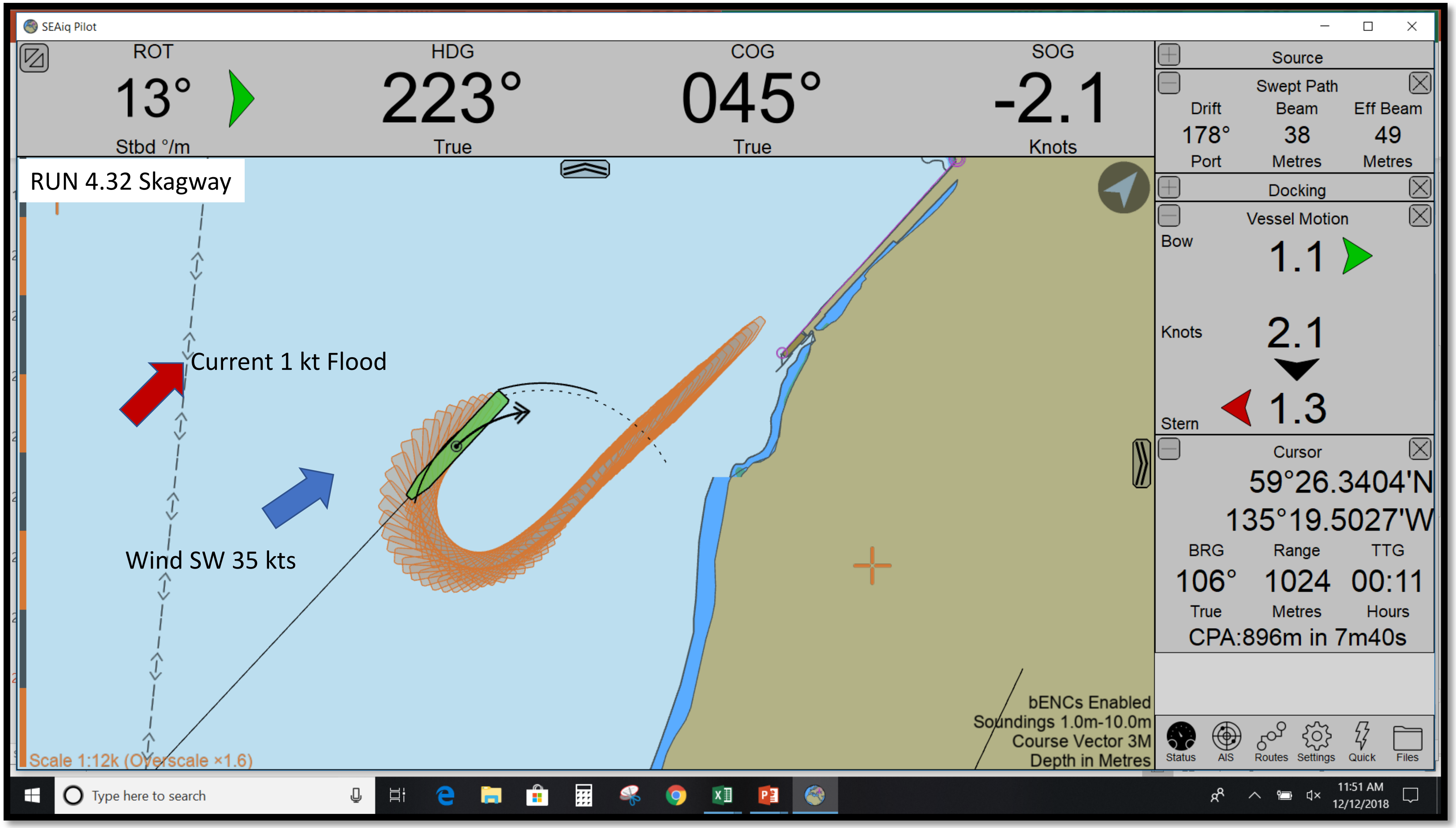
4.32 SW 35kn, Flood 1kn Current, Skagway Departure

Wednesday 12/12/2018

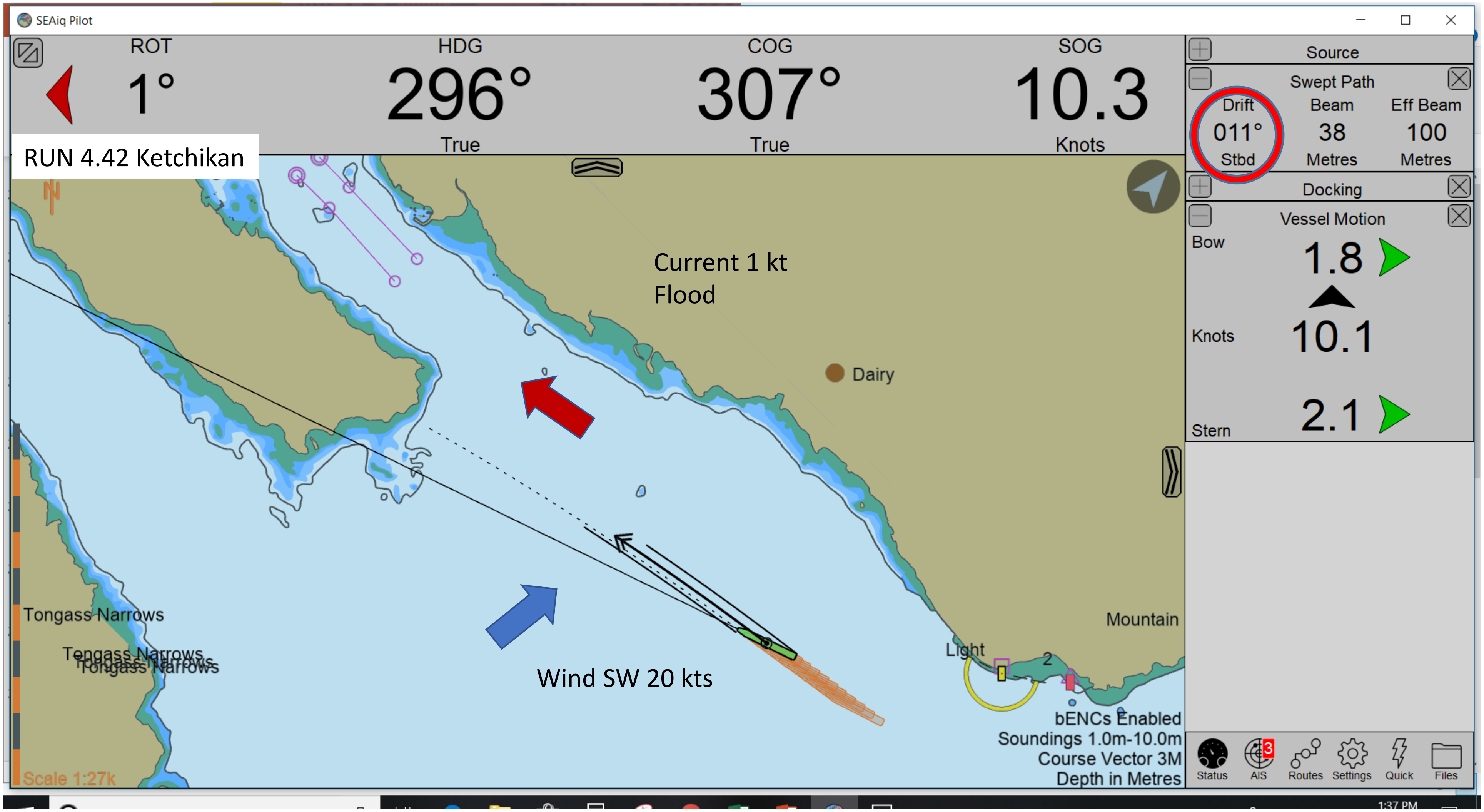
8th Run,

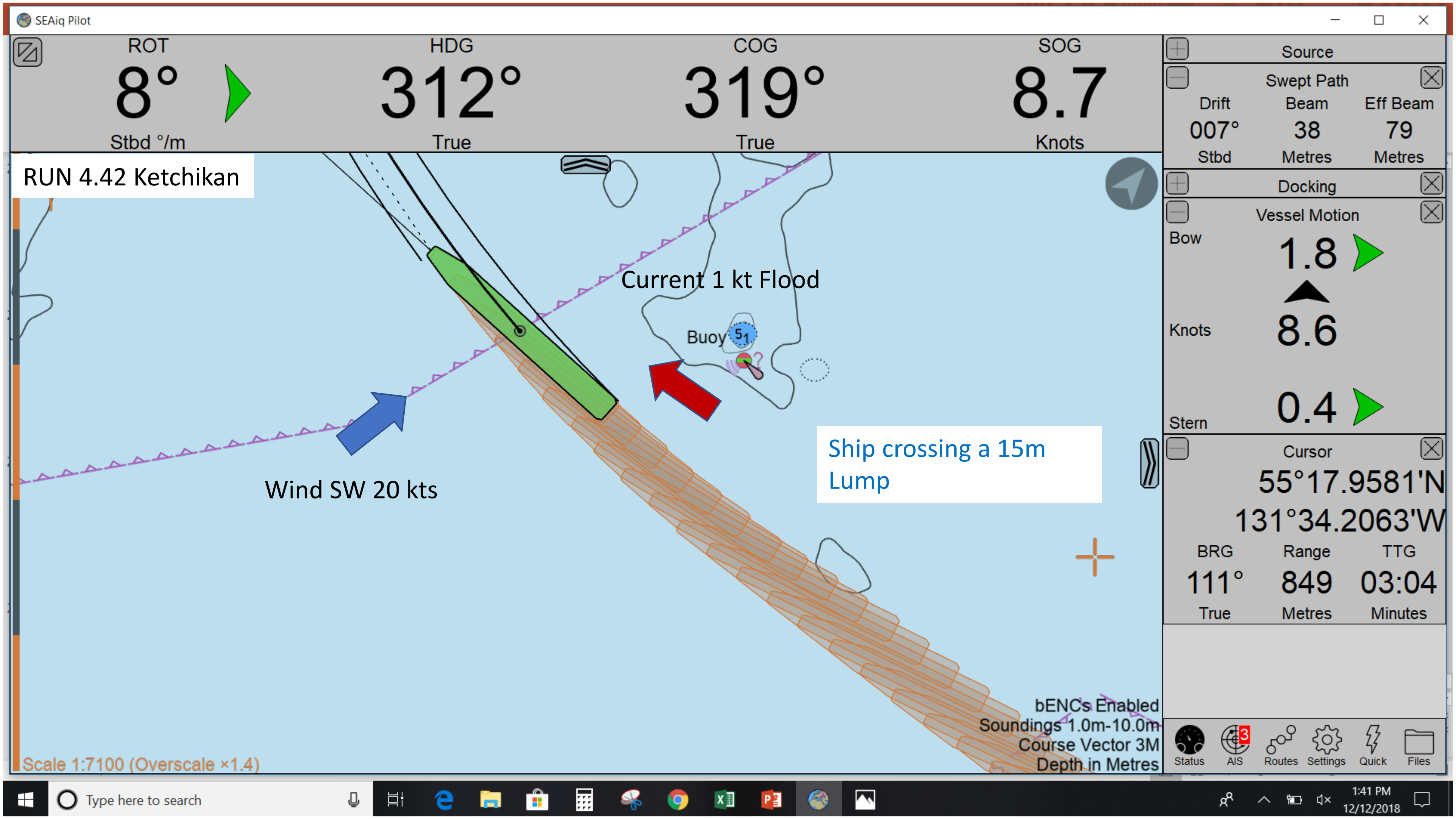

SEAiq Pilot
ROT
0°
°/m
HDG
043°
True
COG
227°
True
SOG
-2.2
Knots
Source
Swept Path
Drift
176°
Port
Beam
38
Metres
Eff Beam
60
Metres
Docking
Vessel Motion
Bow
0.1
Knots
2.2
Stern
0.1
Cursor
59°26.7447'N
135°19.3253'W
BRG
096°
True
Range
205
Metres
TTG
04:35
Minutes
RUN 4.32 Skagway
Light
Light
Light
Light
2
Current 1 kt Flood
Wind SW 35 kts
26.8m
31m
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6000 (Overscale ×3.3)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:37 AM
12/12/2018


SEAiq Pilot
ROT
0°
°/m
HDG
044°
True
COG
229°
True
SOG
-3.6
Knots
Source
Swept Path
Drift
175°
Port
Beam
38
Metres
Eff Beam
64
Metres
Docking
Vessel Motion
Bow
0.3
Knots
3.6
Stern
0.3
Cursor
59°26.6282'N
135°19.4196'W
BRG
090°
True
Range
372
Metres
TTG
03:25
Minutes
RUN 4.32 Skagway
Light
Light
Light
Light
Current 1 kt Flood
Wind SW 35 kts
58m
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:10k (Overscale ×2.0)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:40 AM
12/12/2018

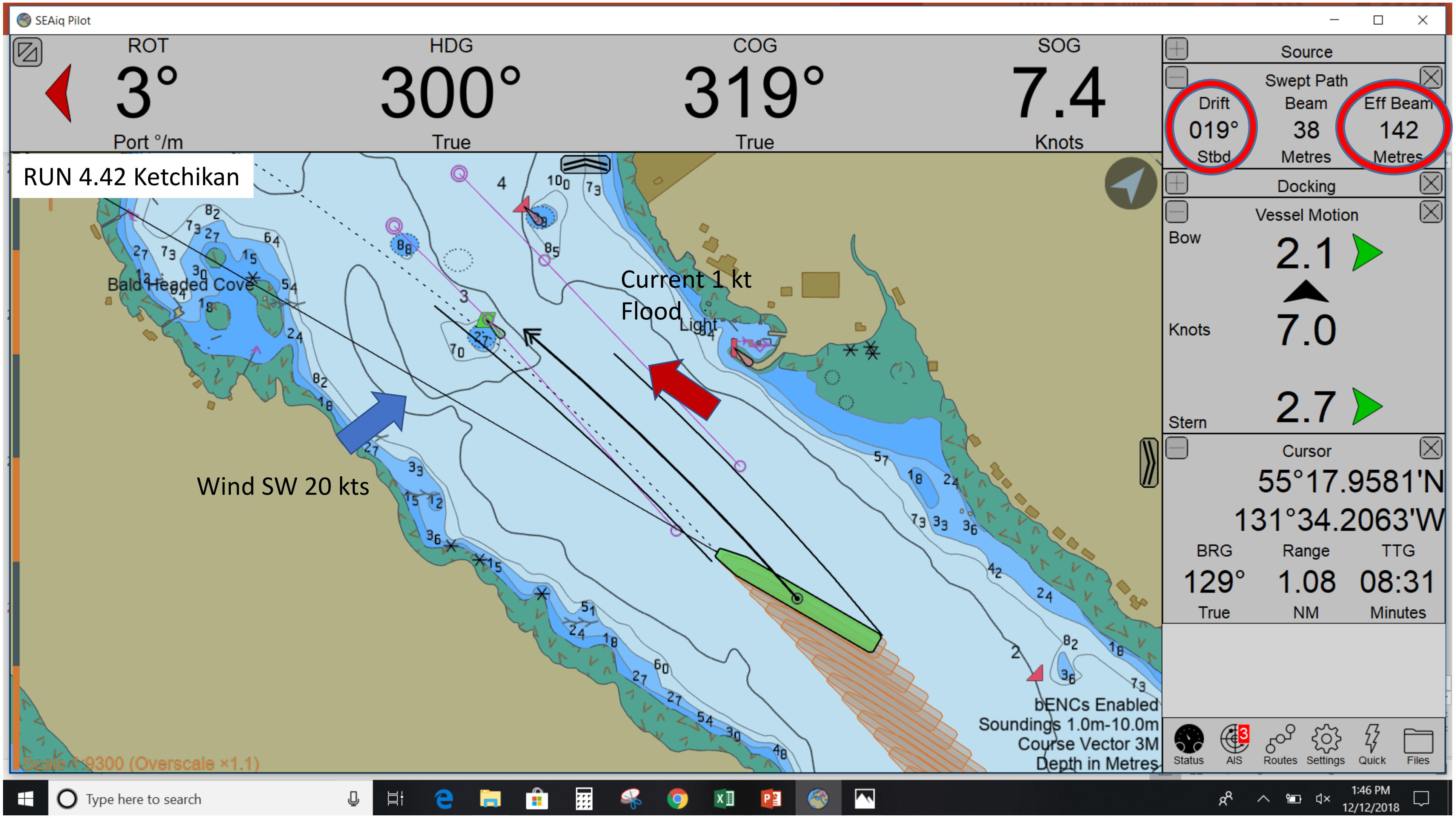

SEAiq Pilot
ROT
13°
Stbd °/m
HDG
223°
True
COG
045°
True
SOG
-2.1
Knots
Source
Swept Path
Drift
178°
Port
Beam
38
Metres
Eff Beam
49
Metres
Docking
Vessel Motion
Bow
1.1
Knots
2.1
Stern
1.3
Cursor
59°26.3404'N
135°19.5027'W
BRG
106°
True
Range
1024
Metres
TTG
00:11
Hours
CPA:896m in 7m40s
RUN 4.32 Skagway
Current 1 kt Flood
Wind SW 35 kts
Scale 1:12k (Overscale ×1.6)
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
11:51 AM
12/12/2018

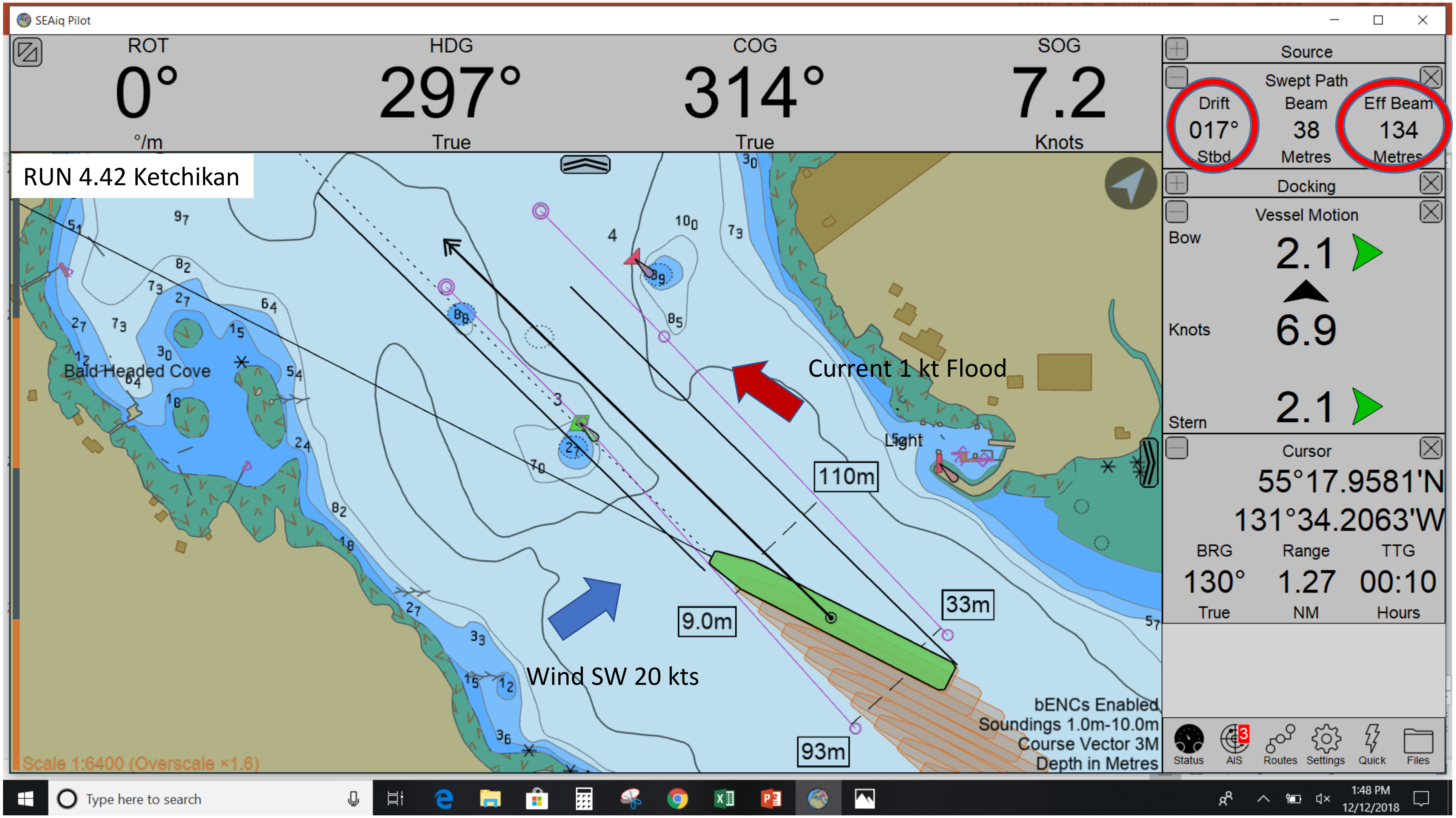
Run 4.42, Ketchikan, Arrival, SW 20 Kts, 1kn Flood

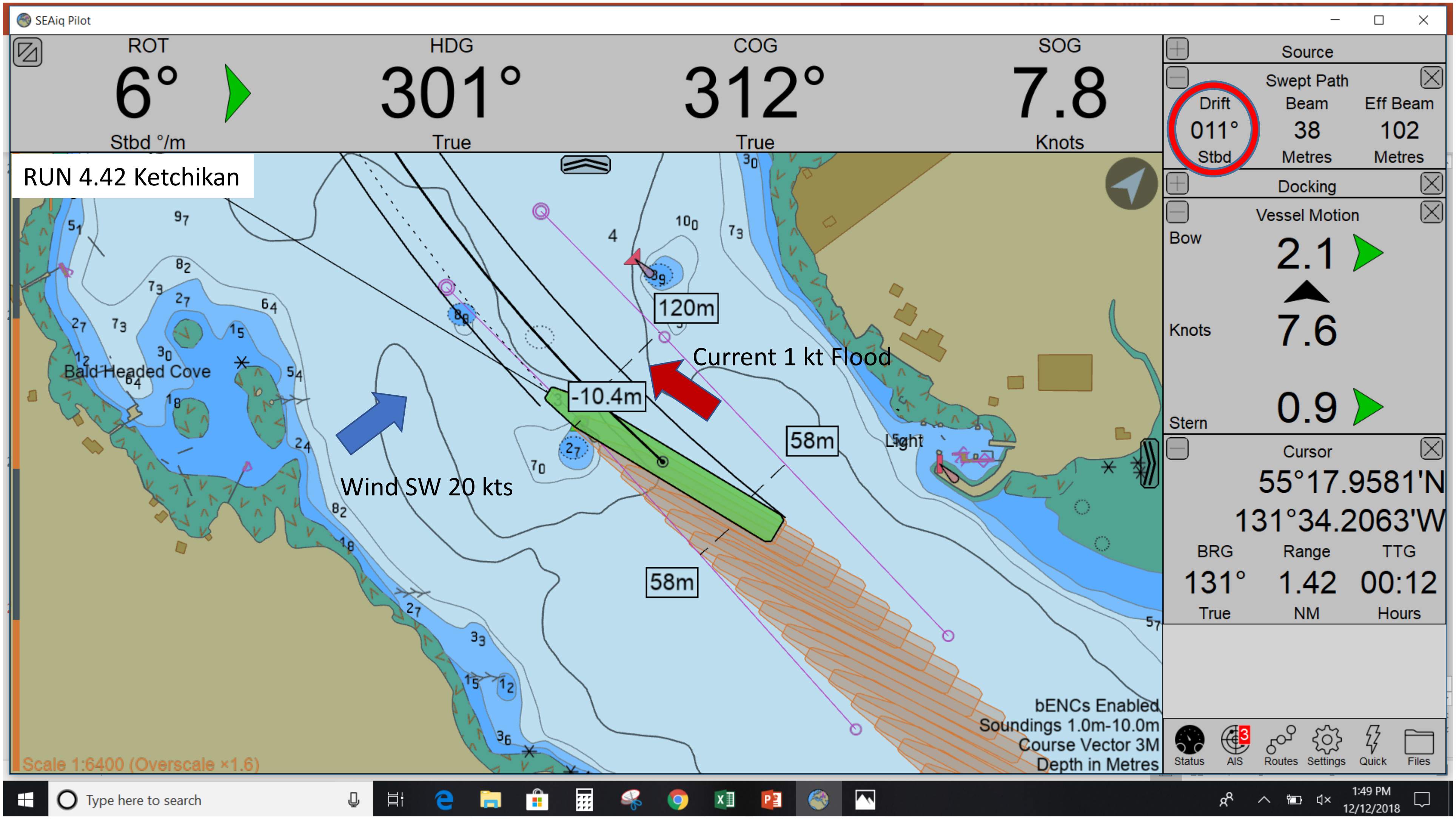

SEAiq Pilot
ROT
1°
HDG
296°
True
COG
307°
True
SOG
10.3
Knots
RUN 4.42 Ketchikan
Source
Swept Path
Drift
011°
Stbd
Beam
38
Metres
Eff Beam
100
Metres
Docking
Vessel Motion
Bow
1.8
Knots
10.1
Stern
2.1
Current 1 kt
Flood
Dairy
Tongass Narrows
Wind SW 20 kts
Mountain
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:27k
Status
AIS
Routes
Settings
Quick
Files


SEAiq Pilot
ROT
8°
Stbd °/m
HDG
312°
True
COG
319°
True
SOG
8.7
Knots
Source
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
79
Metres
Docking
Vessel Motion
Bow
1.8
Knots
8.6
Stern
0.4
Cursor
55°17.9581'N
131°34.2063'W
BRG
111°
True
Range
849
Metres
TTG
03:04
Minutes
RUN 4.42 Ketchikan
Current 1 kt Flood
Buoy
Wind SW 20 kts
Ship crossing a 15m Lump
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:7100 (Overscale ×1.4)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:41 PM
12/12/2018

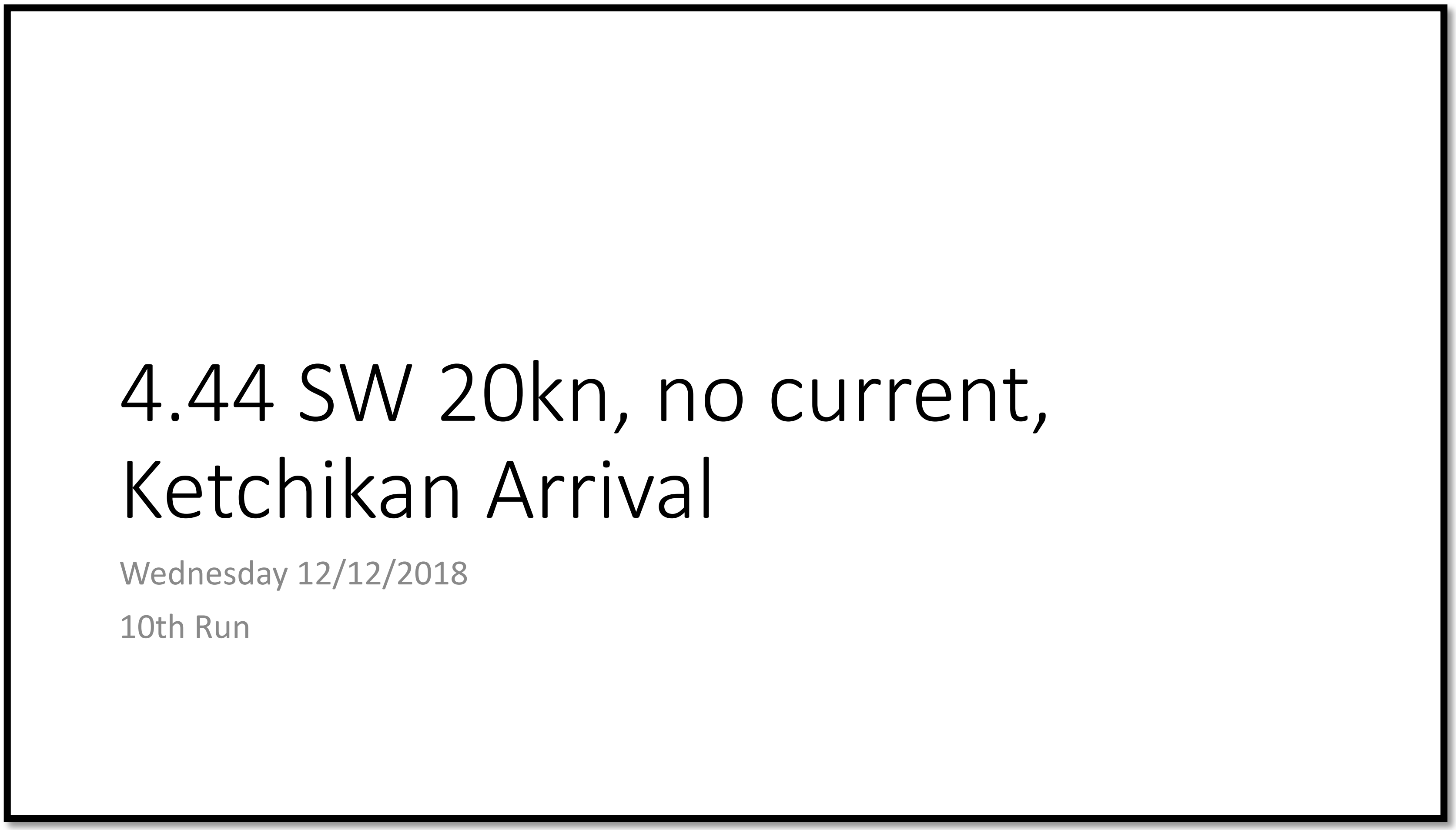
280

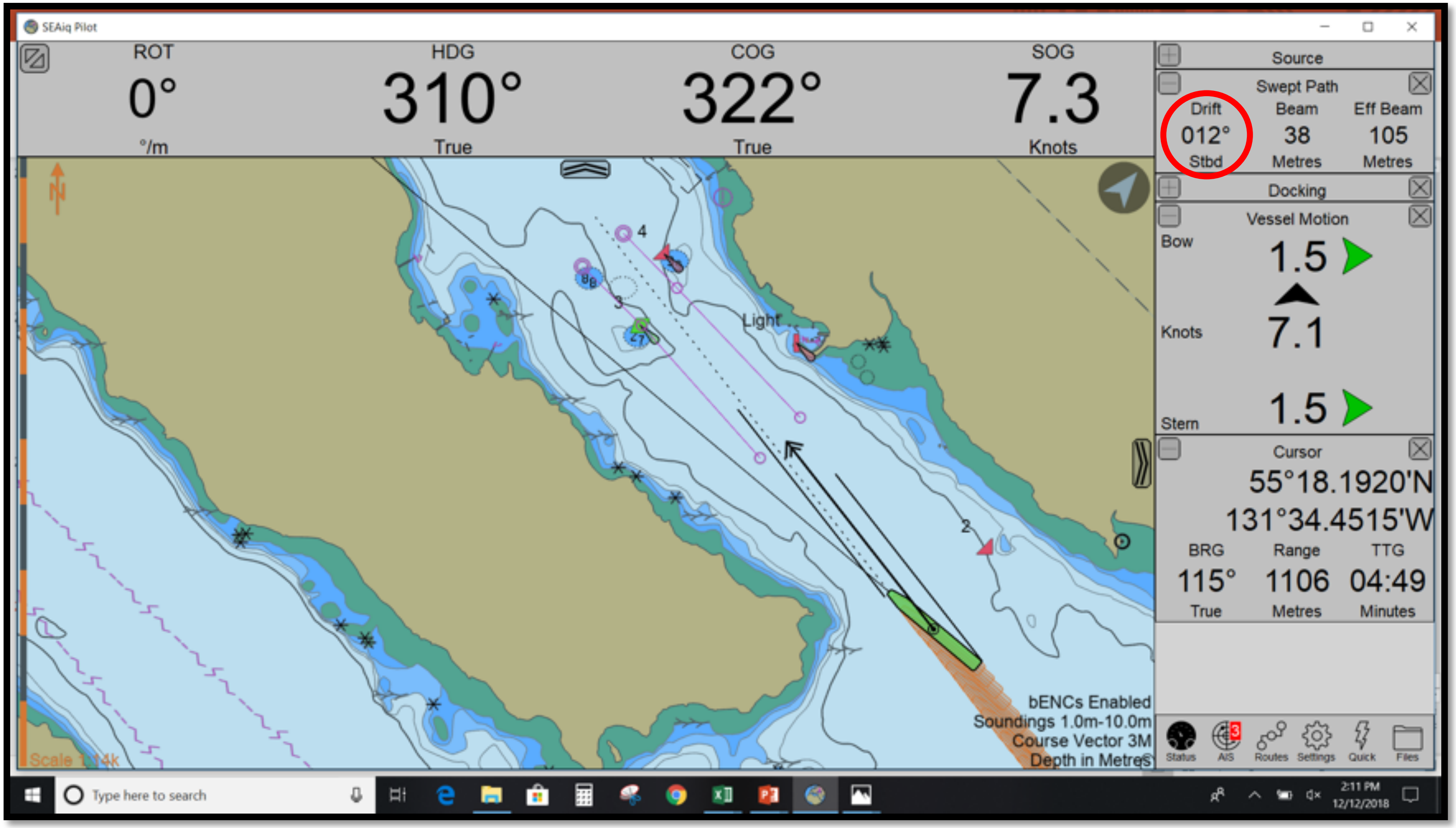

SEAiq Pilot
ROT
3°
Port °/m
HDG
300°
True
COG
319°
True
SOG
7.4
Knots
Source
Swept Path
Drift
019°
Stbd
Beam
38
Metres
Eff Beam
142
Metres
Docking
Vessel Motion
Bow
2.1
Knots
7.0
Stern
2.7
Cursor
55°17.9581'N
131°34.2063'W
BRG
129°
True
Range
1.08
NM
TTG
08:31
Minutes
RUN 4.42 Ketchikan
Current 1 kt
Flood
Wind SW 20 kts
Bald Headed Cove
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:9300 (Overscale ×1.1)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:46 PM
12/12/2018

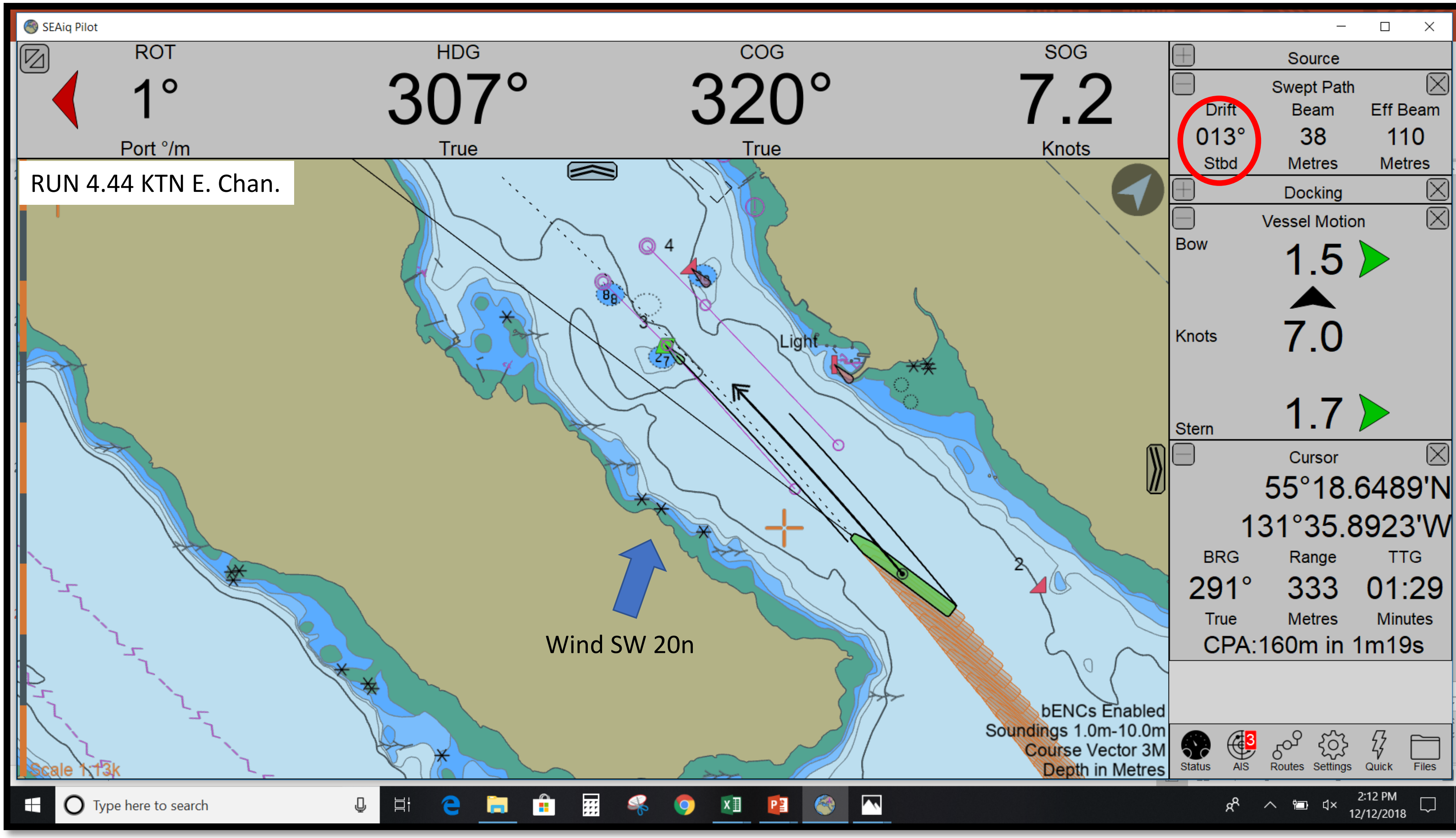

SEAiq Pilot
ROT
0°
°/m
HDG
297°
True
COG
314°
True
SOG
7.2
Knots
Source
Swept Path
Drift
017°
Stbd
Beam
38
Metres
Eff Beam
134
Metres
Docking
Vessel Motion
Bow
2.1
Knots
6.9
Stern
2.1
Cursor
55°17.9581'N
131°34.2063'W
BRG
130°
True
Range
1.27
NM
TTG
00:10
Hours
RUN 4.42 Ketchikan
Bald Headed Cove
Current 1 kt Flood
Light
110m
33m
9.0m
93m
Wind SW 20 kts
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6400 (Overscale ×1.6)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:48 PM
12/12/2018

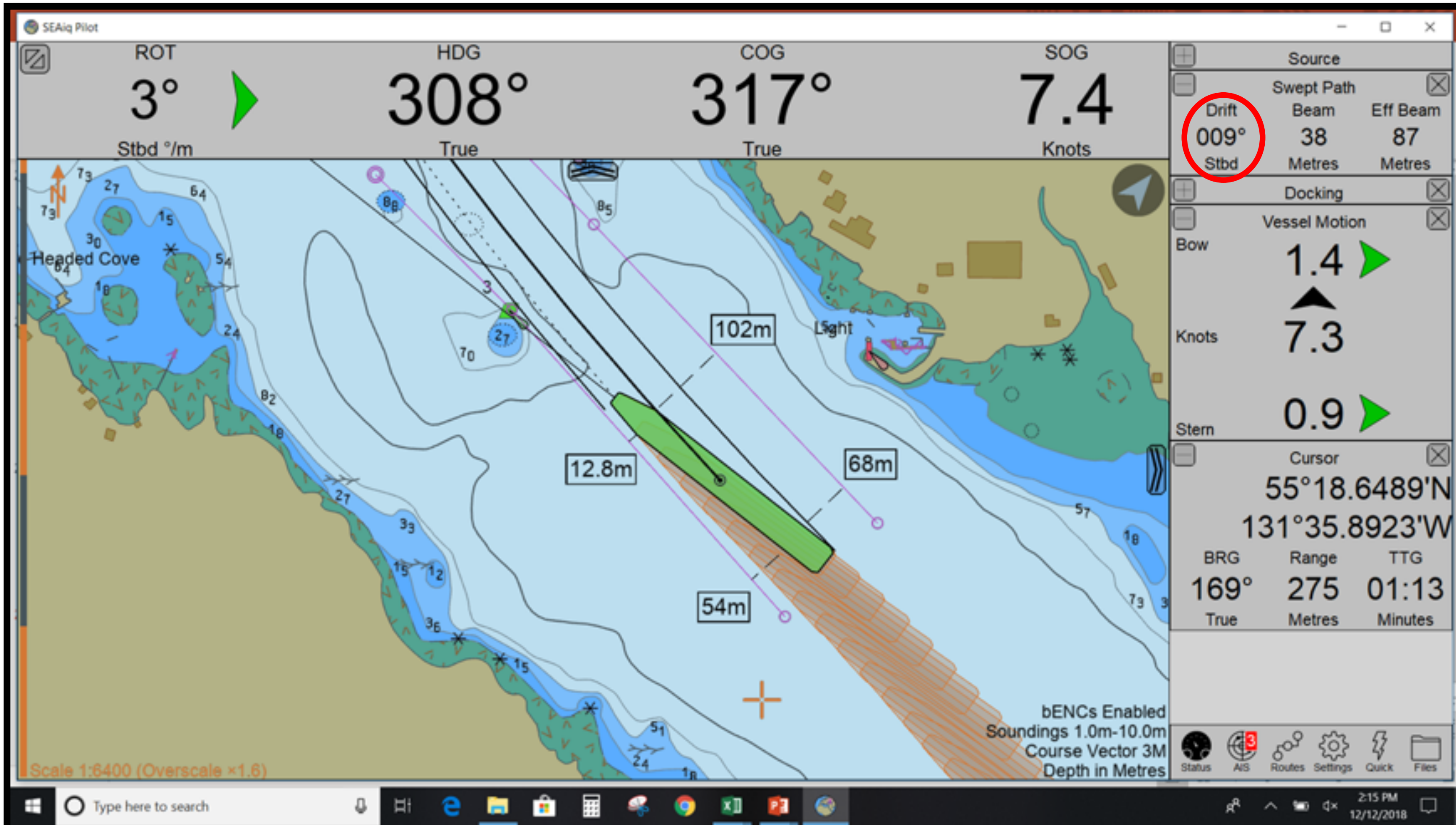

SEAiq Pilot
ROT
6°
Stbd °/m
HDG
301°
True
COG
312°
True
SOG
7.8
Knots
Source
Swept Path
Drift
011°
Stbd
Beam
38
Metres
Eff Beam
102
Metres
Docking
Vessel Motion
Bow
2.1
Knots
7.6
Stern
0.9
Cursor
55°17.9581'N
131°34.2063'W
BRG
131°
True
Range
1.42
NM
TTG
00:12
Hours
RUN 4.42 Ketchikan
Bald Headed Cove
120m
Current 1 kt Flood
-10.4m
58m
58m
Light
Wind SW 20 kts
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6400 (Overscale ×1.6)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
1:49 PM
12/12/2018

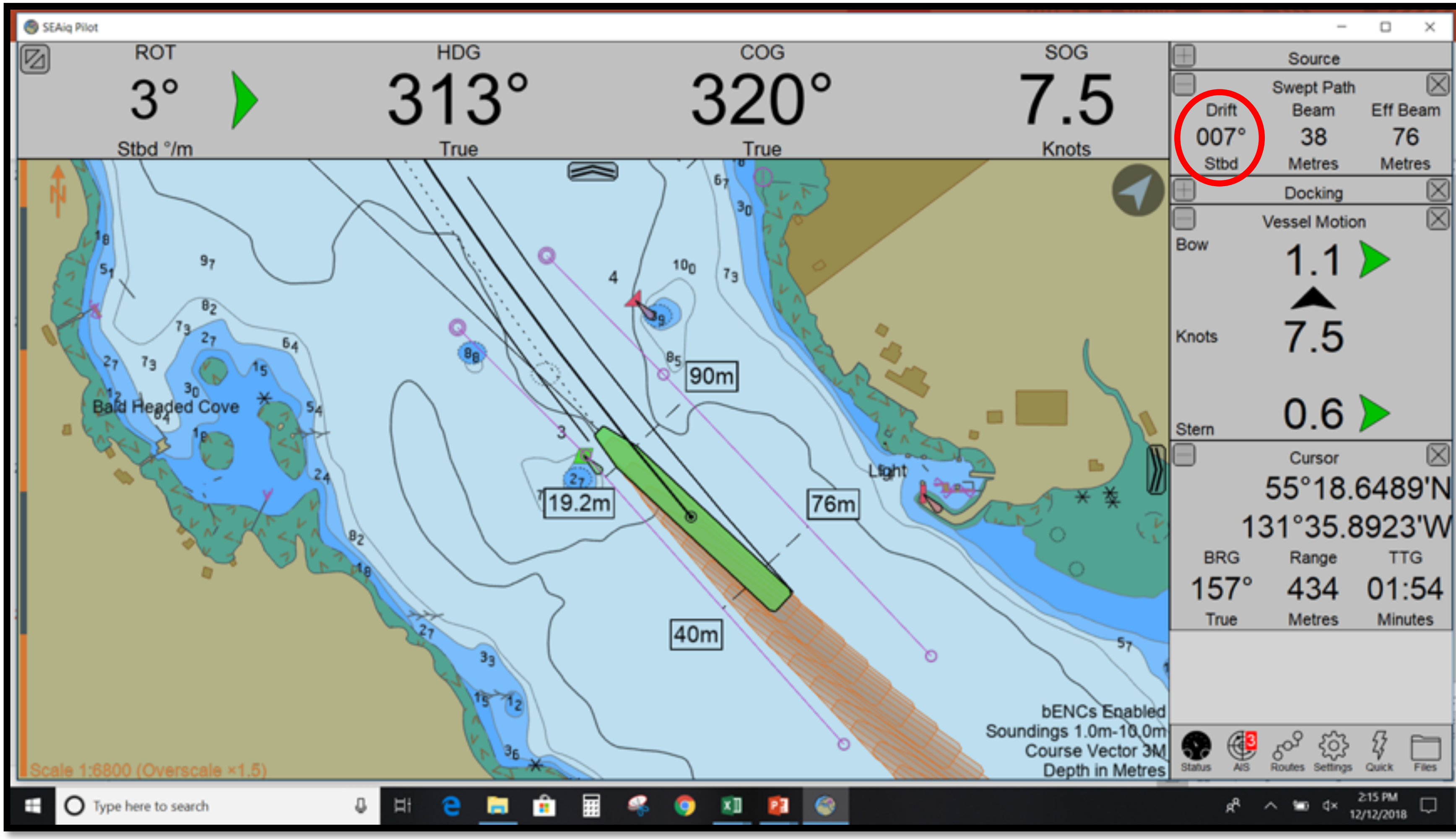
Run 4.44, Ketchikan, ECH, SW 20kn, 1kn Flood

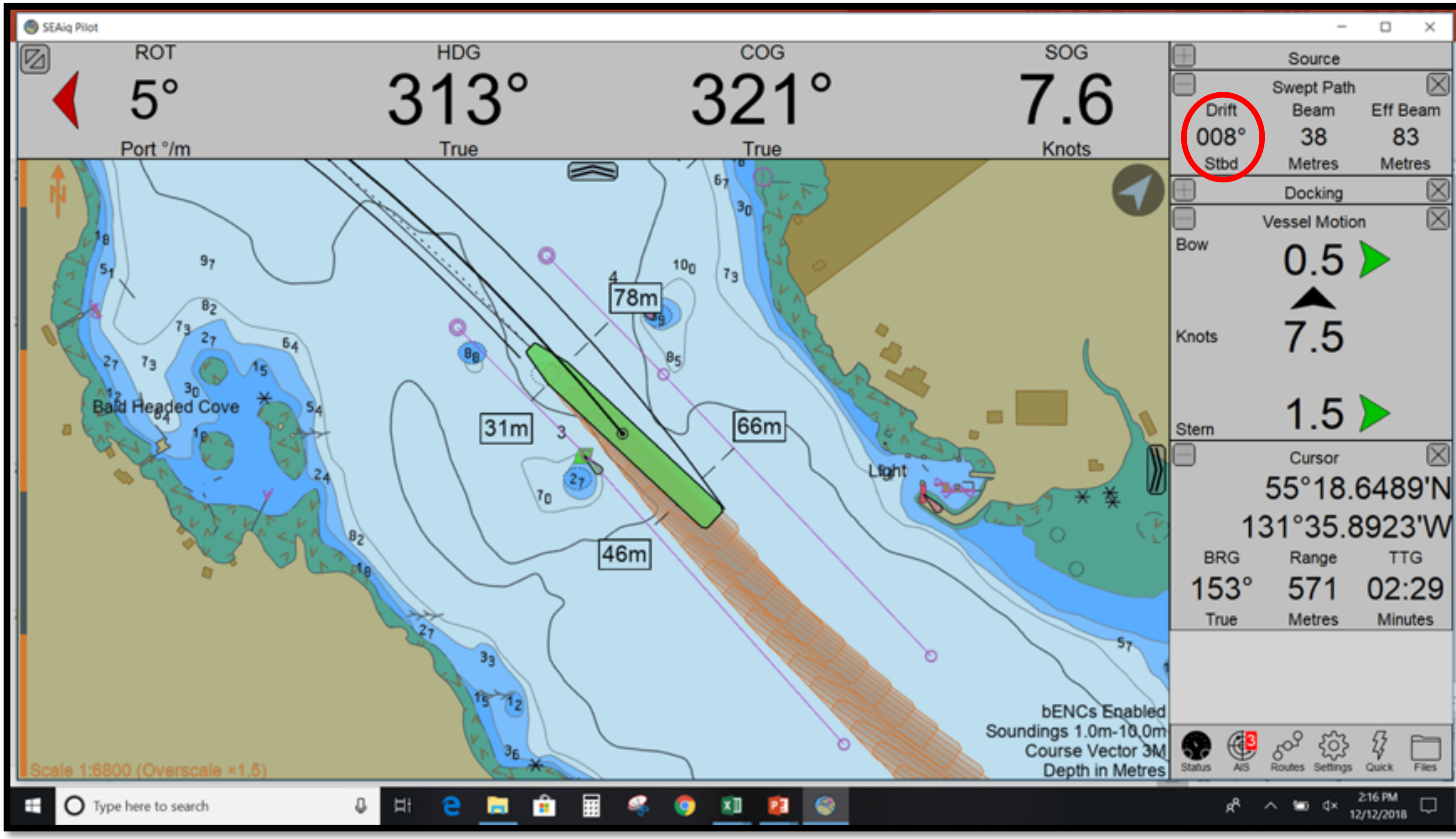


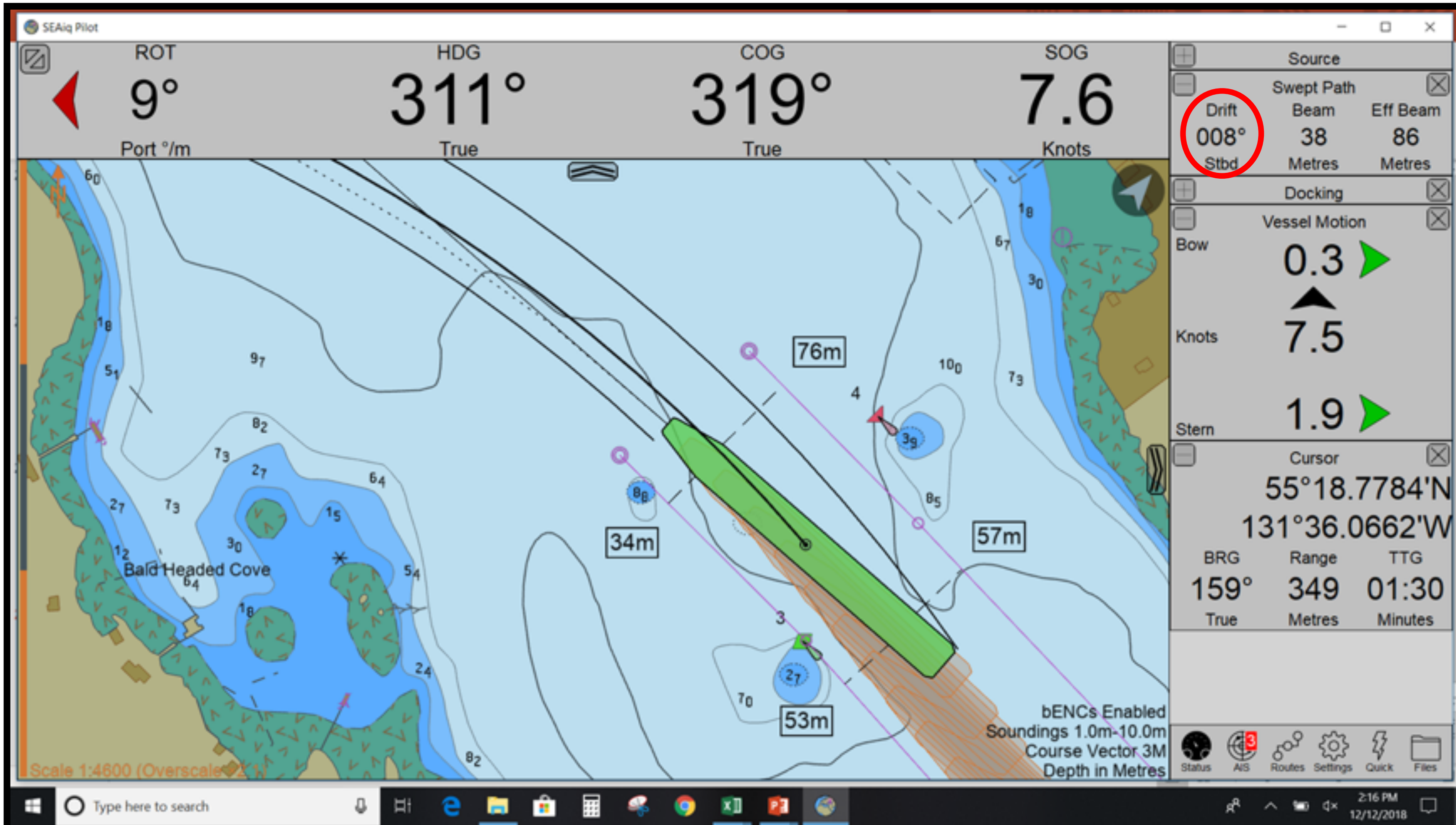

SEAiq Pilot
ROT
0°
°/m
HDG
310°
True
COG
322°
True
SOG
7.3
Knots
Source
Swept Path
Drift
012°
Stbd
Beam
38
Metres
Eff Beam
105
Metres
Docking
Vessel Motion
Bow
1.5
Knots
7.1
Stern
1.5
Cursor
55°18.1920'N
131°34.4515'W
BRG
115°
True
Range
1106
Metres
TTG
04:49
Minutes
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:11 PM
12/12/2018


SEAiq Pilot
ROT
1°
Port °/m
HDG
307°
True
COG
320°
True
SOG
7.2
Knots
Source
Swept Path
Drift
013°
Stbd
Beam
38
Metres
Eff Beam
110
Metres
Docking
Vessel Motion
Bow
1.5
Knots
7.0
Stern
1.7
Cursor
55°18.6489'N
131°35.8923'W
BRG
291°
True
Range
333
Metres
TTG
01:29
Minutes
CPA:160m in 1m19s
RUN 4.44 KTN E. Chan.
Light
Wind SW 20n
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:13k
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:12 PM
12/12/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
308°
True
COG
317°
True
SOG
7.4
Knots
Source
Swept Path
Drift
009°
Stbd
Beam
38
Metres
Eff Beam
87
Metres
Docking
Vessel Motion
Bow
1.4
Knots
7.3
Stern
0.9
Cursor
55°18.6489'N
131°35.8923'W
BRG
169°
True
Range
275
Metres
TTG
01:13
Minutes
Headed Cove
102m
12.8m
68m
54m
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6400 (Overscale ×1.6)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:15 PM
12/12/2018


SEAiq Pilot
ROT
3°
Stbd °/m
HDG
313°
True
COG
320°
True
SOG
7.5
Knots
Source
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
76
Metres
Docking
Vessel Motion
Bow
1.1
Knots
7.5
Stern
0.6
Cursor
55°18.6489'N
131°35.8923'W
BRG
157°
True
Range
434
Metres
TTG
01:54
Minutes
Bald Headed Cove
90m
19.2m
76m
40m
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6800 (Overscale ×1.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:15 PM
12/12/2018


SEAiq Pilot
ROT
5°
Port °/m
HDG
313°
True
COG
321°
True
SOG
7.6
Knots
Source
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
83
Metres
Docking
Vessel Motion
Bow
0.5
Knots
7.5
Stern
1.5
Cursor
55°18.6489'N
131°35.8923'W
BRG
153°
True
Range
571
Metres
TTG
02:29
Minutes
78m
31m
66m
46m
Bald Headed Cove
Light
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Scale 1:6800 (Overscale ×1.5)
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:16 PM
12/12/2018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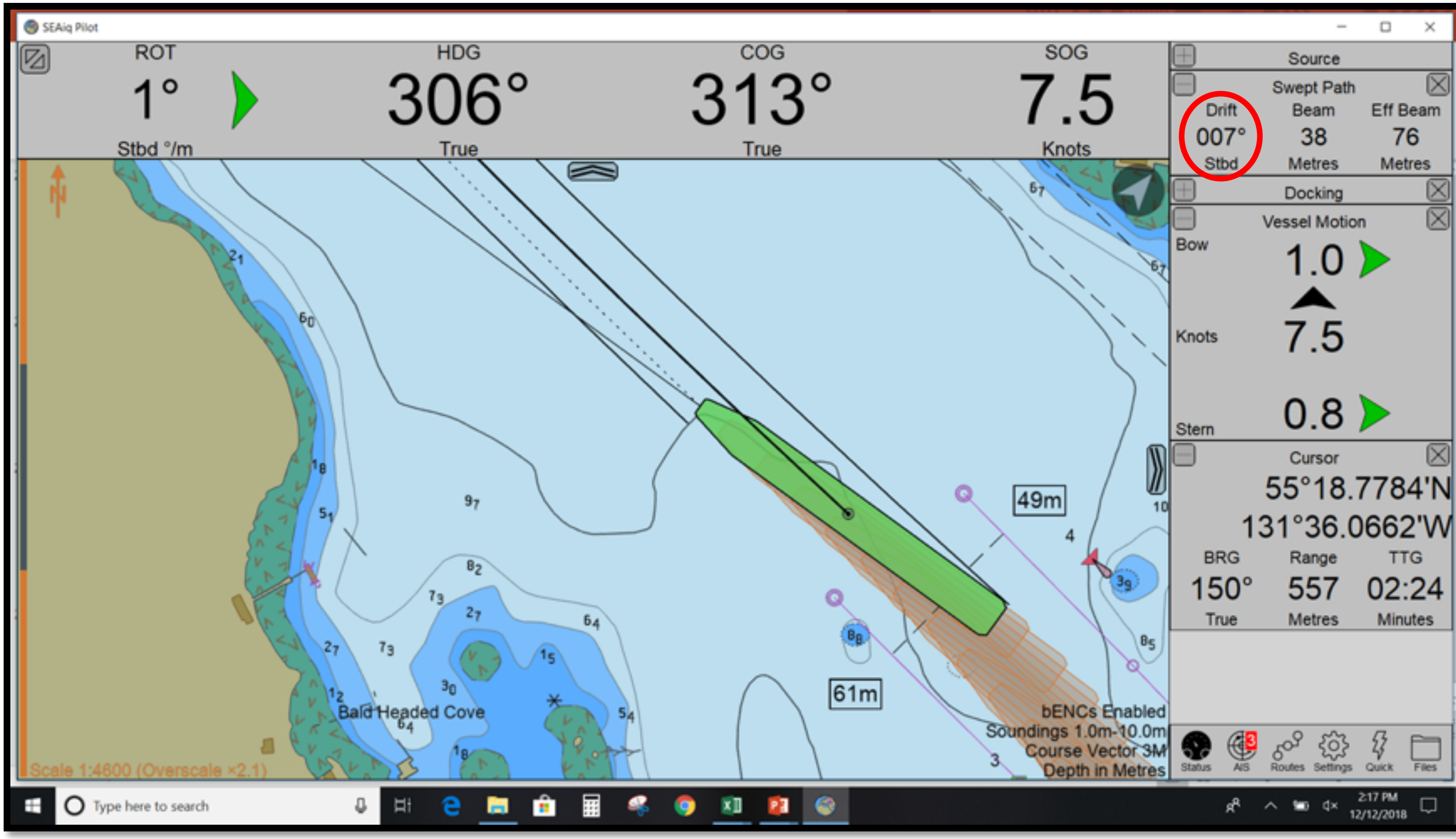
ROT
9°
Port °/m
HDG
311°
True
COG
319°
True
SOG
7.6
Knots
Source
Swept Path
Drift
008°
Stbd
Beam
38
Metres
Eff Beam
86
Metres
Docking
Vessel Motion
Bow
0.3
Knots
7.5
1.9
Stern
Cursor
55°18.7784'N
131°36.0662'W
BRG
159°
True
Range
349
Metres
TTG
01:30
Minutes
76m
34m
57m
53m
Bald Headed Cove
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:16 PM
12/12/2018


SEAiq Pilot
ROT
1°
Stbd °/m
HDG
306°
True
COG
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SOG
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Knots
Source
Swept Path
Drift
007°
Stbd
Beam
38
Metres
Eff Beam
76
Metres
Docking
Vessel Motion
Bow
1.0
Knots
7.5
0.8
Stern
Cursor
55°18.7784'N
131°36.0662'W
BRG
150°
True
Range
557
Metres
TTG
02:24
Minutes
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61m
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12/12/2018

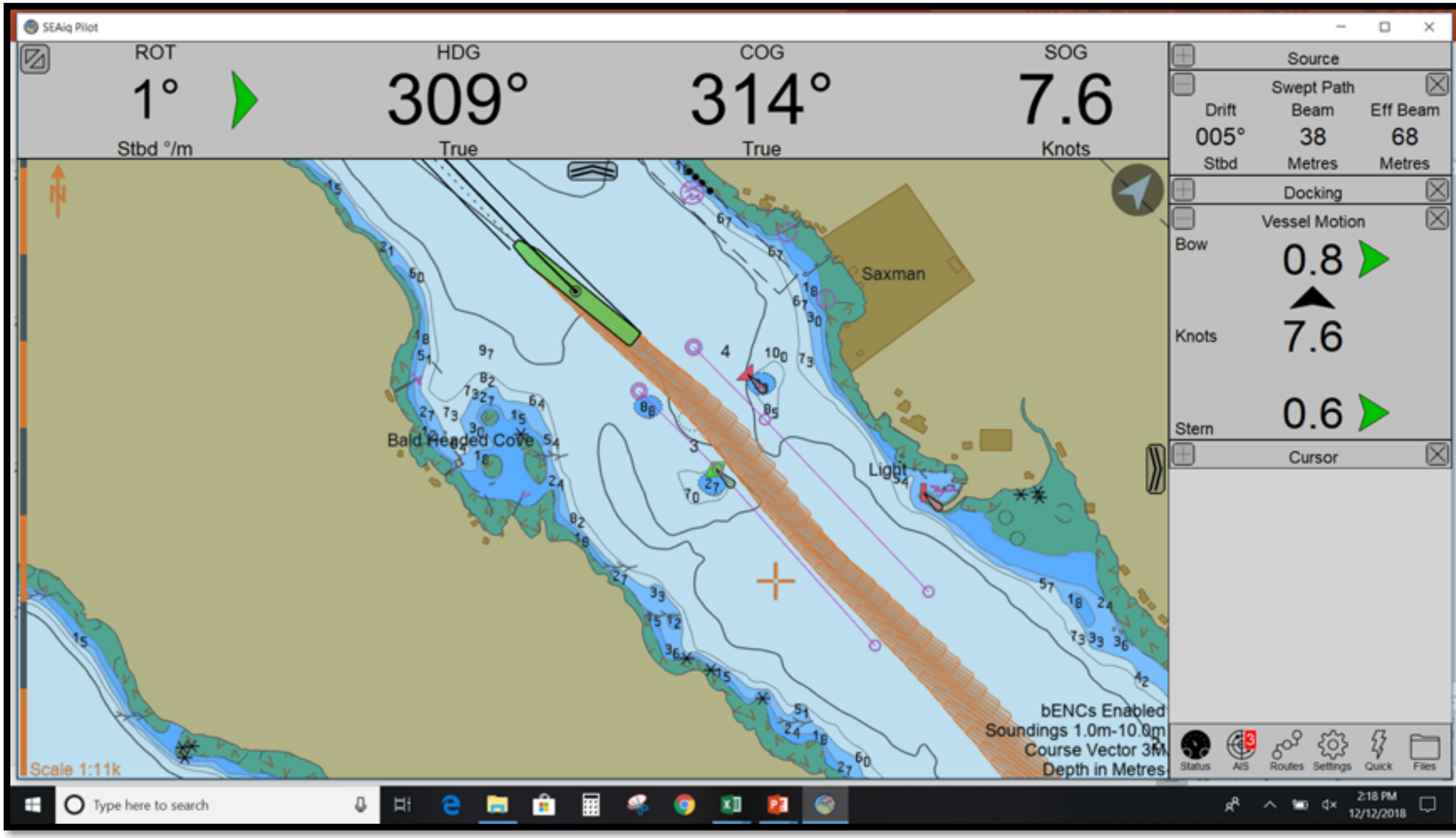
SEAiq Pilot
ROT
1°
Stbd °/m
HDG
309°
True
COG
314°
True
SOG
7.6
Knots
Source
Swept Path
Drift
005°
Stbd
Beam
38
Metres
Eff Beam
68
Metres
Docking
Vessel Motion
Bow
0.8
Knots
7.6
Stern
0.6
Cursor
Saxman
Bald Headed Cove
Light
Scale 1:11k
bENCs Enabled
Soundings 1.0m-10.0m
Course Vector 3M
Depth in Metres
Status
AIS
Routes
Settings
Quick
Files
Type here to search
2:18 PM
12/12/2018

Figure 19: Royal Princess Alongside in Bonaire

End of Report

Simulation-Based Evaluation and Recommended Guidelines for the VLCS *Ovation of the Seas*

Proposed Operations in Southeast Alaskan Pilotage Waters, 2019

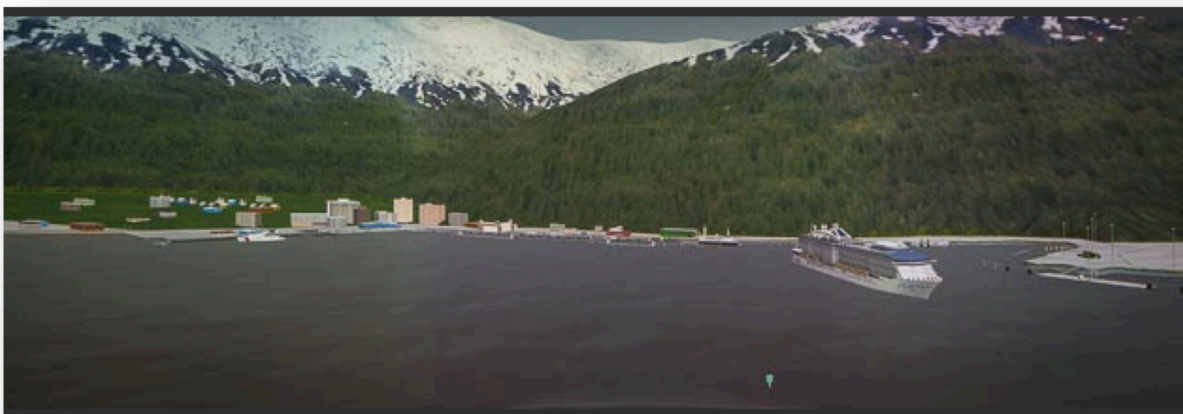

Figure 1: Ovation of the Seas Simulation Model at Ketchikan

Prepared by the Southeast Alaska Pilots Association

Based on Simulations Conducted at Alaska Vocational Technical College (AVTEC), Seward, Alaska December 3-7, 2018

Report Version 1.3
Prepared: 3/6/2019

Editors:
Capt. Barry Olver, SEAPA Pilots
Mr. George B. Burkley, Maritime Pilots Institute

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Disclaimer

The research and findings in this report reflect the cooperative work product of the SOUTHEAST ALASKA PILOTS' ASSOCIATION (SEAPA) and ROYAL CARIBBEAN INTERNATIONAL (RCI). This report, and the safe operational guidelines recommended herein are founded on simulation-based research. The results and findings are based on data accumulated in the process of that research as well as the use of the best available technology and the good faith effort of the participants. The use and application of these safe operational guidelines do not relieve the prudent mariner of the obligation to exercise safe navigational practices and do not hold SEAPA or RCI liable. This report is intended for further consideration by SEAPA and RCI to enact the recommendations contained herein.

Acknowledgements

Many thanks are due to a great many people for their efforts expended in the course of this project. First and foremost, the SEAPA Members, Officers and Board of Directors who committed significant personal funds, personal time and effort in this pursuit of due diligence. Our RCI Partners for providing the simulation model and the tremendous collaboration with Captains Henrik Loy, and Preston Carnahan before, during and following the simulations. *Anthem of the Seas'* Captain Henrik Sorenson, Staff Captain Jethro Barry as well as all the officers and crew. Mr. George Burkley of the Maritime Pilots Institute, for taking-on the monumental task of forging a nonwriter pilot's ideas into this report. SEAPA's Captain Jill Russell for taking on the task of administrator for this project, her many hours of preparation, advice and expertise in the field of simulation, and for keeping us all on task during the week of simulation work. The simulation facility AVTEC, in Seward Alaska, for providing a highly professional and excellent facility and support. The SEAPA VLCS (v2) Committee Members -Captains Hans Antonsen, Tomi Marsh, Levi Benedict and Norbert Chaudhary for their significant efforts during the course of this last year. SEAPA Pilots Captains Jeff Baken, Rich Preston, Steve Axelson, Frank Didier, Scott Jones and Kathy Flury for their participation in the simulations. Captain Bob Winter, fellow SEAPA pilot guided the observation trip aboard the *Anthem of the Seas* as part of the simulation model data collection effort. Amak Towing master's, Captain Lonnie Adams, and Captain Mike Korsmo. CLAA agent, Mr. Rick Erickson. USCG COTP Juneau, Captain Steve White, BMP members of the Alaska Marine Board, in particular Mr. Charles Ward and Captain David Artz (AMP), for their interest and strong support.

Introduction

This study is the second in the series of joint simulation-based studies to apprise cruise companies and SEAPA of operational limits and to create safe operating guidelines for VLCS (Very Large Cruise Ships) operating in Southeast Alaska waters. The first study, completed in December of 2017, studied the Norwegian Cruise Lines (NCL) vessel *Norwegian Bliss.* The Norwegian Bliss report may be found on Southeast Alaska Pilots' website.[1] In 2019, SEAPA membership chartered a second VLCS (v2) committee to conduct two additional studies for the Royal Caribbean International (RCI), "Ovation of the Seas", and Princess Cruises "Royal Princess" due to these vessels' pending deployment to Southeast Alaska. This report addresses the findings of these collaborative studies conducted by SEAPA and Royal Caribbean International, for our collective work for the *Ovation of the Seas,* recognizing the separate roles with common goals in the effort to "protect life and property, and the marine environment"[2], in an economically achievable manner.

The primary goal of this simulation-based risk assessment, and corresponding simulation evaluations, was to identify the environmental and operational parameters at which undesirable incidents began to happen, defined by the SEAPA VLCS (v2) Committee as the <u>Edge Of the Comfort Zone</u> (**EOCZ**). The standard of care used by the Committee as a basis for these recommended guidelines was if a simulation maneuver could be reliably completed by an average Marine Pilot, on an average day, while achieving consistent, above average results. Evaluation scenarios were designed to address the challenging operating maritime environment in Southeast Alaska, including restricted channels, fjords, and bays with unpredictable ice concentrations (from glacial calving); as well as, high winds, large tidal ranges, and strong tidal currents. The Committee utilized a framework closely based on the previous study work for Norwegian Bliss for identifying and evaluating the level of risk for simulated evolutions. The base framework involved: 1) the professional judgment of a senior mariner; 2) the measurement of operating performance according to predetermined risk criteria; 3) a separate, individual debrief interview of the master; 4) a separate individual debrief of the pilot (to assess their perceptions of risk); and 5) correlation, comparison, and resolution of the previous four measures by the Committee as a whole.

Various industry stakeholders observed the simulation efforts during the course of the two studies including (2) Amak Towing Company tug masters, The Captain of the Port (COTP) for US Coast Guard Sector Juneau, Cruise Lines Agencies of Alaska (CLAA), Southwest Alaska Pilots Association (SWAPA), Alaska Marine Pilots (AMP), Hawaii Pilots, The Marine Pilot Coordinator (MPC) for the Alaska Board of Marine Pilots. The stakeholders once again responded favorably to the collaborative efforts of the Committee.

[1] https://www.seapa.com/
[2] AS 08.62.157

Summary

To initiate this study for the *Ovation of the Seas*, the SEAPA committee engaged in thorough data-gathering for the vessel which included a review of previous port studies provided by Royal Caribbean International, as well as interviews of RCI Masters.   An observation trip in April of 2018 during a 7-day voyage aboard sister ship *Anthem of the Seas* to collect data to vet the simulation model, followed by 4 days of full-mission simulation conducted at AVTEC in Seward, Alaska, for the various Southeastern Alaska ports and waterways to be visited in the 2019 itinerary.

Simulations were conducted during the week of December 3-7, 2018, by a team made up of nine members of the Southeast Alaska Pilots Association (SEAPA) in partnership with two representatives from Royal Caribbean International, including Captain Henrik Loy (*Ovation of the Seas* Master) and Captain Preston Carnahan (Director | Marine Port Development). The project team completed twenty-nine simulation runs covering six geographic pilotage areas (as well as one which is not on the itinerary for 2019, Ketchikan area), simulating the most unfavorable and frequent wind and current conditions. The objectives of the simulations were to identify pilotage navigation scenarios which presented challenges for safe operations of the *Ovation of the Seas*.

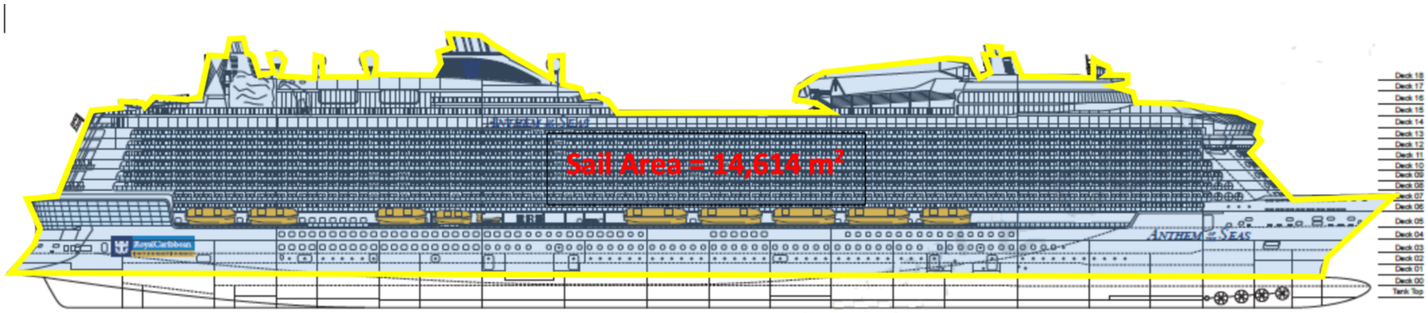
Overall the simulations produced serious challenges in wind and current conditions common to the SEAPA pilotage area. The pilots reported that the *Ovation of the Seas* model was found to be appropriately powered for maneuvering in most conditions encountered in Southeast Alaska waters. Simulations identified a significant swept path track in strong cross winds and currents particularly in the Gastineau Channel/Juneau Area, Tongass Narrows/Ketchikan Area, and in ice conditions simulated at Endicott Arm Bar and Tracy Arm's 'S' Turns. The recommendations in the study agreed to between SEAPA and RCI intentionally favor the conservative side of study findings in determination of operating parameters to ensure safe operations of the *Ovation of the Seas* in Southeast Alaska waters.

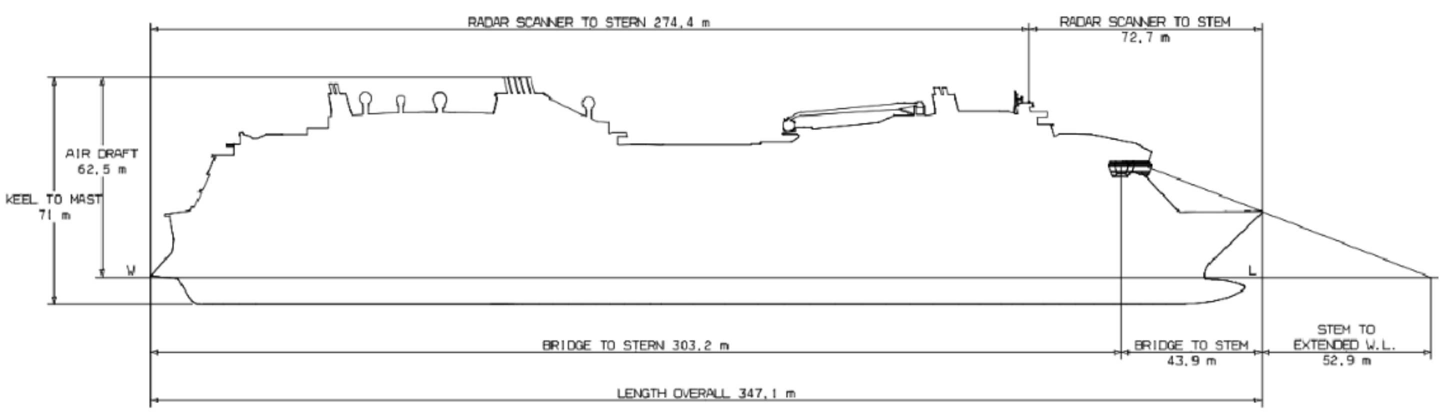
Figure 2: Ovation of the Seas sister ship "Anthem of the Seas" @ Port Liberty

Principal Dimensions - Mega Ship – *Ovation of the Seas*

The *Ovation of the Seas* is a very large passenger vessel of 168,666 Gross Tons, with a length of 1138.5' (347m), maximum structural beam at the bridge wings of 160.4' (48.9m), max (funnel) air draft of 198.4' (60.5m), and summer-load draft of 28.8' (8.8m). The "North Star" observation pod increases the maximum air draft to 312' (95m), and extreme breadth to 206.4' (62.9m) at the extreme limits of operation. She is outfitted with Azipod® propulsion consisting of two 20.5MW ABB azipods with inboard turning propellers, as well as (4) Bow tunnel thrusters listed as 4 X 4694hp +10% (3500KW each). Lateral windage, also known as "sail area" for this vessel is 14,614 square meters. Passenger maximum is 5011, with 1551 crew for a maximum LSA total of 6562. This vessel will be the largest vessel to date to engage in the Alaskan passenger ship trade.

Figure 3: Ovation of the Seas – Lateral Windage





Findings

The following findings are based upon simulations of transits and maneuvers in the areas of Juneau, Skagway, Endicott Arm/Tracy Arm, Sitka, Icy Strait Point, and Ketchikan.[3]

Findings: From the 29 runs conducted in simulation are:

1. *Ovation of the Seas* exhibits the typical challenging slow speed handling characteristics of VLCS class mega ships requiring close attention to handling and judicious use of propulsion (thrusters and azipods).
2. The vessel exhibits significant swept path due to a large sail area and characteristic nature of azipods pulling the stern through the water to steer.
3. *Ovation of the Seas* acts like a heavy ship – slow to accelerate and maintains her momentum once moving.
4. Minimum steering speed is listed as 2 knots on the pilot card for the vessel, but less than 6 knots speed provides poor steerage. 6 knots or greater provides good steerage.
5. Bow Thrusters:
    a. Listed on the pilot card as losing effect at 8 Knots but were found to be effective at harbor speeds of 7-8 Kts during simulation.[4]
    b. During simulation an effective technique to reduce swept path on a straight track was to utilize 20% thruster into the external force (wind/current) and counter the resulting rotation with opposing helm order (thus putting both BTs and Pods thrusting into the wind/current).
    c. Bow thrusters will increase ship's speed (20% BT for ~ 1 minute increased speed from 7.0 to 7.2 knots).
6. Azipods:
    a. Significant RPM are required to effectively get her moving – 60 RPM, and likewise 60 RPM with both pods at 180º to check her way.
    b. The '60/120' orientation with azipods is found to maximumize turning effect in maneuvering.
    c. Due to concerns given the extreme aft location of azipods increasing risk for damage when conning in ice; it has been discussed having the pilot maintain the conn and either maneuvering in 'aziman' with azipod verbal commands or directing the vessel's course to steer while the Master manipulates the pods.

Findings: Use of Tugs

A study was concurrently conducted by SEAPA pilots, with input from experienced tug operators, to evaluate the use of tractor tugs to mitigate risk to ports particularly for VLCS class vessels. The report recommends a minimum of two 70-ton bollard pull (BP) tractor tugs be deployed to the ports of Ketchikan, Juneau and Skagway. Tugs of this capability are not available in the region with only one tractor tug in region estimated to have a 55-60 ton BP rating. All other tugs in region are conventional propulsion (with corresponding limitations in capability to assist) with a maximum estimated rating of 33-ton BP. Both Masters (Anthem of

[3] Due to simulation capabilities, ice transit simulations were conducted in Tracy Arm substitute for transit areas of Endicott Arm
[4] Note from observation trip, Master's comment, thrusters lose much of their effectiveness above 2 knots speed.

the Seas and Ovation of the Seas) made a point of noting that a tug will be required when running/retrieving stern lines with a 25 knot or greater offshore wind in order to prevent entanglement of lines in propellers.

Findings: Known Limitations of Simulation

The SEAPA Pilots recognize that simulation is an excellent tool for general studies and is valuable for informing the decision process. SEAPA also recognizes that simulations, both this current PMI effort and the efforts conducted by others in the port studies prepared by Royal Caribbean International, have inherent limitations in the reliance on mathematical models and assumptions that may be incongruent with actual wind, currents, ship behavior and other intangible factors experienced in actual operations.

The SEAPA Pilots extend their thanks for the participation and support from RCI in the conduct of this important research. The study team agreed it was a privilege to be able to participate in these simulations, and that this process is an essential part of fostering the safety of navigation and the protection of the environment, people and property of the State of Alaska.

Figure 4: Anthem of the Seas and Norwegian Gem at Nassau, Bahamas

Simulation Debrief Notes – Navigation and Controllability

1. The vessel has pod drive and bow-thruster power capable to maintain positive control of the vessel given a theoretical maximum of 30 to 32 knots of wind on her beam. Simulation study results showed the model capable of managing winds to 40 knots for departure (Skagway).
2. Bow thrusters (BTs): The bow thrusters are effective up to 10-12 kts[5] and can be used effectively to minimize swept path with the following techniques.
    a. (20/20/20) used at 6-8 kts: 20% BT in direction of turn, used in conjunction with 20° rudder, maintain a 20° ROT. Note, the BTs were used effectively during simulation as the only means of turning, when it was desired to keep the stern on track
    b. Another technique for minimizing swept path while maintaining a straight track: BTs powered at 20% into the wind/current and counter the resultant with opposing rudder (thus putting both the BT's and the pods thrusting into the wind/current)
3. Azipods. 60 RPMs and above is an effective power setting for increasing speed and also for decreasing speed with both pods at 180°.[6] The OVS acts like a heavy ship; she's slow to accelerate and slow to decelerate (thus the use of > or = 60 RPMs, as noted above)
    a. An efficient technique for changing course, when accelerating at > 60 RPMs, is to give moderate rudder commands (10-15°), wait for the ROT to build up, and then give a heading to the helmsman.[7]
    b. The 60/120 pod configuration is considered most effective for turning the vessel, while maneuvering
    c. The Ovation's azipods are mounted very far aft, thus increasing the danger of ingesting ice or mooring lines.[8]
4. Ice. For conning in ice areas, we discussed that the pilot would keep the conn and either give azipod commands or indicate the course to steer to the master, who will manipulate the pods. The master was advised that both pods inboard is a safe configuration for maneuvering in ice.
5. Speed.
    a. Greater than 6 kts provides good steerage while 6 kts or less provides poor steerage.
    b. 10 kts or less through the water is safe operational speed for shifting from Open Sea to Aziman Mode.
    c. Appropriate arrival speeds (calm environmentals): 1 nm is 5 kts, 1 ship length 3 kts or less, 50 m is 1 kt or less
    d. 3.0 nm advance notice required to slow from 15 to 7 kts
    e. With both pods inboard 90° and zero RPM the ship will slow at 1 kt per 0.1 nm
    f. At 10 kts most drift angles decrease to ~ 3 degrees (and remain small through higher speeds)
    g. Slowing from 12 to 5 kts proves difficult while maintaining steering, (especially with a following wind/current). Therefore, at 10 kts (through the water) the common solution is to put both pods inboard at zero RPMs (which slows the ship at 1 kt / 0.1 nm).

---

[5] Master of *Anthem of the Seas* observation in regard to BTs (paraphrased here) 'offer effect to 7kts, but no great effect above 2 kts', and sufficient power to manage 35 knots of wind.
[6] Master of *Anthem of the Seas* observation stern is heavy, 40-50 RPM required for effective maneuvering
[7] Often a helmsman will use extreme rudder angles to reach a new heading thus providing more thrust to the side and less thrust ahead for speed buildup
[8] Master of *Anthem of the Seas* observation: Pods aft are 'like maneuvering with an outboard engine', makes for a massive sweep when turning (large swept path).

6. The stern seeks the wind, especially with sternway. Observation trip note from master that balcony angled section aft really acts as a wind scoop particularly at apparent wind angles of 45° and 135° and strongly impart strong influence on the handling of the ship.
7. Steering gear motors are electric, rather than hydraulic, thus azipod rotation rate builds up slowly (is not immediate) and reaches a maximum rate of 7.5°/second.
8. When propeller RPM are set at zero, the propellers will freewheel thus there is no slowing effect of 'stopped' propellers.
9. The master advised that many tie-ups require stern breast lines to be run from the offshore side of the ship thus, with 25 kts of offshore wind, the master commonly asks for a tug to push the ship alongside while letting go lines (eliminating the need for pod use while the lines are in the water).[9]
10. SEAPA's azipod command terminology was forwarded to RCCL for consideration. During simulation testing, the SEAPA azipod command terminology was used effectively with both RCCL masters (who also pointed out the similarities between the SEAPA terminology and the terminology being taught in the ABB azipod course).

Observation Trip Notes - based upon observed data and discussion with the Master

1. Speed is the only real solution to reducing swept path.
2. Engine/thruster combinations as related to wind 1 big/1 small + 2BTs for < 25kts wind, 2 big/1small + 3 or 4BTs for > 25kts wind.
3. BT #4 (farthest aft) less effective than the others (farther from the stem).
4. Sandy Hook Pilot suggested Rate of Turn (ROT) as preferred method of turning – felt there is more consistent control with Quartermasters performing better with this method.
5. Captain offered that the ship would take a lot of power to get her moving in a desired direction, but offered that when power was taken off – she would settle quickly.
6. Pods aft are 'like maneuvering with an outboard engine', makes for a massive sweep when turning (large swept path).
7. 25kts of wind (on the beam) pretty much limits ROT to 10° per minute (due to heeling). Can build up to 20° ROT as long as you back off in increments as well. 18kts Speed can turn at 10-15° ROT.
8. May be critical to work in Aziman mode in ice due to extreme aft and outboard location of pods
9. Captain commented that you really can't turn too early, and again she settles very quickly.

[9] This advice was 'mirrored' by the *Anthem of the Seas* master noting: 'Pods so far aft require care with mooring lines, must stop pods to pass stern lines.'

Recommendations

Given the outcome of the simulations and review of reports conducted by Royal Caribbean International of other port areas, the following recommendations are offered by SEAPA:

1. The Operational Guidelines attached (figure 5.) are recommended for the 2019 season, subject to adjustment based on experience and the on-scene decisions of the pilot and master.
2. SEAPA and RCI agree to meet for a post-season de-brief session to discuss and process guideline adjustments, based on the operational experience with this class of vessel.
3. Recommend against any entry at Tracy arm.
4. Closely observe operational capabilities – in particular Bow Thruster ability to counteract forces- due to unresolved discrepancy between simulator model performance and observed vessel/master determinations.

Figure 5: Anthem of the Seas, Bow View from the dock at Nassau, Bahamas

SEAPA Operational Guidelines for 2019 Season

Figure 6: Operational Guidelines - 2019

Royal Caribbean International and Southeast Alaska Pilots Association
---General Guidelines for Royal Caribbean International Vessels---

"What we can do without compromising safety."

General Considerations	**The Master and Pilot will jointly assess the current, wind speed & direction, visibility, navigational hazards (e.g., channel limitations, density of ice, anchored vessels) to agree on an abort point or to proceed. For port calls where the winds are forecast to exceed 45 knots for any time during the port call, the Master and Pilot will jointly address the port capabilities to include at a minimum: berth limitations (e.g., bollard strength, number & arrangement of bollards); ship's mooring limitations (e.g., max number of lines, line strength); port resources (e.g., tug availability and horsepower) in consideration of port cancellation.**

	AREA	WIND	CURRENT
Ice Areas	**Yakutat Bay / Disenchantment Bay (Hubbard Glacier)**	For evolutions where actual or forecast winds are 30 knots or greater, the Master and Pilot will jointly assess the current, wind direction, visibility, waterway limitations (including size & density of ice, marine mammals, etc.), and the presence of other vessels to agree on an abort point or to proceed.	
Ice Areas	**Glacier Bay**		
Ice Areas	**Endicott Arm**	For evolutions where actual or forecast winds are 15 knots or greater, the Master and Pilot will jointly assess the current, wind direction, visibility, waterway limitations (including size & density of ice, marine mammals, etc.), and the presence of other vessels to agree on an abort point or to proceed.	
Ice Areas	**Tracy Arm**	**ADVISE AGAINST ANY ENTRY INTO TRACY ARM**	
Juneau Area	**Juneau AS Stbd Side-to Docking**	30 Knots	1 Knot of current in same direction as wind
		35 Knots	Minimal current
Juneau Area	**Juneau AS Stbd Side-to Undocking**	30 Knots	1 Knot of current in same direction as wind
		35 Knots	Minimal current
Skagway Ar[ea]	**Skagway RRA Docking**	35 Knots	N/A
Skagway Ar[ea]	**Skagway RRA Undocking**	40 Knots	N/A
Sitka Area	**Sitka - Arrival OSD**	30 Knots	1 Knot of current in same direction as wind
Sitka Area	**Sitka - Departure OSD**	30 Knots	1 Knot of current in same direction as wind
ISP Area	**Icy Strait Point - Arrival**	25 Knots	1 Knot of current in same direction as wind
ISP Area	**Icy Strait Point - Departure**	25 Knots	1 Knot of current in same direction as wind
Ketchikan Area	**Tongass Narrows East Channel (California and Idaho Rocks)**	Southerly through Westerly winds in excess of 25 Knots	1 Knot of current in same direction as wind
		Winds in excess of 30 Knots from any direction	
Ketchikan Area	**Tongass Narrows Ketchikan Harbor to Lewis Reef (Airport / Drydock Area)**	Southerly through Westerly winds in excess of 25 Knots	1 Knot of current in same direction as wind
		Winds in excess of 30 Knots from any direction	
Ketchikan Area	**Ketchikan Berth 4 Docking**	Winds in excess of 25 Knots from any direction	1 Knot of current in same direction as wind
Ketchikan Area	**Ketchikan Berth 4 Undocking**	Winds in excess of 25 Knots from any direction	1 Knot of current in same direction as wind

Ketchikan is not scheduled for the 2019 season (Limits set on very limited simulation run data)

* Aft tug necessary to 'pin' ship at berth during let go for offshore winds (to prevent lines in propellors)

Simulation Run Log

Figure 7: Simulation Run Log

OVATION OF THE SEAS SCENARIOS RUN RECORD - DEC 3-7, 2018

RUN NUMBER					INITIAL CONDITIONS	
Run-LOC-dir-Day#.Total#	LOC	Run?	WATERWAY/PORT	MANEUVER/DIRECTION	WIND	CURRENT
2-JNU-arr-1.2	JNU	▯	Gastineau Ch / Alaska Steam	Inbound	SE 20 KTS	none
3-JNU-arr-1.3	JNU	▯	Gastineau Ch / Alaska Steam	Inbound	SE 30 KTS	none
4-JNU-arr-1.4	JNU	▯	Gastineau Ch / Alaska Steam	Inbound	SE 30 KTS	Fl, 1kt
28-JNU-arr-1.28	JNU	▯	**Gastineau Ch / Alaska Steam**	**Inbound**	**SE 45**	**Fl, 1kt**
5-JNU-arr-1.5	JNU	▯	Gastineau Ch / Alaska Steam	Inbound	NE 25 KTS	E, 1kt
8-JNU-dep-1.8	JNU	▯	Alaska Steam / Gastineau Ch	Undocking / Transit	NE 35 KTS	E, 1kt
9-JNU-dep-1.9	JNU	▯	Alaska Steam / Gastineau Ch	Undocking / Transit	NE 35 KTS	E, 1kt
29-JNU-arr-3.29	JNU	▯	**JNU / Gastineau Ch**	**Inbound**	**SE 35 KTS**	**Fl, 1.5**
30-JNU-dep-3.30	JNU	▯	**JNU / Gastineau Ch**	**Outbound**	**NW 35 KTS**	**E, 1.5kt**
31-JNU-dep-4.31	JNU	▯	**JNU / Gastineau Ch**	**Inbound**	**SE 30 KTS**	**Fl, 1kt**
10-SKG-arr-2.10	SKG	▯	Taiya Inlet / RRA	Inbound	SE 45 KTS	F, 0.5
11-SKG-arr-2.11	SKG	▯	Taiya Inlet / RRA	Inbound	SE 35 KTS	E, 0.5kt
12-SKG-arr-2.12	SKG	▯	Taiya Inlet / RRA	Inbound	SW 25 KTS	none
13-SKG-arr-2.13	SKG	▯	Taiya Inlet / RRA	Inbound	NE 25 KTS	E, 0.5kt
14-SKG-dep-2.14	SKG	▯	RRA / Taiya Inlet	Undocking / Transit	SE 45 KTS	F, 0.5
15-SKG-dep-2.15	SKG	▯	RRA / Taiya Inlet	Undocking / Transit	N 45 KTS	E, 1kt
16-SKG-dep-2.16	SKG	▯	RRA / Taiya Inlet	Undocking / Transit	SW 45 KTS	Fl, 1kt
17-SKG-dep-2.17	SKG	▯	RRA / Taiya Inlet	Inbound	SE 45 KTS	none
22-SIT-arr-3.22	SIT	▯	Sitka Sound / Old Sitka Dock	Inbound	SW 35 KTS	Fl,2 kt
23-SIT-dep-3.23	SIT	▯	Old Sitka Dock / Sitka Sound	Undocking / Transit	NE 35 KTS	E, 1.5kt
24-ISP-arr-3.24	ISP	▯	Icy Strait / Icy Strait Point Dock	Inbound	SW 25 KTS	E, 1kt
25-ISP-dep-3.25	ISP	▯	Icy Strait Point Dock / Icy Strait	Undocking	N 25 KTS	Fl, 1kt
31-TA-ib-3.31	**TA**	▯	**Tracy Arm Bar**	**Inbound**	**none**	**E, 4kt**
18-END-ib-3.18	END	▯	Endicott Arm Bar	Inbound	none	E, 4kt
19-END-ob-3.19	END	▯	Endicott Arm Bar	Outbound	none	E, 4kt
20-TA-s1-3.20	TA	▯	Tracy Arm S Turns	Outbound	SW 30 KTS	none
21-TA-s2-3.21	TA	▯	Tracy Arm S Turns	Outbound	SW 30 KTS	none
26-KTN-arr-4.26	KTN	▯	East Channel / Berth _ / Transit	IB / Docking / OB	SE 25 KTS	Fl, 1kt
32-KTN-dep-4.32	**KTN**	▯	**KTN / Tongass Ch North**	**Outbound**	**SE 25 KTS**	**Fl, 1kt**
Total Simulations:		**29**			**1 - NO GO**	9
					2 - EOCZ	6
					3 - OK	8
					4 - GOOD	6

Note for Simulation Run Log Ratings: Ratings 3 & 4 are operationally manageable risk, 2 is at or beyond the upper limit of risk, and 1 is unacceptable risk. Edge of Comfort Zone (EOCZ is rating 2) is defined as: 'the environmental and operational parameters at which undesirable incidents began to happen'.

Simulation Criteria

#	Item	Standard
1	Ketchikan – Mt Point to Saxman	12 knots by Southeast Alaska Vessel Waterway Guide (VWG)
2	Ketchikan – Saxman to Channel Island	7 knots by CFR reference
3	Ketchikan - Harbor	5 knots by Tongass Waterway Guide and VWG
4	Juneau – Dupont to Sheep Creek	14 knots - VWG
5	Juneau – Sheep Creek to Juneau Isle	10 knots - VWG
6	Juneau – Juneau Isle to Rock Dump	7 knots - VWG
7	Juneau - Harbor	5 knots - VWG
8	Maximum drift angle passing through California and Idaho Rocks	7 degrees
9	Thrusters use for vessel control during channel transits (vessel not maneuvering near berth areas)	Thruster use not a common practice for channel transit
10	Tug use	Evaluated in concurrent study

Pilot Card: Ovation of the Seas[10]

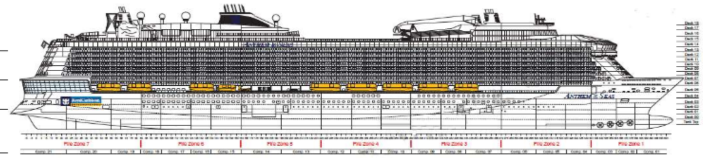
Figure 8: Pilot Card, Ovation of the Seas

Drafts

Fwd : ____________

Mid : ____________

Aft : ____________



Year Built: 2016
Call Sign: C6BX9
IMO Number: 9697753
MMSI Number: 311000397
Official Number: 7000799
Class: DNV 1A1, Passenger Ship

No Pax : ____________

No Crew : ____________

Ovation Of The Seas - Pilot card

Ship's Particulars	
Gross Tonnage:	168.666 GRT
Net Tonnage:	154,078 NRT
Displacement:	78,250 tonnes
Draught (Min) :	8.1 m. / 26'7"
Draft Max:	8.8 m. / 28'10"
Length Overall:	347.10m/1138.8ft
Length P/P:	320.2m / 1050.5ft
Moulded Breadth on WL:	41.4m. / 135.1 ft
Ext. Breadth (Bridge Wings):	48.9m / 160.3 ft
Max Air Draft @ 8.10 m :	62.9m / 206.4 ft
Max Air Draft @ 8.10 m :	58.2m / 190.9 ft (Retracted Funnels)
Max Air Draft (North Star) :	95.0 m / 311.8 ft
Bridge to Bow:	43.9m. / 144 ft
Bridge to Stern:	303.2m. / 994.9 ft
Anchors:	2 x 14 Shackles(2*385) 17.25MT

RoyalCaribbean INTERNATIONAL

Port of Register
Nassau, Bahamas

Maneuvering Speeds	
RPM	**Speed**
145	**23.4**
102	**16.7**
59	**9.6**
15	**4.9**
0	**2.5**

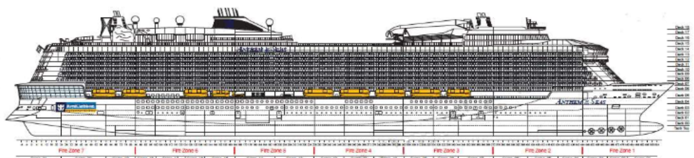
Machinery Characteristic	
PROPULSION: Two 360-degree, fixed pitch Pods, inwards turning	
Max Azipod Angle / Power:	35º (Cruise Mode), 2 X 20 MW
Max Azipod Angle / Power:	360º (Maneuvering Mode), 2 X 10 MW
Pod Turning Rate :	2.5 °/ Sec Normal
Pod Turning Rate :	5.0 °/ Sec Fast mode
Bow Thrusters:	4 x 3500 kW / 4 x 4694hp + 10%
Type of Engines:	Wartsila Diesel Electric
Main Engines:	2 X 14 MW, 2 X 18MW
Total propulsion power:	41,000 kW / 54,982hp
Propulsion machinery:	Two 20.5 MW, ABB Azipod
Max Spd for Thrusters:	8 kts
Max Speed:	23.4 knots - Stopping Distance 0.92 Cables
Stabilizers:	2 , Extend 6.2 Meters
Frontal Wind Area:	1,780 sq.m. / 19,159 sq. ft
Lateral Wind Area:	14,614 sq.m. / 157, 304 sq. ft

Drafts

Fwd : ____________

Mid : ____________

Aft : ____________



Year Built: 2016
Call Sign: C6BX9
IMO Number: 9697753
MMSI Number: 311000397
Official Number: 7000799
Class: DNV 1A1, Passenger Ship

No Pax : ____________

No Crew : ____________

Ovation Of The Seas - Pilot card

Ship's Particulars	
Gross Tonnage:	168.666 GRT
Net Tonnage:	154,078 NRT
Displacement:	78,250 tonnes
Draught (Min) :	8.1 m. / 26'7"
Draft Max:	8.8 m. / 28'10"
Length Overall:	347.10m/1138.8ft
Length P/P:	321.1m / 1050.5ft
Moulded Breadth on WL:	41.4m. / 135.1 ft
Ext. Breadth (Bridge Wings):	48.9m / 160.3 ft
Max Air Draft @ 8.10 m :	62.9m / 206.4 ft
Max Air Draft @ 8.10 m :	58.2m / 190.9 ft (Retracted Funnels)
Max Air Draft (North Star) :	95.0 m / 311.8 ft
Bridge to Bow:	43.9m. / 144 ft
Bridge to Stern:	303.2m. / 994.9 ft
Anchors:	2 x 14 Shackles(2*385) 17.25MT

RoyalCaribbean INTERNATIONAL

Port of Register
Nassau, Bahamas

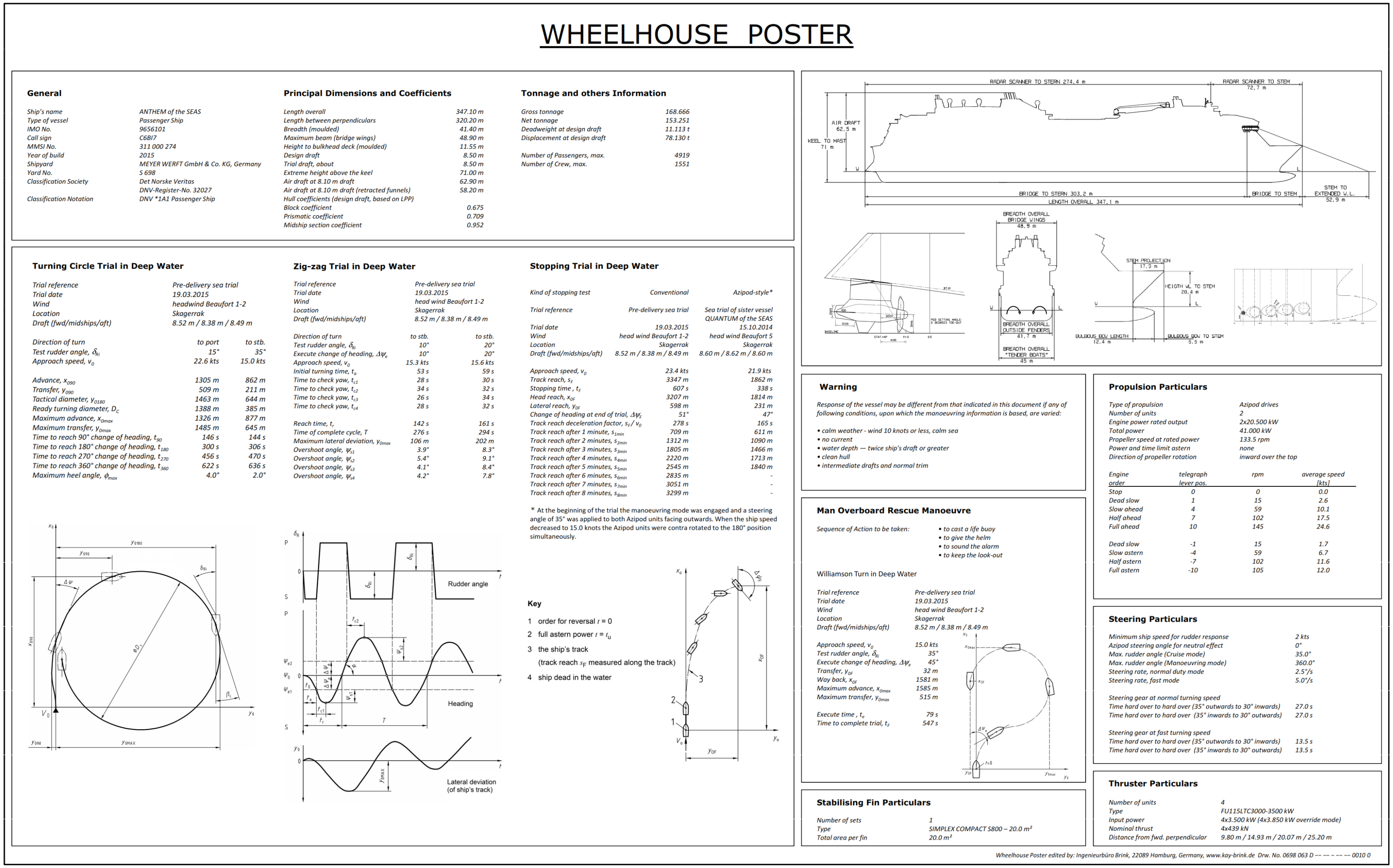
Maneuvering Speeds	
RPM	**Speed**
133	**23.4**
77	**13.5**
56	**9.9**
28	**4.9**
0	**0.0**

Machinery Characteristic	
PROPULSION: Two 360-degree, fixed pitch Pods, inwards turning	
Max Azipod Angle / Power:	35º (Cruise Mode), 2 X 20 MW
Max Azipod Angle / Power:	360º (Maneuvering Mode), 2 X 10 MW
Pod Turning Rate :	2.5 °/ Sec Normal
Pod Turning Rate :	5.0 °/ Sec Fast mode
Bow Thrusters:	4 x 3500 kW / 4 x 4694hp + 10%
Type of Engines:	Wartsila Diesel Electric
Main Engines:	2 X 14 MW, 2 X 18MW
Total propulsion power:	41,000 kW / 54,982hp
Propulsion machinery:	Two 20.5 MW, ABB Azipod
Max Spd for Thrusters:	8 kts
Max Speed:	23.4 knots - Stopping Distance 0.92 Cables
Stabilizers:	2 , Extend 6.2 Meters
Frontal Wind Area:	1,780 sq.m. / 19,159 sq. ft
Lateral Wind Area:	14,614 sq.m. / 157, 304 sq. ft

[10] Pilot Card Data Provided by Royal Caribbean International

Wheelhouse Poster, Ovation of the Seas

Figure 9: Wheelhouse Poster, Ovation of the Seas



WHEELHOUSE POSTER

General

Ship's name	ANTHEM of the SEAS
Type of vessel	Passenger Ship
IMO No.	9656101
Call sign	C6BI7
MMSI No.	311 000 274
Year of build	2015
Shipyard	MEYER WERFT GmbH & Co. KG, Germany
Yard No.	S 698
Classification Society	Det Norske Veritas
	DNV-Register-No. 32027
Classification Notation	DNV *1A1 Passenger Ship

Principal Dimensions and Coefficients

Length overall	347.10 m
Length between perpendiculars	320.20 m
Breadth (moulded)	41.40 m
Maximum beam (bridge wings)	48.90 m
Height to bulkhead deck (moulded)	11.55 m
Design draft	8.50 m
Trial draft, about	8.50 m
Extreme height above the keel	71.00 m
Air draft at 8.10 m draft	62.90 m
Air draft at 8.10 m draft (retracted funnels)	58.20 m
Hull coefficients (design draft, based on LPP)	
Block coefficient	0.675
Prismatic coefficient	0.709
Midship section coefficient	0.952

Tonnage and others Information

Gross tonnage	168.666
Net tonnage	153.251
Deadweight at design draft	11.113 t
Displacement at design draft	78.130 t
Number of Passengers, max.	4919
Number of Crew, max.	1551

Turning Circle Trial in Deep Water

Trial reference	Pre-delivery sea trial
Trial date	19.03.2015
Wind	headwind Beaufort 1-2
Location	Skagerrak
Draft (fwd/midships/aft)	8.52 m / 8.38 m / 8.49 m

Direction of turn	to port	to stb.
Test rudder angle, δ_{Ri}	15°	35°
Approach speed, v_0	22.6 kts	15.0 kts
Advance, x_{090}	1305 m	862 m
Transfer, y_{090}	509 m	211 m
Tactical diameter, y_{0180}	1463 m	644 m
Ready turning diameter, D_C	1388 m	385 m
Maximum advance, x_{0max}	1326 m	877 m
Maximum transfer, y_{0max}	1485 m	645 m
Time to reach 90° change of heading, t_{90}	146 s	144 s
Time to reach 180° change of heading, t_{180}	300 s	306 s
Time to reach 270° change of heading, t_{270}	456 s	470 s
Time to reach 360° change of heading, t_{360}	622 s	636 s
Maximum heel angle, ϕ_{max}	4.0°	2.0°

Zig-zag Trial in Deep Water

Trial reference	Pre-delivery sea trial
Trial date	19.03.2015
Wind	head wind Beaufort 1-2
Location	Skagerrak
Draft (fwd/midships/aft)	8.52 m / 8.38 m / 8.49 m

Direction of turn	to stb.	to stb.
Test rudder angle, δ_{Ri}	10°	20°
Execute change of heading, $\Delta\psi_e$	10°	20°
Approach speed, v_0	15.3 kts	15.6 kts
Initial turning time, t_a	53 s	59 s
Time to check yaw, t_{c1}	28 s	30 s
Time to check yaw, t_{c2}	34 s	32 s
Time to check yaw, t_{c3}	26 s	34 s
Time to check yaw, t_{c4}	28 s	32 s
Reach time, t_r	142 s	161 s
Time of complete cycle, T	276 s	294 s
Maximum lateral deviation, y_{0max}	106 m	202 m
Overshoot angle, ψ_{s1}	3.9°	8.3°
Overshoot angle, ψ_{s2}	5.4°	9.1°
Overshoot angle, ψ_{s3}	4.1°	8.4°
Overshoot angle, ψ_{s4}	4.2°	7.8°

Stopping Trial in Deep Water

Kind of stopping test	Conventional	Azipod-style*
Trial reference	Pre-delivery sea trial	Sea trial of sister vessel QUANTUM of the SEAS
Trial date	19.03.2015	15.10.2014
Wind	head wind Beaufort 1-2	head wind Beaufort 5
Location	Skagerrak	Skagerrak
Draft (fwd/midships/aft)	8.52 m / 8.38 m / 8.49 m	8.60 m / 8.62 m / 8.60 m
Approach speed, v_0	23.4 kts	21.9 kts
Track reach, s_F	3347 m	1862 m
Stopping time, t_F	607 s	338 s
Head reach, x_{0F}	3207 m	1814 m
Lateral reach, y_{0F}	598 m	231 m
Change of heading at end of trial, $\Delta\psi_F$	51°	47°
Track reach deceleration factor, s_F/v_0	278 s	165 s
Track reach after 1 minute, s_{1min}	709 m	611 m
Track reach after 2 minutes, s_{2min}	1312 m	1090 m
Track reach after 3 minutes, s_{3min}	1805 m	1466 m
Track reach after 4 minutes, s_{4min}	2220 m	1713 m
Track reach after 5 minutes, s_{5min}	2545 m	1840 m
Track reach after 6 minutes, s_{6min}	2835 m	-
Track reach after 7 minutes, s_{7min}	3051 m	-
Track reach after 8 minutes, s_{8min}	3299 m	-

* At the beginning of the trial the manoeuvring mode was engaged and a steering angle of 35° was applied to both Azipod units facing outwards. When the ship speed decreased to 15.0 knots the Azipod units were contra rotated to the 180° position simultaneously.

Key

1 order for reversal $t = 0$
2 full astern power $t = t_u$
3 the ship's track (track reach s_F measured along the track)
4 ship dead in the water

Warning

Response of the vessel may be different from that indicated in this document if any of following conditions, upon which the manoeuvring information is based, are varied:

- calm weather - wind 10 knots or less, calm sea
- no current
- water depth — twice ship's draft or greater
- clean hull
- intermediate drafts and normal trim

Man Overboard Rescue Manoeuvre

Sequence of Action to be taken:

- to cast a life buoy
- to give the helm
- to sound the alarm
- to keep the look-out

Williamson Turn in Deep Water

Trial reference	Pre-delivery sea trial
Trial date	19.03.2015
Wind	head wind Beaufort 1-2
Location	Skagerrak
Draft (fwd/midships/aft)	8.52 m / 8.38 m / 8.49 m
Approach speed, v_0	15.0 kts
Test rudder angle, δ_{Ri}	35°
Execute change of heading, $\Delta\psi_e$	45°
Transfer, y_{0F}	32 m
Way back, x_{0F}	1581 m
Maximum advance, x_{0max}	1585 m
Maximum transfer, y_{0max}	515 m
Execute time, t_e	79 s
Time to complete trial, t_F	547 s

Stabilising Fin Particulars

Number of sets	1
Type	SIMPLEX COMPACT S800 – 20.0 m²
Total area per fin	20.0 m²

Propulsion Particulars

Type of propulsion	Azipod drives
Number of units	2
Engine power rated output	2x20.500 kW
Total power	41.000 kW
Propeller speed at rated power	133.5 rpm
Power and time limit astern	none
Direction of propeller rotation	inward over the top

Engine order	telegraph lever pos.	rpm	average speed [kts]
Stop	0	0	0.0
Dead slow	1	15	2.6
Slow ahead	4	59	10.1
Half ahead	7	102	17.5
Full ahead	10	145	24.6
Dead slow	-1	15	1.7
Slow astern	-4	59	6.7
Half astern	-7	102	11.6
Full astern	-10	105	12.0

Steering Particulars

Minimum ship speed for rudder response	2 kts
Azipod steering angle for neutral effect	0°
Max. rudder angle (Cruise mode)	35.0°
Max. rudder angle (Manoeuvring mode)	360.0°
Steering rate, normal duty mode	2.5°/s
Steering rate, fast mode	5.0°/s
Steering gear at normal turning speed	
Time hard over to hard over (35° outwards to 30° inwards)	27.0 s
Time hard over to hard over (35° inwards to 30° outwards)	27.0 s
Steering gear at fast turning speed	
Time hard over to hard over (35° outwards to 30° inwards)	13.5 s
Time hard over to hard over (35° inwards to 30° outwards)	13.5 s

Thruster Particulars

Number of units	4
Type	FU115LTC3000-3500 kW
Input power	4x3.500 kW (4x3.850 kW override mode)
Nominal thrust	4x439 kN
Distance from fwd. perpendicular	9.80 m / 14.93 m / 20.07 m / 25.20 m

Wheelhouse Poster edited by: Ingenieurbüro Brink, 22089 Hamburg, Germany, www.kay-brink.de Drw. No. 0698 063 D –– –– – –– –– 0010 0

Figure 10 Anthem of the Seas at Nassau

End of Report