



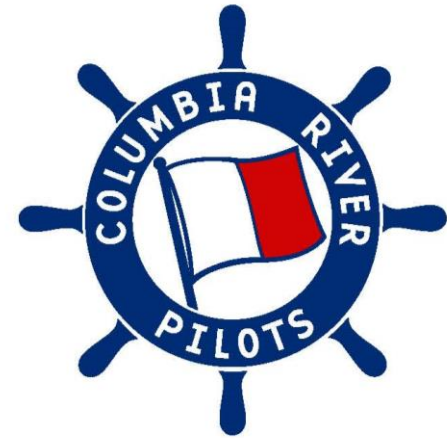
5.4



**COLUMBIA
RIVER
PILOTS**



WHO ARE THE
COLUMBIA RIVER PILOTS?



**ASSOCIATION OF
PROFESSIONAL
MARINERS**



46



A stylized map of the Columbia River. The river is shown in dark blue, flowing from the bottom left towards the top right. The land areas are in a medium grey. The state of Washington is labeled in the upper half, and Oregon is labeled in the lower half. Five ports are marked with white anchor icons and labeled: Port of Longview, Port of Kalama, Port of Vancouver USA, Port of Columbia County, and Port of Portland. A white line follows the river's path from the Port of Portland towards the Port of Columbia County.

WASHINGTON

PORT OF LONGVIEW

PORT OF KALAMA

PORT OF VANCOUVER USA

PORT OF
COLUMBIA COUNTY

PORT OF PORTLAND

OREGON

OVER 85 MILES
OF RIVER
SERVING 5 MAJOR PORTS



SERVICE SHIPS

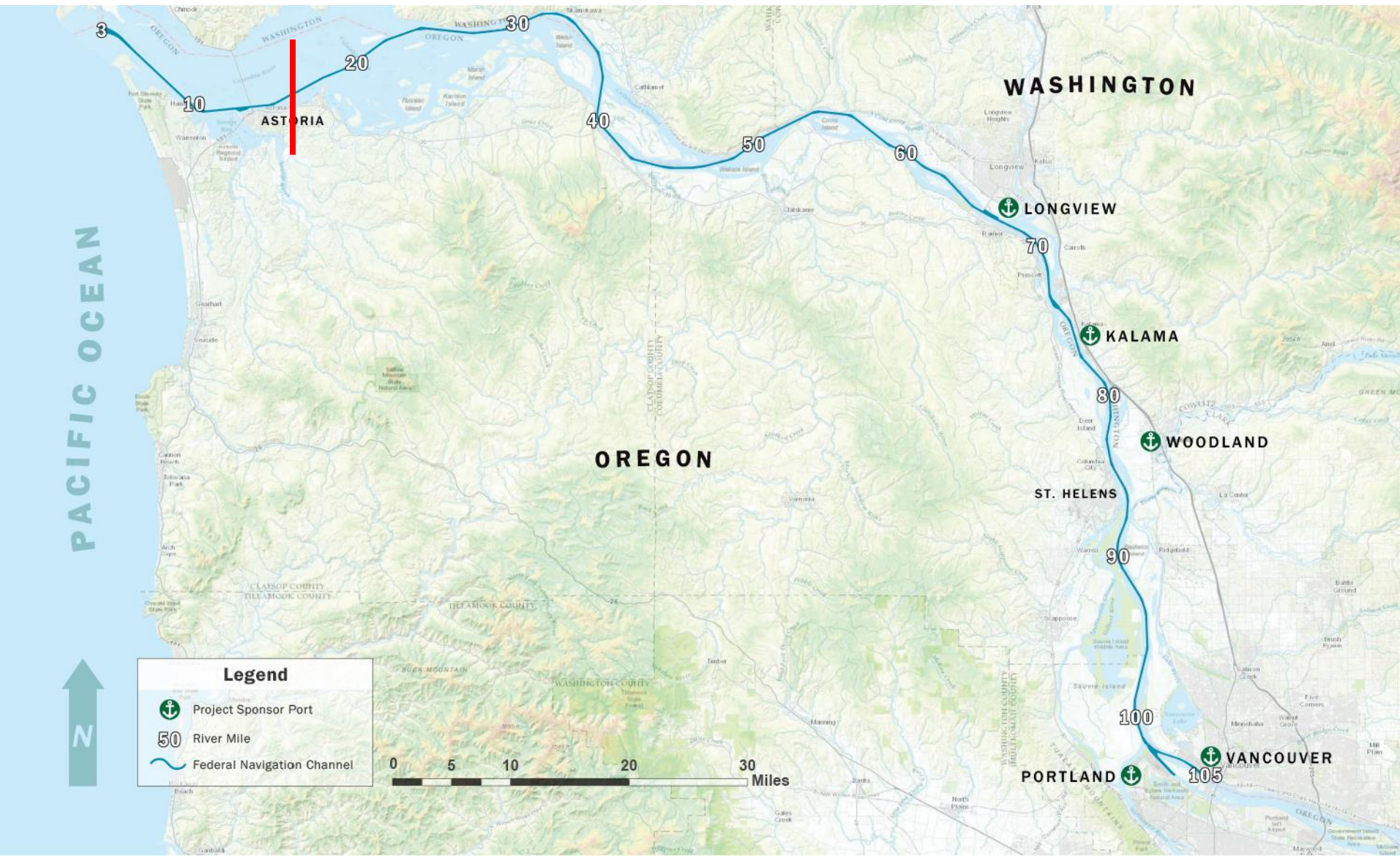
24 HOURS A DAY

365 DAYS A YEAR

CLOSELY COORDINATE WITH COLUMBIA RIVER BAR PILOTS

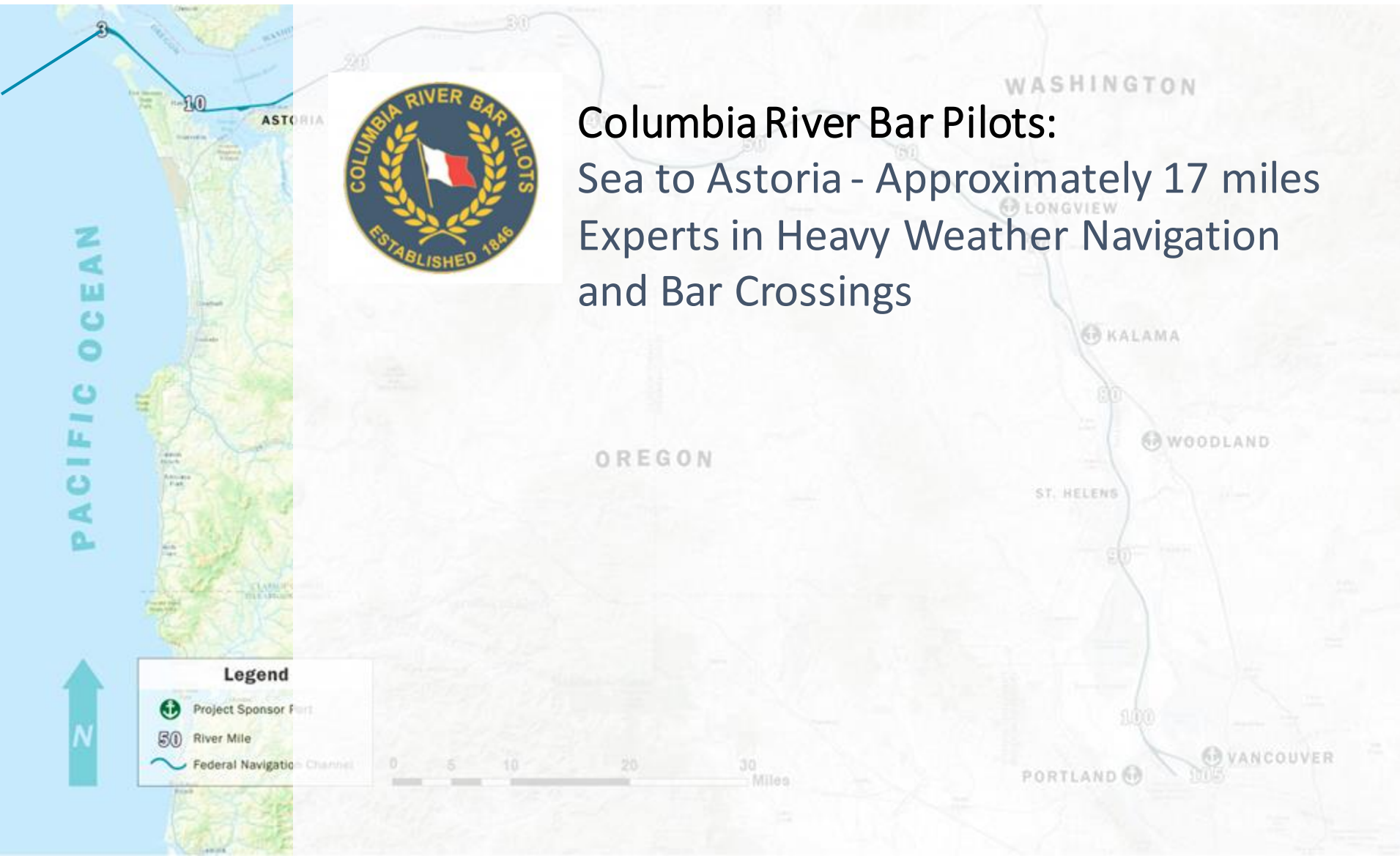
PILOTS & THE RIVER SYSTEM

Two separate Pilotage Grounds // Two different skill sets



PILOTS & THE RIVER SYSTEM

Two separate Pilotage Grounds // Two different skill sets



PILOTS & THE RIVER SYSTEM

Two separate Pilotage Grounds // Two different skill sets

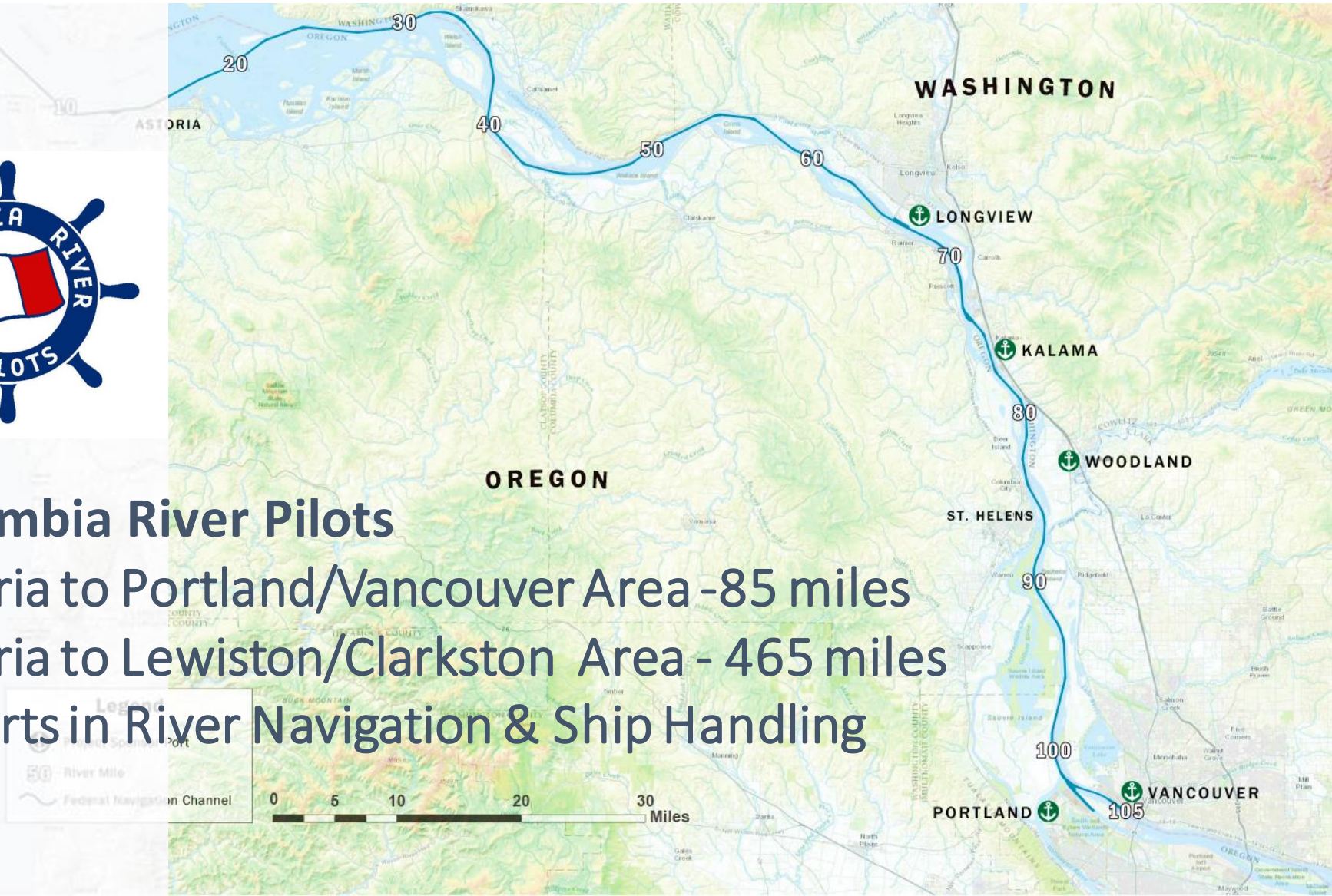


Columbia River Pilots

Astoria to Portland/Vancouver Area - 85 miles

Astoria to Lewiston/Clarkston Area - 465 miles

Experts in River Navigation & Ship Handling





NO. 1 PRIORITY
SAFETY



SAFE & EFFICIENT
NAVIGATION &
SHIP HANDLING





A PILOT'S JOB

INBOUND TRANSITS

POOR HANDLING AGAINST A STRONG DOWNSTREAM CURRENT

Must arrive on a flood tide:

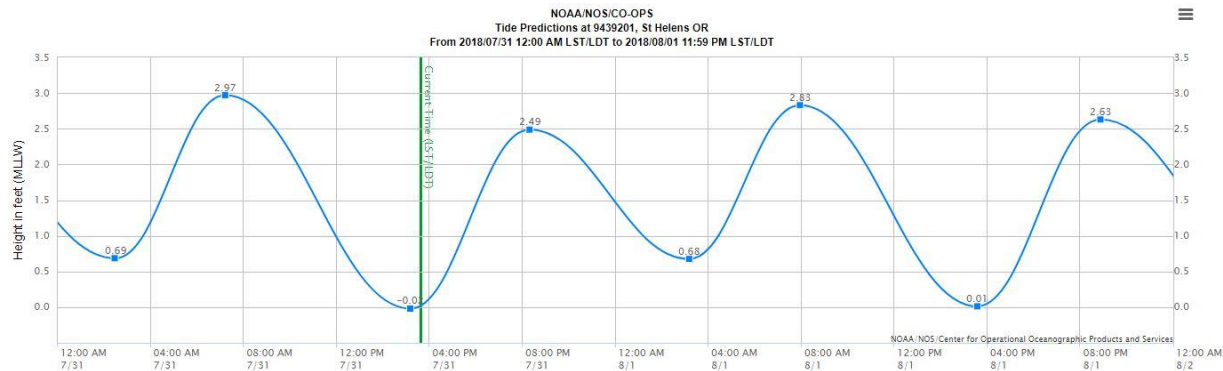
- >600' and >36' draft
- <600 and loaded to 80% or more max draft
- Heavy ships handle better in these conditions!



OUTBOUND TRANSITS

Deep Ship = Sailing Windows

Bar Pilot Window + River Pilot UKC Requirements



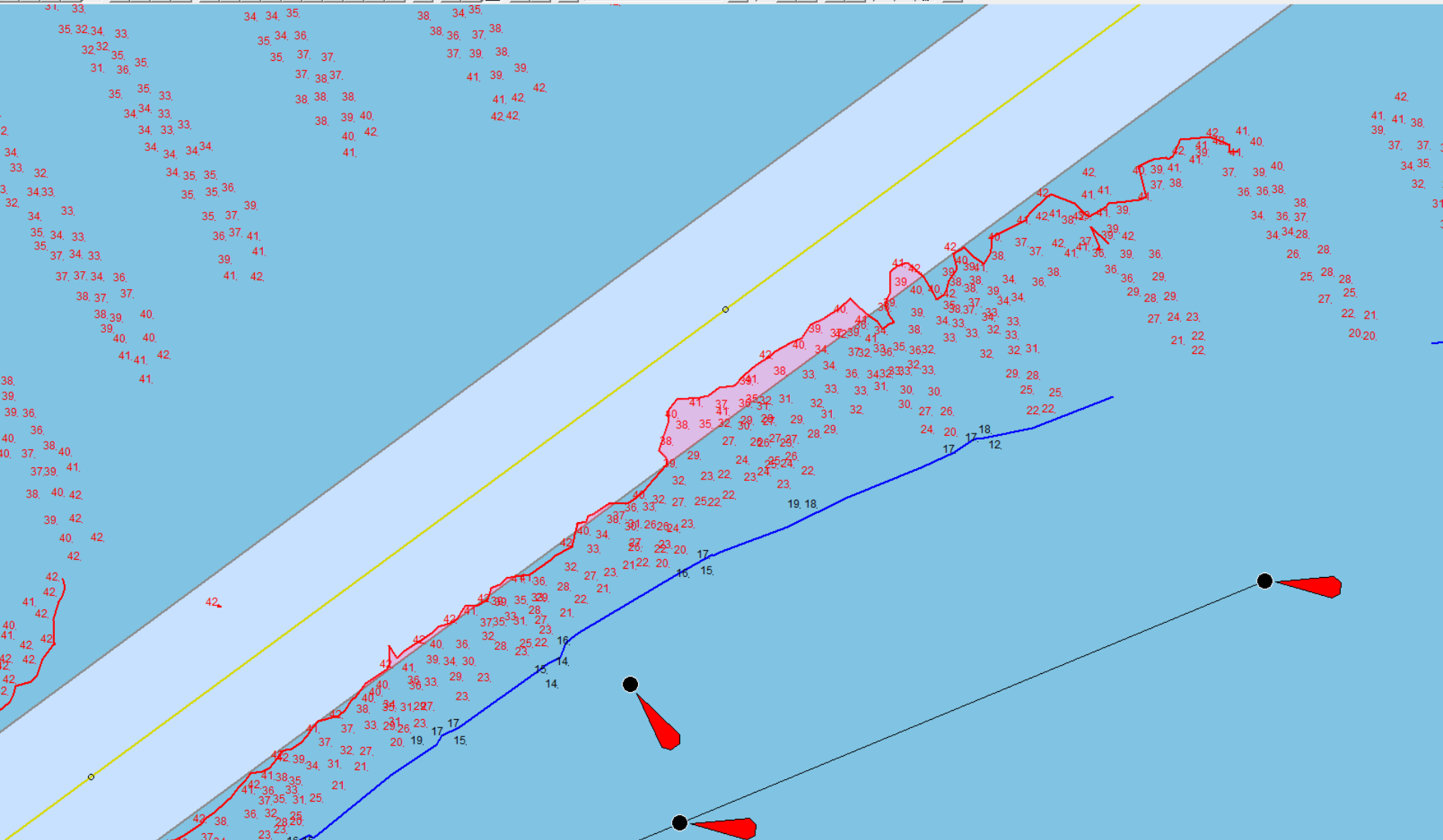
Departing Portland/Vancouver we will
encounter three tide changes

This presents a challenge when river levels
are low and shoaling is present

SHOALING IN THE COLUMBIA RIVER

TV32 ver 7.8.0Beta2 -- Mar 28 2022 - 15:33:59 -- C:\COLRIP 2022 TV32\TV32\STARTUP\DEFAULT.CONF -- Running Since: 08/19/2022

File View Chart Utilities Config Contacts Navigation Set Bookmark Goto Bookmark



46°14.3075' -123°42.9134'

Sock(0):Connected 31420 (n=1)

in 1172

1:4169

UNDER KEEL CLEARANCE (UKC)

SAFETY REQUIRES 2 FEET OF UKC

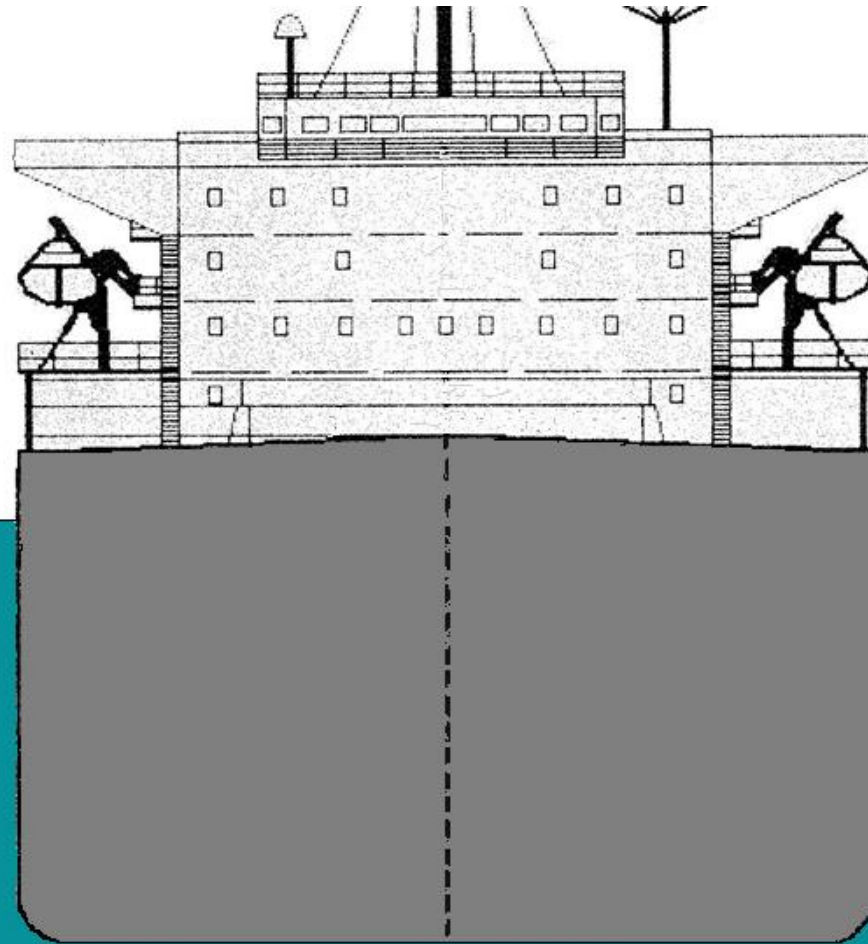
SHOALING AND RIVER LEVELS MAY
NOT ALLOW FOR 2 FEET UKC IN
CERTAIN AREAS AT CERTAIN TIMES

WE MUST STRATEGICALLY USE TIDES
AND RIVER LEVELS TO OUR
ADVANTAGE

SHIPS SOMETIMES HAVE TO WAIT
UNTIL A HIGH TIDE TO TRANSIT
SHALLOW AREAS IN THE RIVER

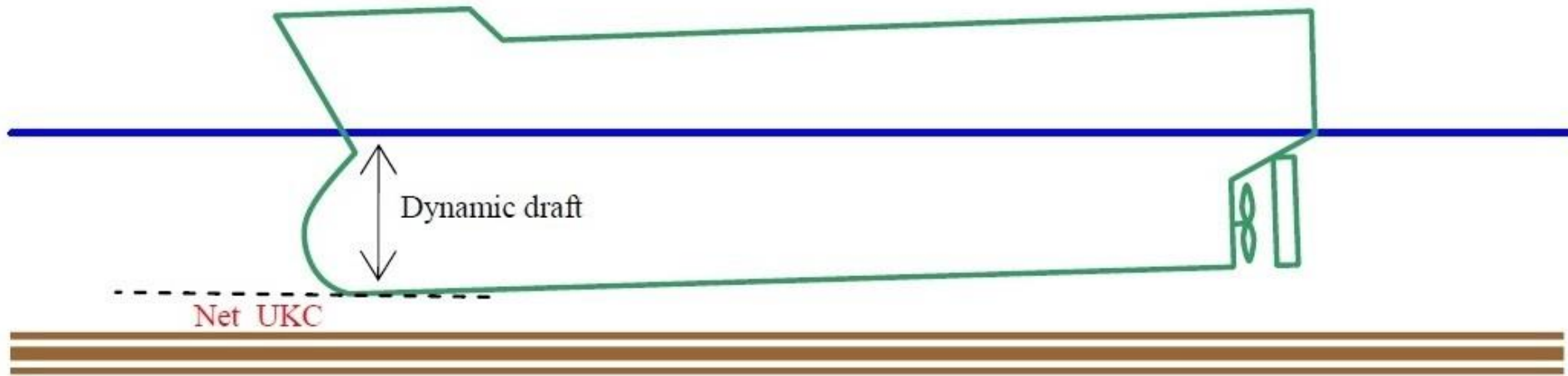


2-FT UKC TO SCALE IN CALM WATER IN THE COLUMBIA RIVER

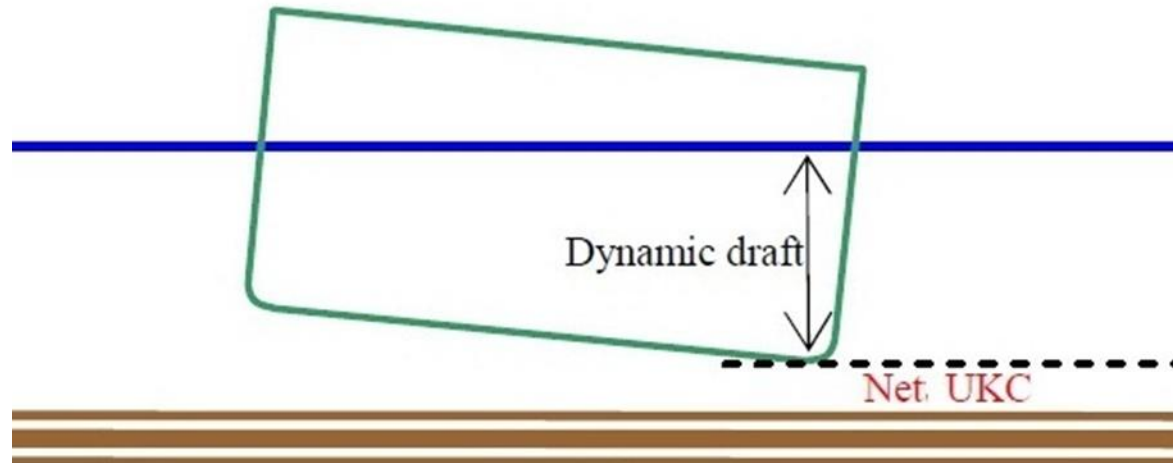


2 Feet

SQUAT / SINKAGE



ROLL/HEEL





Service of NOAA sponsored by the Port of Portland

LOADMAX

Predicting River Levels

Seven sensors strategically placed along the river that record and broadcast river levels

Loadmax predicts river levels at these locations for several days in advance using

Considers discharge at Bonneville Dam

Tides

Flow from tributaries

Recent precipitation



		R I V E R M I L E									
Date	Hour	17 ASTORIA	25	35 SKAMOKAWA	45 WAUNA	55 BEAVER	65 LONGVIEW	75	85 ST. HELENS	95	105 VANCOUVER
Gauge Reading in Feet / Flow Velocity in Feet per Second											
[FORECAST: Gauge Reading - beginning 08/15/2019 - hour 16]											
08/15/2019	16	6.46		6.81	7.06	6.19	5.51		2.93		1.95
08/15/2019	17	5.20		5.86	6.29	5.74	5.95		3.89		2.65
08/15/2019	18	3.85		4.42	5.11	4.81	5.41		4.29		3.63
08/15/2019	19	2.58		3.24	4.01	3.90	4.74		4.11		4.04
08/15/2019	20	1.77		2.32	3.16	3.18	4.12		3.75		3.83
08/15/2019	21	1.76		1.65	2.62	2.64	3.52		3.38		3.39
08/15/2019	22	2.69		1.54	2.16	2.21	2.94		3.00		2.94
08/15/2019	23	4.22		2.44	2.18	2.06	2.56		2.58		2.54
08/16/2019	00	5.93		4.29	3.30	2.68	2.40		2.20		2.22
08/16/2019	01	7.29		6.03	5.48	4.27	2.88		1.96		1.94
08/16/2019	02	7.87		7.12	6.92	5.78	4.37		2.17		1.78
08/16/2019	03	7.55		7.48	7.64	6.59	5.77		3.05		1.99
08/16/2019	04	6.31		6.76	7.16	6.47	6.21		4.09		2.75
08/16/2019	05	4.56		5.42	6.01	5.54	6.08		4.63		3.90
08/16/2019	06	2.71		3.84	4.73	4.51	5.39		4.62		4.50
08/16/2019	07	0.96		2.46	3.61	3.61	4.69		4.28		4.40
08/16/2019	08	-0.28		1.30	2.78	2.85	4.02		3.83		3.93
08/16/2019	09	-0.83		0.28	1.98	2.19	3.31		3.40		3.39
08/16/2019	10	-0.47		-0.38	1.10	1.31	2.62		2.93		2.90
08/16/2019	11	1.01		-0.27	0.55	0.87	2.04		2.42		2.48
08/16/2019	12	2.81		0.95	0.77	0.74	1.54		1.92		2.11
08/16/2019	13	4.75		2.83	2.06	1.58	1.40		1.47		1.72
08/16/2019	14	6.41		4.76	2.88	2.01	1.84		1.16		1.26
08/16/2019	15	7.24		6.29	5.88	4.74	2.92		1.23		1.11
08/16/2019	16	7.14		7.01	6.98	5.83	4.50		1.98		1.18
08/16/2019	17	6.09		6.56	6.87	6.07	5.38		3.09		1.81
08/16/2019	18	4.67		5.27	5.77	5.26	5.50		3.86		2.82
08/16/2019	19	3.20		3.82	4.48	4.31	4.80		4.07		3.69
08/16/2019	20	2.06		2.68	3.45	3.45	4.19		3.80		3.82
08/16/2019	21	1.50		1.85	2.78	2.81	3.65		3.39		3.45
08/16/2019	22	1.85		1.36	2.27	2.33	3.04		3.02		2.95
08/16/2019	23	3.03		1.58	1.95	1.98	2.59		2.60		2.52
08/17/2019	00	4.68		2.84	2.32	2.09	2.27		2.18		2.17
08/17/2019	01	6.33		4.82	3.88	2.97	2.32		1.83		1.85
08/17/2019	02	7.46		6.32	5.91	4.73	3.07		1.72		1.60
08/17/2019	03	7.78		7.24	7.14	6.00	4.65		2.17		1.55
08/17/2019	04	7.17		7.29	7.51	6.55	5.80		3.21		1.97
08/17/2019	05	5.69		6.31	6.70	6.10	6.07		4.13		2.91
08/17/2019	06	3.79		4.77	5.48	5.10	5.72		4.50		3.96
08/17/2019	07	1.92		3.22	4.19	4.07	4.93		4.38		4.34
08/17/2019	08	0.44		1.90	3.14	3.20	4.25		3.96		4.09
08/17/2019	09	-0.51		0.81	2.41	2.53	3.58		3.52		3.58
08/17/2019	10	-0.46		-0.02	1.57	1.86	2.87		3.09		3.05
08/17/2019	11	0.40		-0.28	0.85	1.21	2.30		2.60		2.59
08/17/2019	12	2.02		0.42	0.68	0.80	1.75		2.10		2.21
08/17/2019	13	3.89		1.93	1.43	1.20	1.43		1.63		1.83
08/17/2019	14	5.63		3.93	2.99	2.31	1.57		1.25		1.47
08/17/2019	15	6.83		5.62	5.04	4.00	2.37		1.10		1.16
08/17/2019	16	7.14		6.68	6.48	5.35	3.77		1.52		1.05
08/17/2019	17	6.54		6.78	6.84	5.88	4.88		2.54		1.41

TIMING IS ESSENTIAL!



When these components don't come together,
we end up with...

DRAFT RESTRICTIONS

This can virtually be eliminated by:

- A properly funded channel maintenance program
- Close coordination between COLRIP, USACE, CRSOA

CHANNEL PARTNERS

COLRIP Partners with the Port of Portland and the Army Corps of Engineers to evaluate river conditions for maintenance dredging

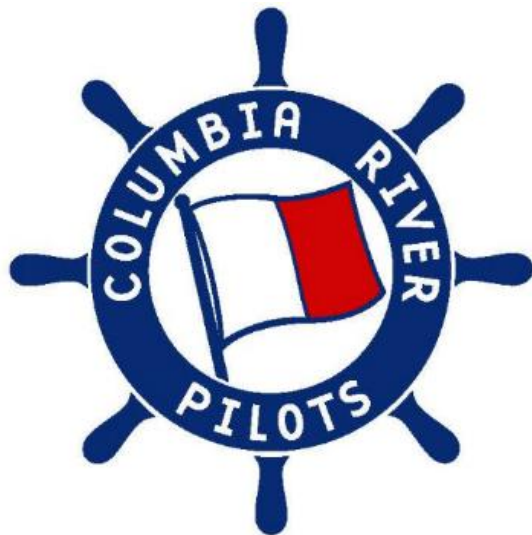
The USACE completes surveys every 30-60 days



**Port of Portland Dredge
OREGON**



Corps of Engineers Hopper Dredge ESSAYONS



VESSEL TRAFFIC INFORMATION SYSTEM (VTIS)

1

- Manned center is not required

2

- 2 relay towers cover entire route

3

- Real-time environmental data

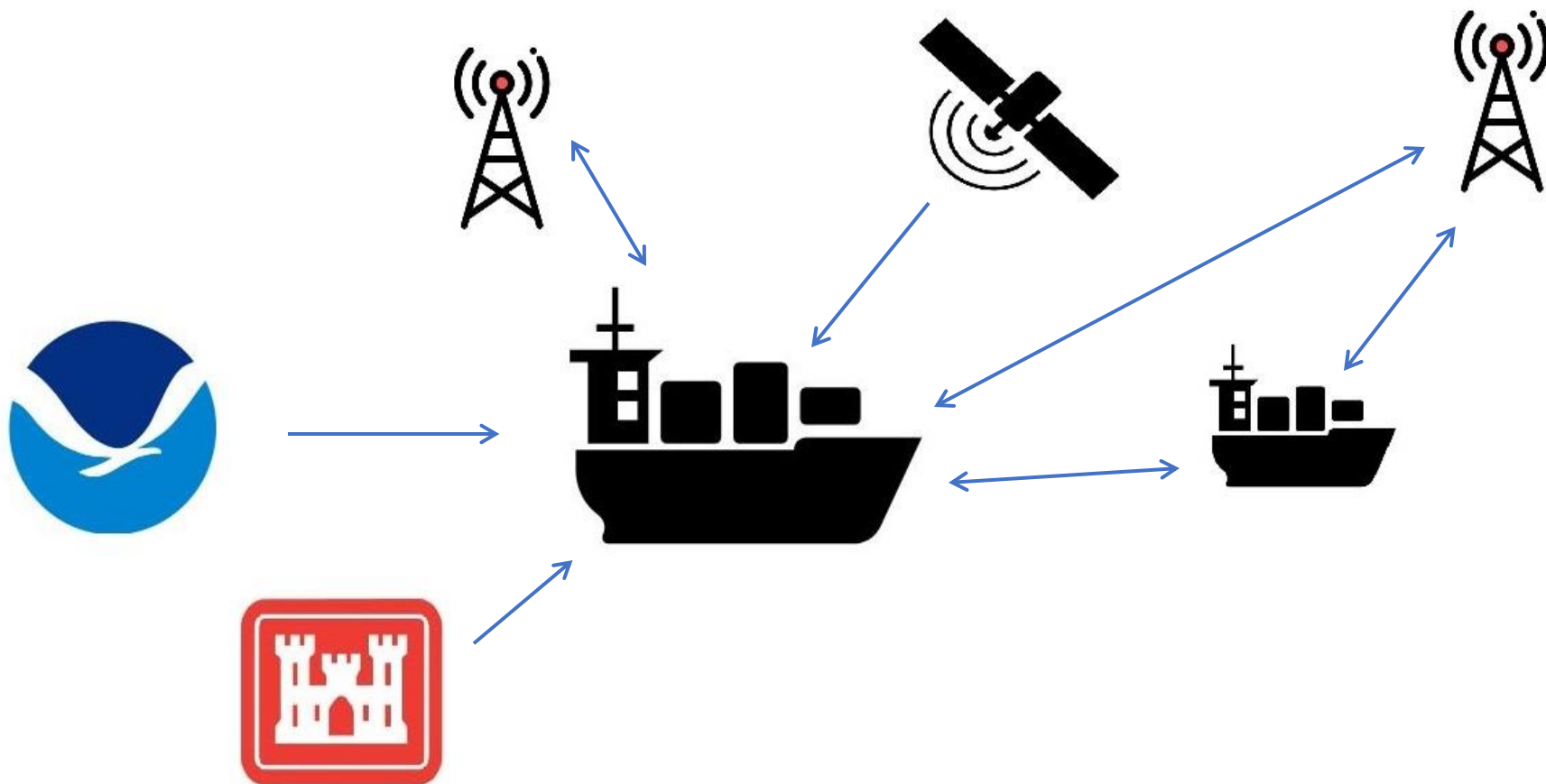
4

- Most recent survey data

5

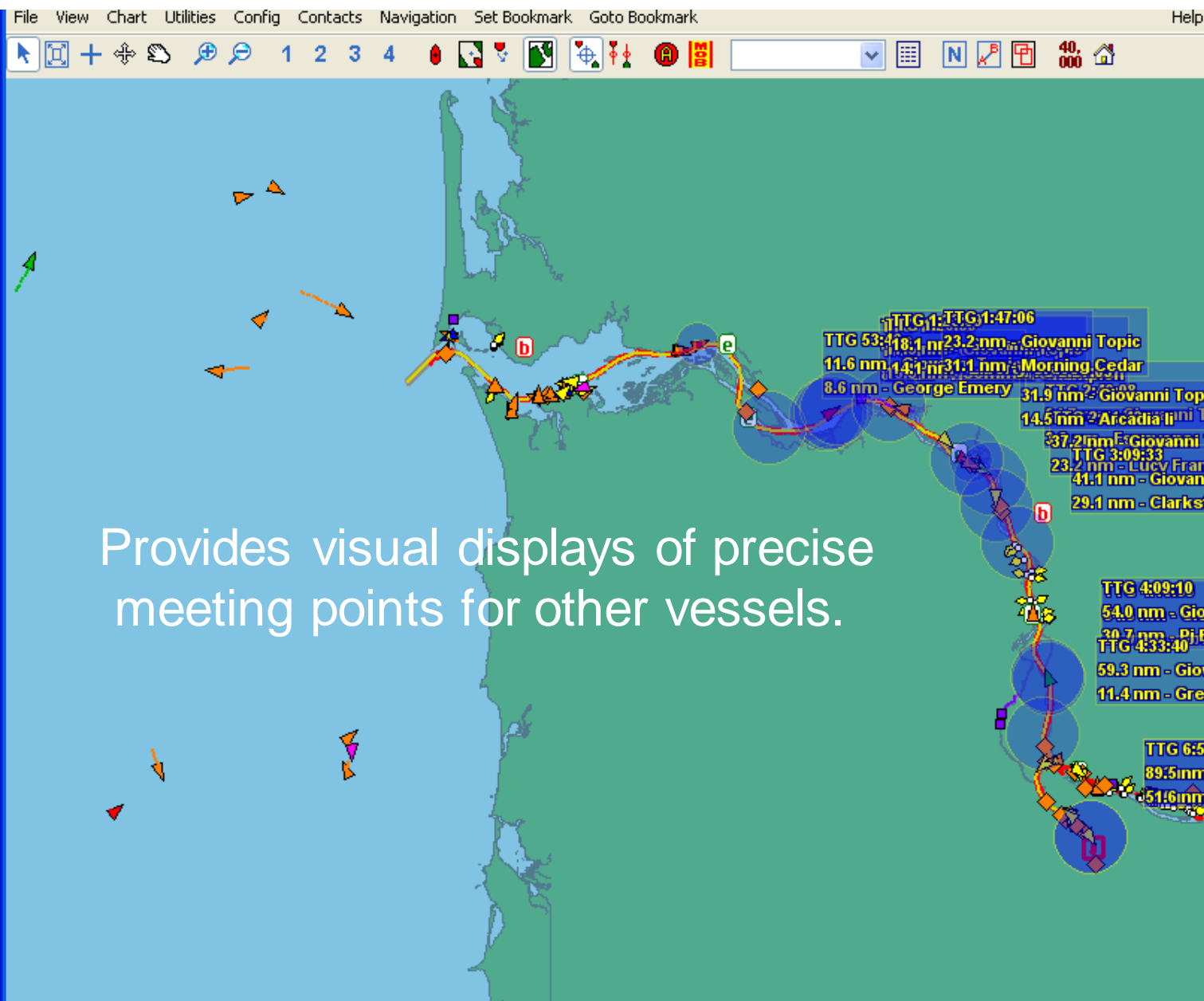
- Continual broadcasting using AIS

VTIS



A map of a river system, likely the Amazon, showing a winding path through a green landscape. The river is marked with a red line and various colored markers: orange diamonds, yellow triangles, red triangles, purple squares, and green circles. Two specific locations are circled in red and labeled with a red 'b'. A large yellow arrow points from the text to the first circled location. Another yellow arrow points from the text to the second circled location. The river flows from the top left towards the bottom right. In the top left, there are several orange triangles pointing towards the river. In the bottom left, there are a few more markers, including a red triangle and a purple square. The text "Two towers allow us to see the entire river at a glance" is written in white on a blue background, with two yellow arrows pointing to the circled locations.

Two towers allow us to see the
entire river at a glance



Provides visual displays of precise meeting points for other vessels.

Giovanni Topic

SID 636010697

SOG 13.0 kt

spkr

HDG 69°T

ROT R 0°/m

XTrk R 20 ft

From: ☒ center line ☐ sailline 0 ft

Cur reach Unnamed

Next WPT 29 - Rockland

Track Dist 3984 ft

Bearing 66.3°T

TTG 3:01s

☒ This ☐ Next > Course 66.6°T

Status Rng/Brq ETA's

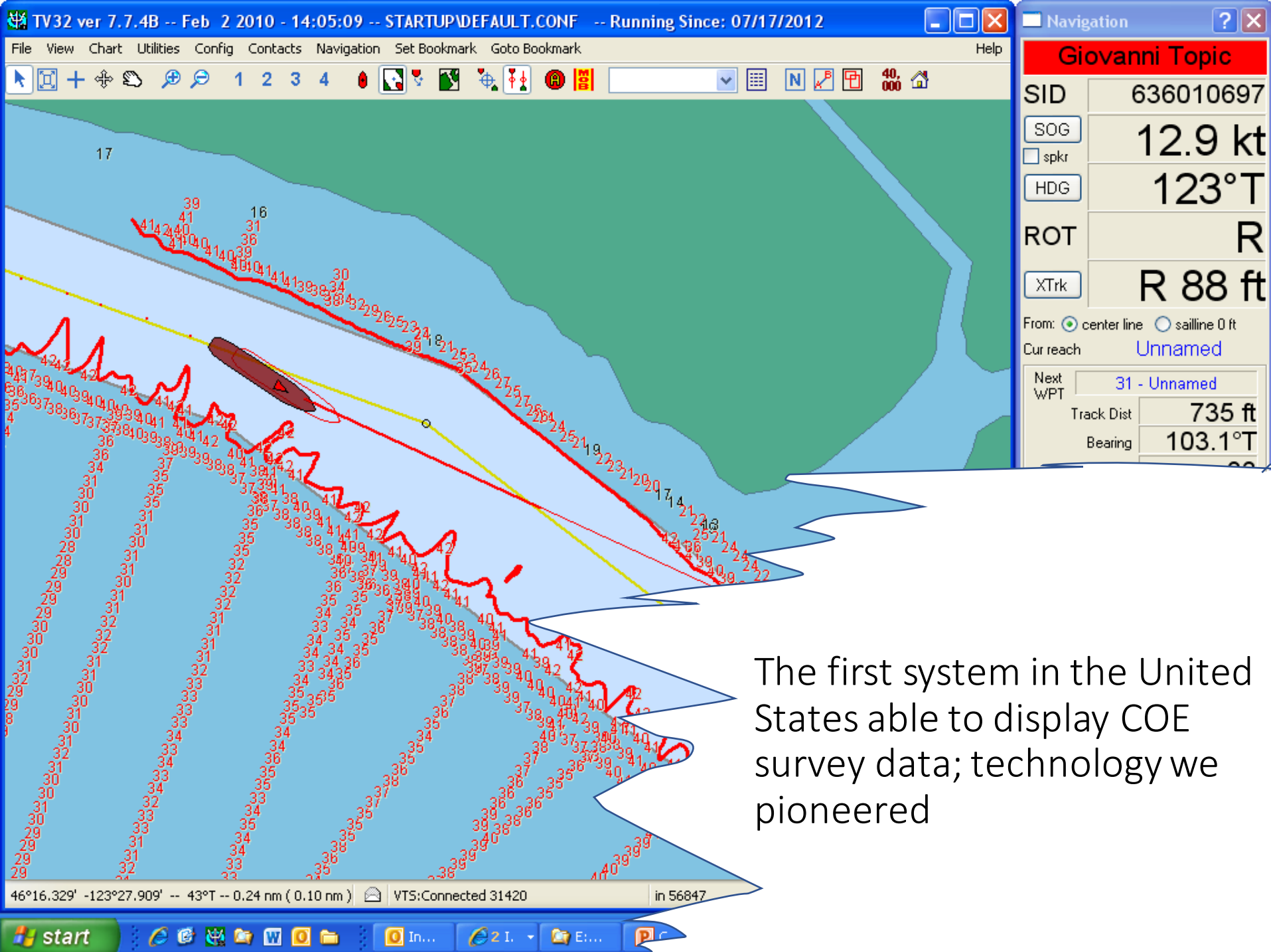
DGPS No SVs n/a

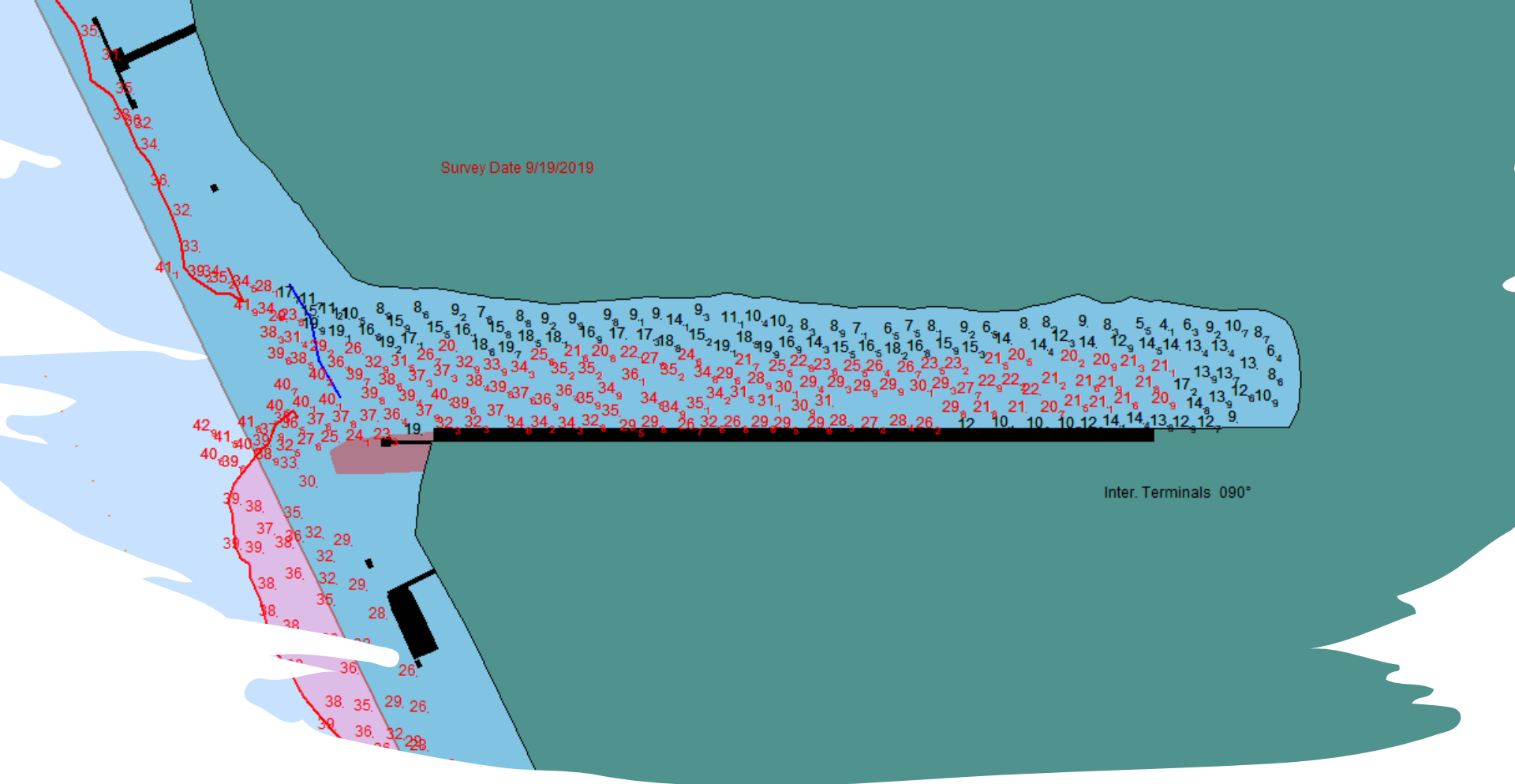
HDOP n/a Age n/a

Src vdm3 Mrb n/a

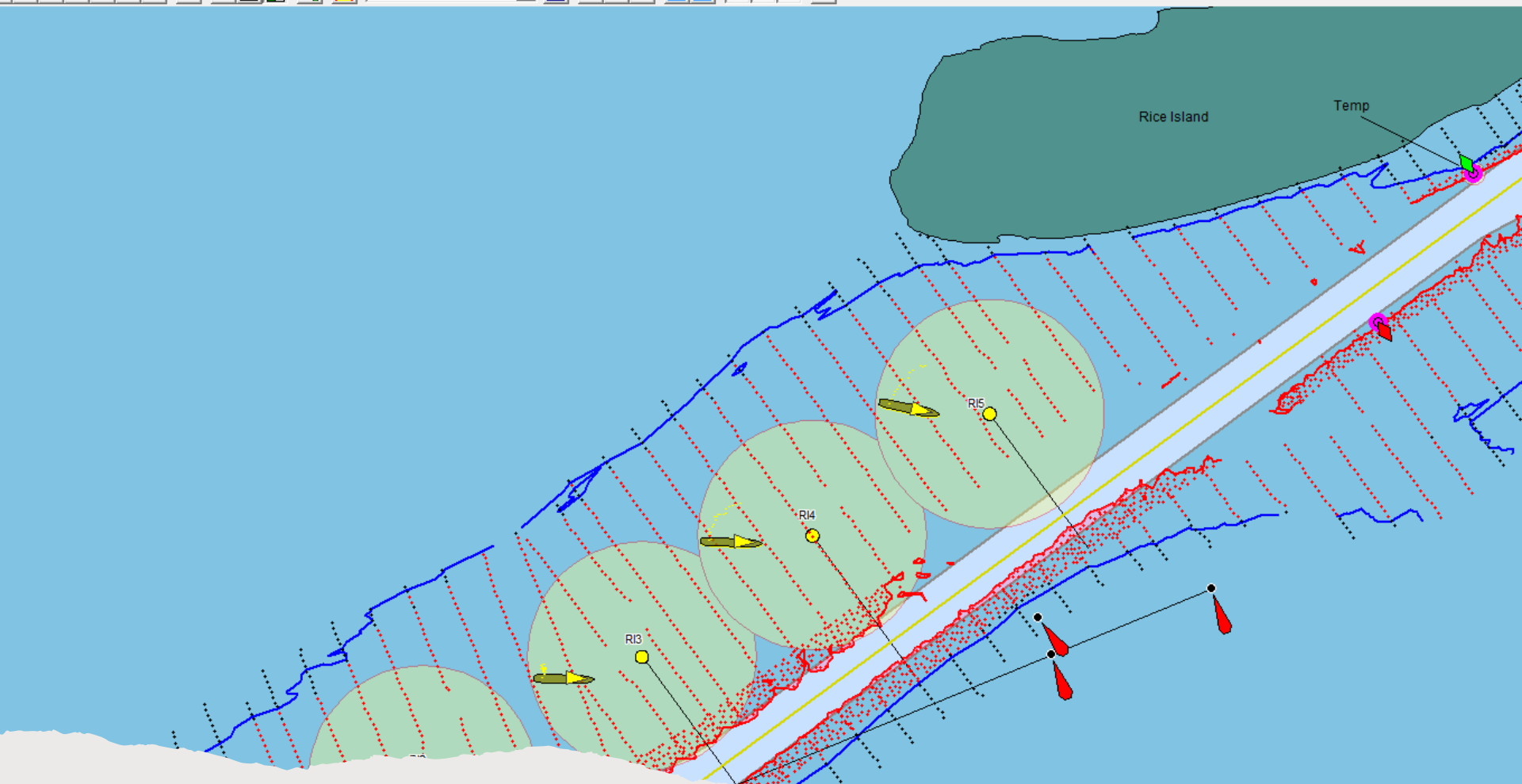
☒ Options... 14:08:15

Waypoint ...	Dist	ETA
Astoria P.S.	0 ft	14:08
Three Tree Pt.	0 ft	14:08
Bugby Hole	7.6 nm	14:43
Waterford N...	15.7 nm	15:20
Longview Bri...	30.8 nm	16:30
Columbia City	46.4 nm	17:42
Kelleu Pt	61.3 nm	18:51





DEPTH SURVEYS FOR PRIVATE FACILITIES



ANCHORAGE LOCATION & MONITORING



CHALLENGES A PILOT ENCOUNTERS

GOING
TO WORK





MANUVERING LARGE
VESSELS IN RESTRICTED
WATERWAYS



WELLS FARGO TOWER

- 546', 40 STORIES

US BANCORP TOWER

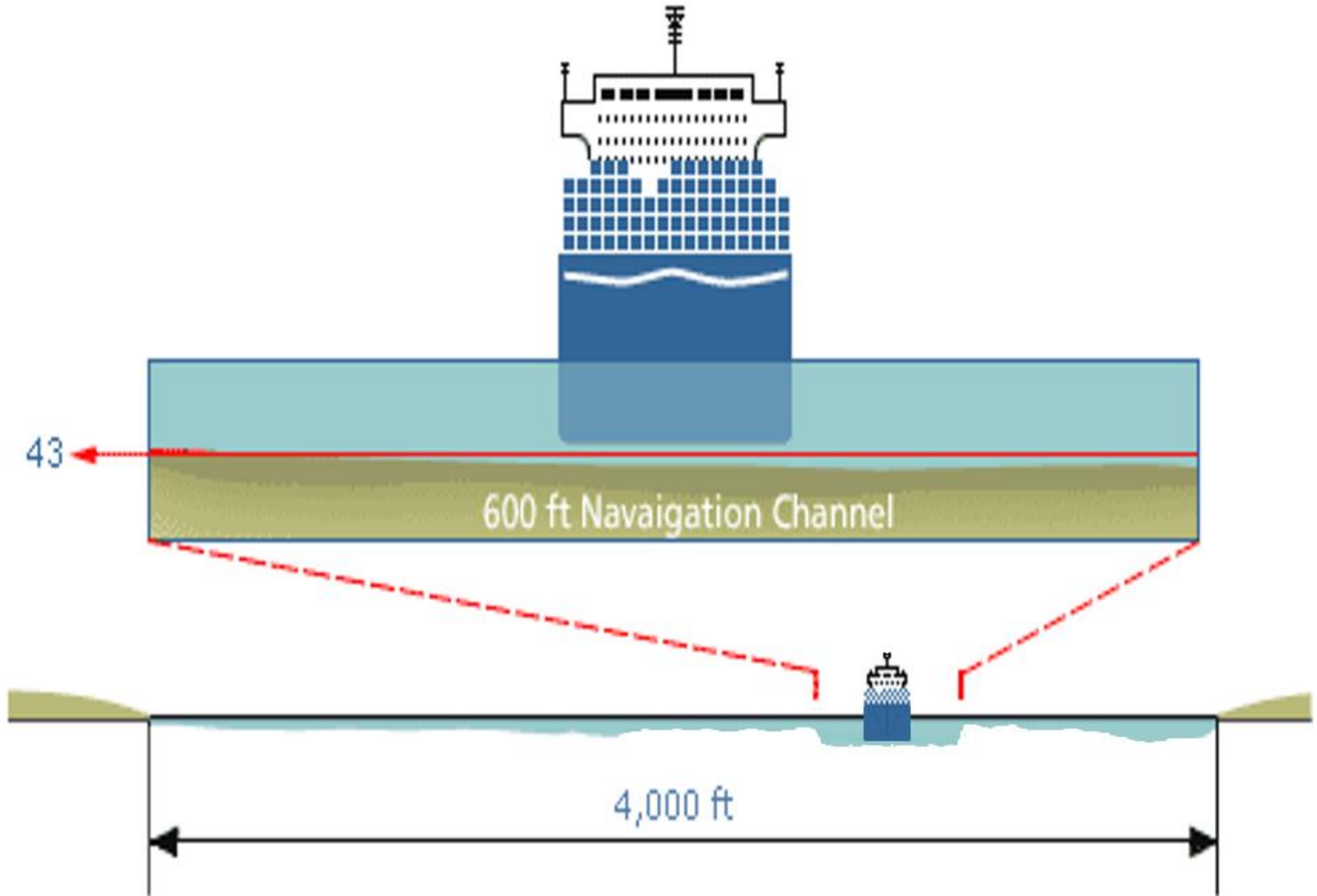
- 536', 40 STORIES

KOIN TOWER

- 509', 35 STORIES



WIDTH OF CHANNEL VS WIDTH OF RIVER







UNUSUAL JOBS



OTHER COMMERCIAL
TRAFFIC

FOG

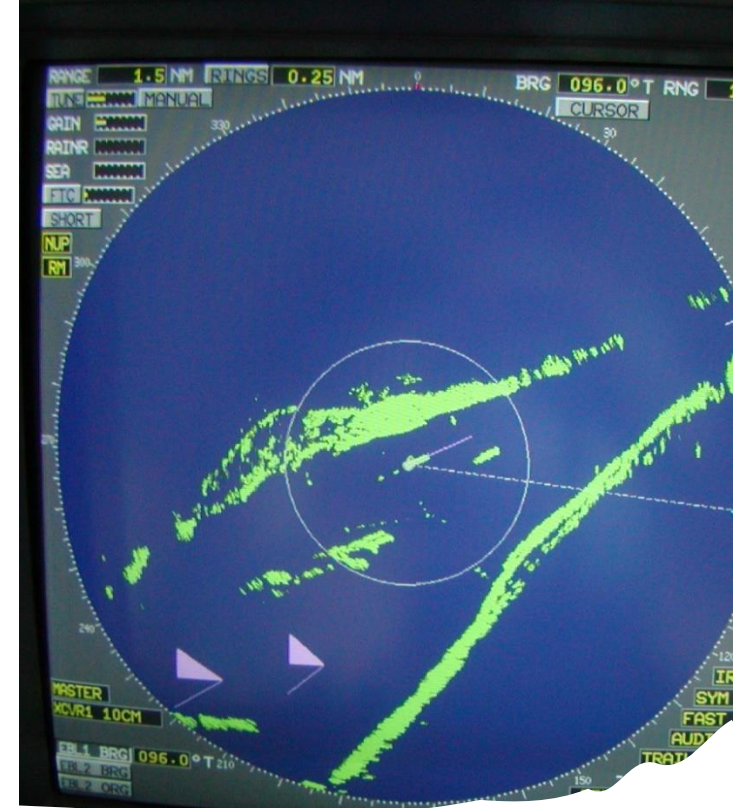
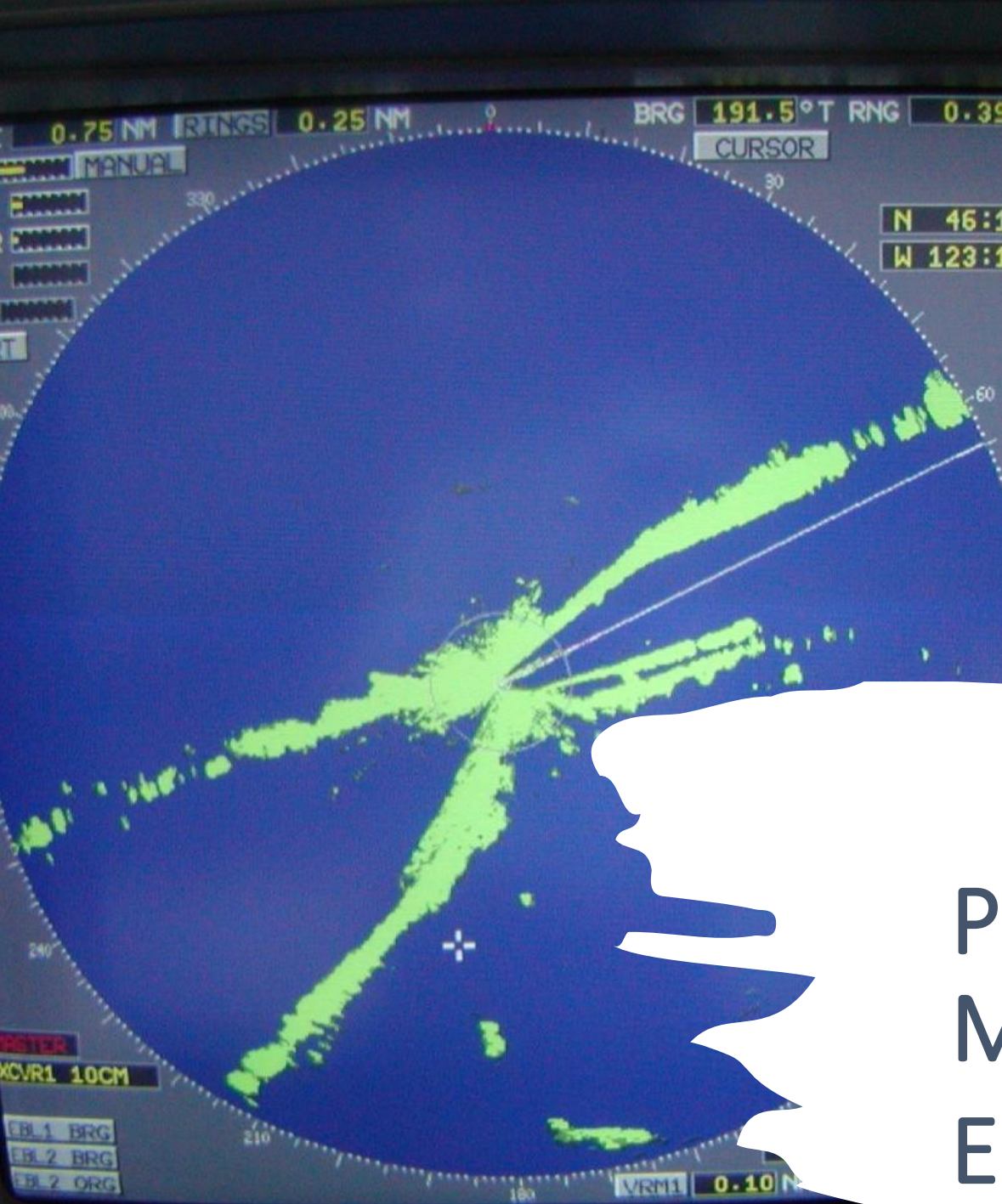




OBSTRUCTED VIEWS




WEATHER



POORLY
MAINTAINED
EQUIPMENT



INTERESTING FOOD

A close-up photograph of two golden-brown, triangular fortune cookies resting on a dark brown wooden surface. A small, white, rectangular slip of paper is wedged between the two cookies. The slip of paper has the text "That wasn't chicken." printed on it in a black, sans-serif font. The cookies have a slightly cracked and porous texture. The background is the wooden surface, which has a visible grain pattern.

That wasn't chicken.

LANGUAGE BARRIERS

THE PRECAUTION OF MAGNETIC COMPASS
PUT A HELMET USUALLY.BE CAREFUL OF
A HEAVY RAIN & TAKE A COUNTERMEASURE

MINIMAL CLEARANCES



RECREATIONAL TRAFFIC







THE UNEXPECTED!



NEEDS TO IMPROVE SAFETY & EFFICIENCY:

- ANCHOR BUOYS
- RIVER LEVEL SENSORS
- AIR DRAFT CLEARANCE SENSORS
- RECREATIONAL USER EDUCATION
& ENFORCEMENT





THANK YOU



Captain Jeremy Nielsen, President

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