# Monitoring Water Quality Around Key West: Q2 Progress Report

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### 3<sup>rd</sup> EPA Grant: Chemicals of Emerging Concern (CECs) in Areas of Concern (AOC)

#### **Objectives**

- 1. Continue water quality monitoring in the Key West harbor and ship channel using existing technology and infrastructure.
- 2. Expand water quality monitoring to eight AOC around the islands of Key West using an Autonomous Underwater Vehicle equipped with sensors for dissolved oxygen, temperature, salinity, turbidity, and total algae.
- 3. Expand water quality monitoring to beach AOC around the southern section of Key West for oxybenzone in the marine food chain.
- 4. Expand water quality monitoring to seven AOC around the islands of Key West for sewage discharge indicators (i.e. ammonia and sucralose).
- 5. Expand water quality monitoring to marine environment near Stock Island Landfill for toxic pollutants (i.e. hydrogen sulfide).
- 6. Provide data and input for the City of Key West's Water Quality Improvement Plan.

## **Objective 1**

Continue water quality monitoring in the Key

West harbor and ship channel using existing

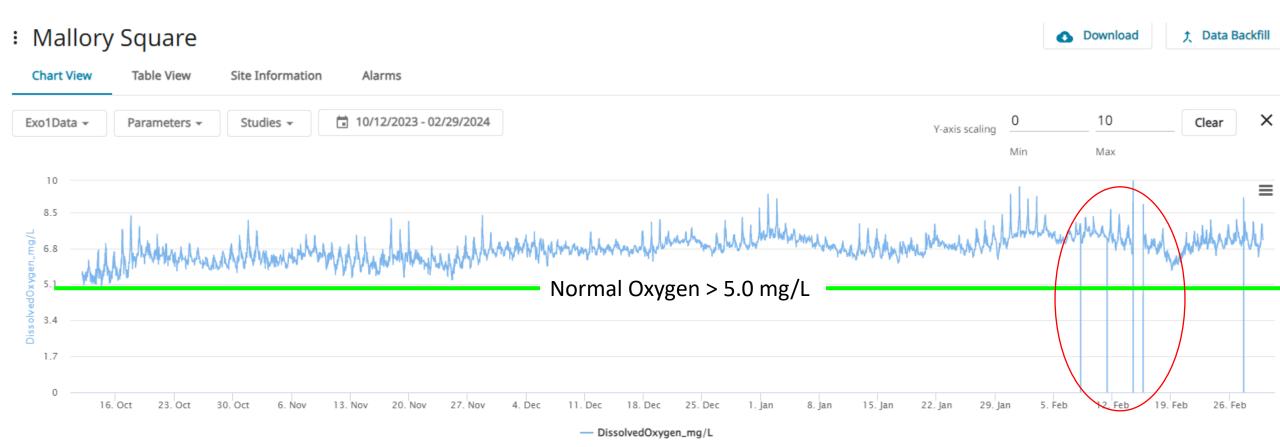
technology and infrastructure.



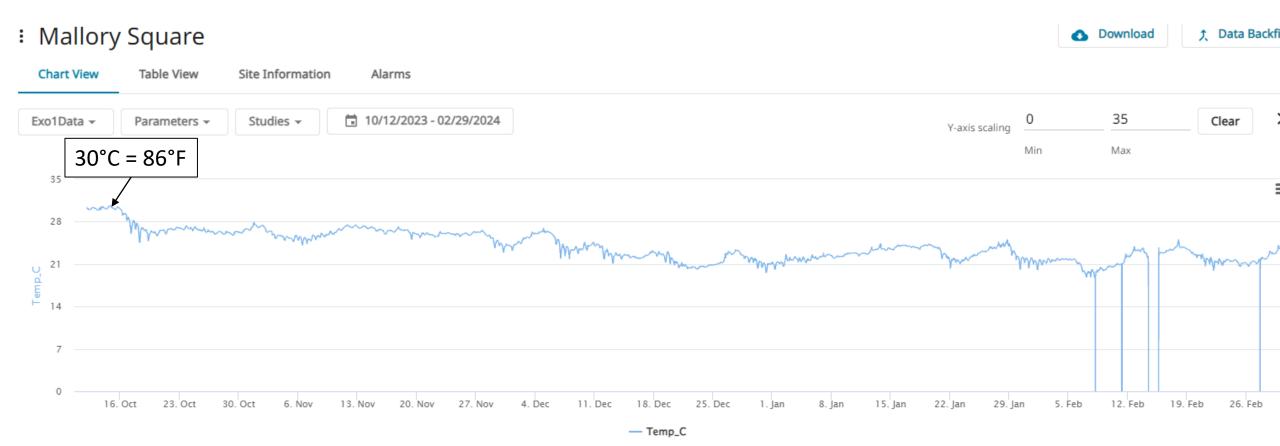
### **Mallory Square TK System**



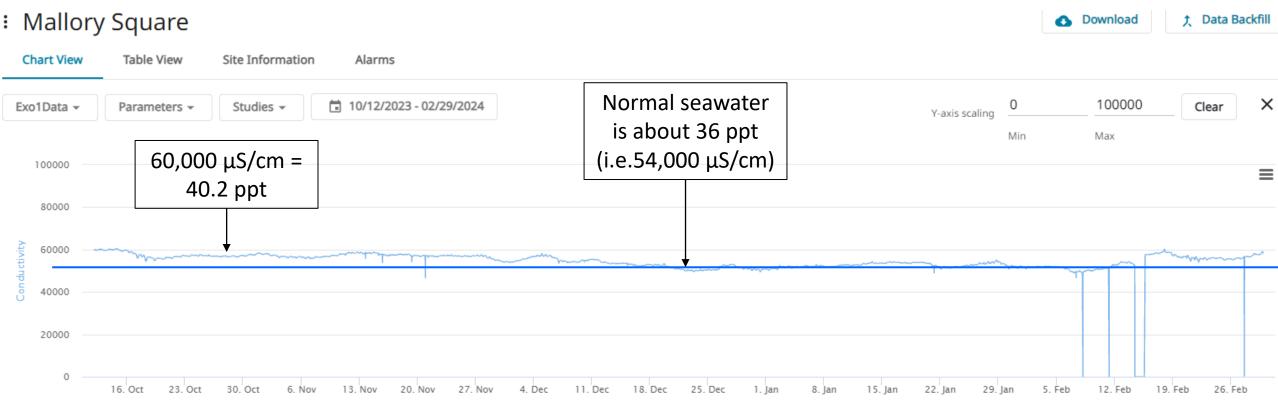
# Mallory Square TK System: Dissolved Oxygen Deep sonde (20 m)



# Mallory Square TK System: Temperature Deep sonde (20 m)



# Mallory Square TK System: Conductivity (i.e. salinity) Deep sonde (20 m)

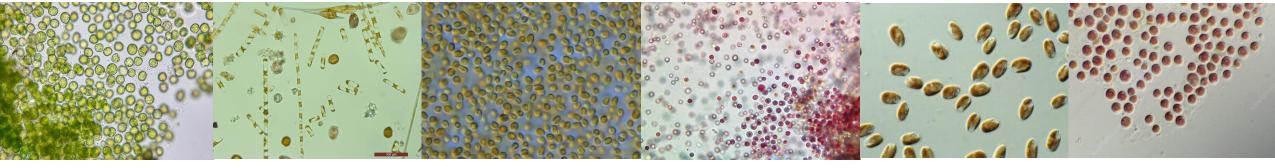


Conductivity

### Mallory Square TK System: Total Algae Sensor - Phycoerythrin and Chlorophyll Deep sonde (20 m)

This optical sensor uses a beam of light and measures the reflection from pigments found in marine algae.

- Chlorophyll pigments found in green algae (Chlorophyll a and b), diatoms (Chlorophyll a and c), golden brown algae (Chlorophyll a and c)
- 2. Phycoerythrin (PE) pigment-protein complex predominantly found in rhodophytes (red algae), cryptophytes, and cyanobacteria



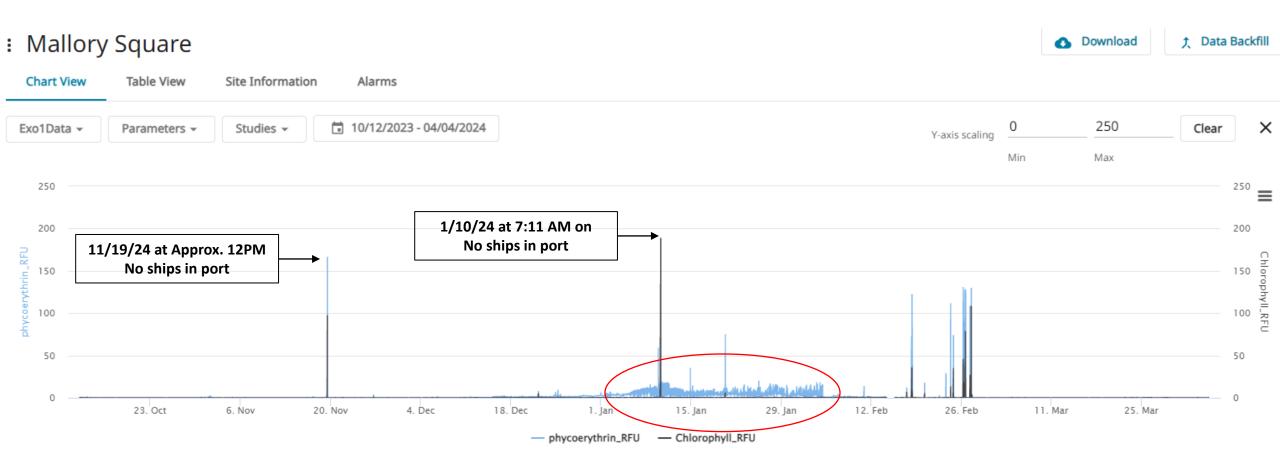
Chlorophyta (Green algae) Diatoms

Chrysophyta Rhodophytes (Golden-brown algae) (Red algae)

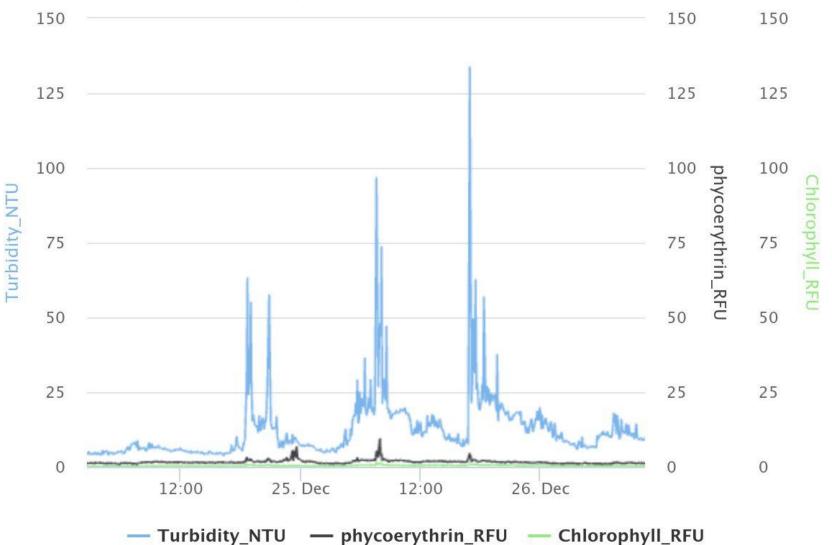
Cryptophytes

Cyanobacteria

# Mallory Square TK System: Total Algae Deep sonde (20 m)



## Mallory Square TK System: Total Algae Deep sonde (20 m)



## Cruise ship data in the Key West Harbor

- 132 ships have visited KW Harbor since Oct. 12, 2023
- □ Cruise ships range in size (i.e. capacity) from:
  - Smallest American Glory (Capacity = 49 Passengers)
  - Largest Carnival Dream (Capacity = 3,646)
- Data collected on:
  - Capacity
  - Arrival/Departure time
  - Ambient water quality at arrival/departure
  - Wind direction
  - Wind speed
- Turbidity events associated with cruise ships exceeded EPA standards 19.4% of the time (EPA Chapter 62-302: Water Quality Standards)
   The most substantial turbidity event was 430% beyond the EPA standards (i.e. 133.94 NTU)



#### **Carnival Dream in Key West Harbor**

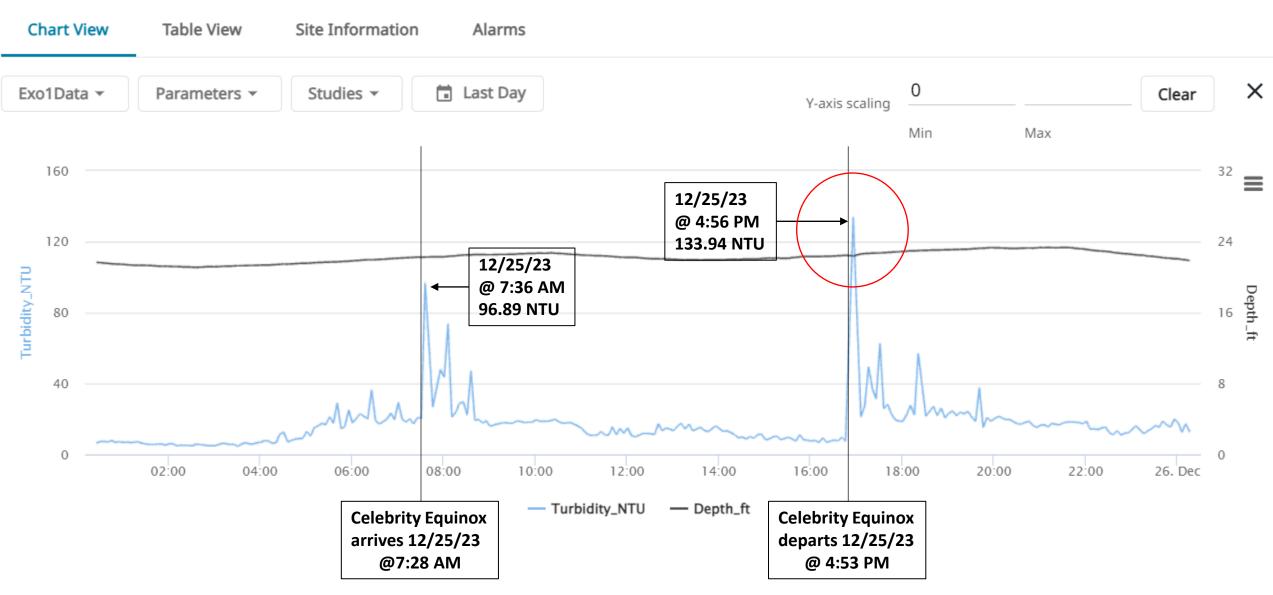
### 2023 (Oct. - Dec.)

Table 2. Cruis	e ship data for Key W	Vest Harbor (2023)													
					Deep	Shallow				Deep	Shallow				
					Tubidit					Turbidity	Turbidity	Wind Direction		Departure	
	Date	Vessel Name		Arrival	(NTU)	(NTU)	Wind Direction (Arrival	Wind Speed (mph)		(NTU)	(NTU)	(Departure)	Wind Speed (mph)	Direction	Comments
	10/13/2023	Matella Discovery		3:00 AM					6:00 PM						(1) Schedulled arrival and depart times; (2) no video clip
~	10/17/2023	Camival Glory		9:00 AM					5:00 PM						(1) Schedulind arrival and depart times; (2) no video clip
8	10/19/2023	Scarlet Lady		8:00 AM					5:00 PM						(1) Scheduled arrival and depart times; (2) no video clip
32	10/23/2023	Carnival Dream		11:00 AM					7:00 PM						(1) Schedulled arrival and depart time;; (2) no video clip
8	10/24/2023	Carnival Conquest	3,581			2.28	NE	10	1:30 PM	2.15	3.15	E	13		(1) Departs late – 2:30 PM; (2) huge turbidity plant (see video clip); (3) Arrival guests up to 21 mph, Departure guests up to 23 mph; (4) Shallow Sonda records 499.9 at 1:11 pm
	10/26/2023	Norwegian Sky	2,004	NA 9:33 AM	NA	NA	NA	NA	NA	NA	NA	NA	NA		(1) No show; (2) video clip with commants
Octob		MS Europa		9233 AM	4.76	4.36 NA	NE	10 NA	4:31 PM NA	1.73 NA	3.12 NA	NE	10 NA	NA	<ol> <li>Actual departure times from video-clip with comments; (2) Arrival guest up to 23 mph; Departure guests up to 25 mph; (3) Shallow Sonde records -99.9 at 4:11 and</li> </ol>
5	10/29/2023	Viking Mars Radiance of the Sea	950	2.16 AM	1.56	2.46	VAR	7	NA 8:52 PM	NA 19.23		NA	NA	1101	(1) No video clip
0	10/30/2023		2,545		0.99	9,95	VAR	7	5:52 PM	19.25	2.00	N	5		(1) Actual articuland departure times (from video clips with comments; [2]) No Artival guests; (3) Shallow Sonde records 499.9 at 12:06 am, 9:16 am, and 9:31 pm (1) Actual articuland departure times (from video clips with comments; [2]) No Artival guests; (3) Shallow Sonde records 499.9 at 12:06 am, 9:16 am, and 9:31 pm
	10/31/2023	Carnival Paradise Scarlet Lady	2,000		NA NA	NA	NA	NA	NA NA	NA	2.00 NA	NA	NA		<ol> <li>Arrival based on observation; (2) departure based on video clip; (3) No Arrival gusts, No Departure gusts</li> <li>No show due to easil force winds.</li> </ol>
	11/3/2023	Mein Shiff 6	2,800	NA	50	NA	NA	NA	NA	NA	NA	NA	NA		(1) we show have to stall forgation with a
	11/4/2023	MSC Explora 1	1.473	2:35 AM	1.95	2.65	NNE	14	5:38 PM	4.48	4.43	NNE	9	0.0	(1) Provide state in pair store winas (1) Arrival state on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (2) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on video chr: (3) Arrival state, and on observations: (3) departure based on observations: (3) departure based on video chr: (3) Arrival state, and (3) departure based on observations: (3) departure based on obs
	11/5/2023	Hambure	450	8:40 AM	1.95	2.05	ADL.	19	5:58 PM	1.65	2.30	N	*	Encoder	(1) Avrian tracks of overvalues, (2) adjustment inserve on value copy (2) Avrian generating to comparison generating (2) adjustment inserve on value (2) and adjustment generating (2) adjustment inserve on value (2) and adjustment (2) and (2) are and (2) and (2) are and (2) and (2) are adjustment (2) are adjustment (2) and (2) are adjustment (2) are adjustmen
	11/6/2023	Carnival Druam	3,646	10-31 AM	1.22	2.05	NNE	13	6:49 PM	1.19	1.50	N	7	1 M Walth	(1) Peaking and exploring instrumentations in subscription of a constraints, (2) or promoting galaxy, or particular galaxy, (2) parameter struments, (2) parameter structure instruments, (2) parameter structure instructure instructure instruments, (2) parameter structure instructure instructure instructure instruments, (2) parameter structure instruments, (2) parameter structu
	11/7/2023	Carnival Conquest	3,581	7:19 AM	7.78	1.81	NNE	7	1:37 PM	3.25	2.12	NNE	12	Reverse	
	11/9/2023	Artania	1,260	7:38 AM	0.50	1.92	ENE	8	5:53 PM	2.03	4.39	E	13	Revenue	
0	11/13/2023	MS Europa	516	9:20 AM	3.21	3.84	NE	12	4:20 PM	1.61	2.51	NE	12		(1) Actual artical and departure times from video clips with comments; (2) No Artival pasts. No Departure guets; (3) Shallow Sonde records -99.9 at 11:11 am and 3:06 pm
30	11/16/2023	Scarlet Lady		7:40 AM	45.65	15.55	NNE	5	5:00 PM	19.87	3.38	N	3	NA	(1) Arrival based on video clin: (2) departure based on schedule; (2) No Arrival pasts. No Departure pasts
- M	11/17/2023	Celebrity Silhouette		3:00 AM	33.58	28.25	CALM	0	5:00 PM	14.33	10.43	W	6		(1) Schedulled arrival and depart times; (2) no video clip due to power outsize; (3) No Arrival parts, No Departure susts; (4) Shallow Sonde seconds -99.9 at 12:01 pm; 1-46 pm, and 6/31 pm; (5) 7-41 am time used for arrival
8	11/18/2023	MSC Explore 1	1.473	2:33 AM	1.76	3.18	NNW	15	5:00 PM	2.92	4.18	NNW	16	NA	(1) Arrival based on video clip: (2) denarture based on schedule; (3) Arrival cursts up to 28 mph; Departure nexts up to 25 mph; (4) Shallow Sonde records -99.9 at 12:51 am, 4:21 pm, 5:46 pm, and 7:51 pm
	11/20/2023	Camival Dream	3,646	7:31 AM	1.61	2.61	NE.	3	6:44 PM	2.05	2.99	E	8	NA	(1) Actual artical and departure times from video clips with comments (2). No Artical pasts, No Departure quets
overnb	11/21/2023	Camival Glory	3,581	8:49 AM	1.61	3.91	ENE	17	4:47 PM	18.30	14.92	E	16	-	(1) Actual artical and departure times from video clips with comments (2). Artical sures up to 28mph. No Departure pasts: (3) Shallow Sonde records 49.9 at 10:01 pm and 10:21 pm
8	11/23/2023	MS Rotundara	3,210	11:00 AM	NA	NA	NA	NA	6:00 PM	NA	NA	NA	NA	NA	Cancelled
<u> </u>	11/24/2023	Carnival Sunrise	2,984	7:16 AM	2.11	2.55	NNE	K	1:47 PM	2.14	4.01	NNE	6	Forward	<ol> <li>Actual artical and departure times from video clips with comments; (2) No Artival gusts, No Departure gusts; (3) Shallow Soude records -09.9 at 2306 pm</li> </ol>
z	11/25/2023	MSC Magnifica	3,017	7:50 AM	1.64	3.07	NE.	10	5:57 PM	1.80	3.74	E	8	Reverse	(1) Reverse departure; (2) Actual arrival and departure times from video clips; (3) Arrival guits up to 22 mph, No Departure guits; (4) Shallow Sonde records +99.9 at 6:11 arr
	11/26/2023	Celebrity Apex	3,373	7:15 AM	10.75	10.17	SE	S.	5:00 PM	133.07	16.14	SW	6	Reverse	<ol> <li>Reverse departure; (2) 133.07 NTU (i) 5:11 PM; (3) Arrival/departure from video; (4) No Arrival gusts; No Departure gusts; (5) Shallow Soude records -99.9 at 8:21 pm</li> </ol>
	11/27/2023	Norwegian Jade	2,882	10:23 AM	1.00	2.34	N	13	5:19 PM	2.81	2.71	N	9	Reverse	<ol> <li>Turbidity at articul; (2) Revenue departance, (3) Articul/departance times: from videox; (4) Artival guests: up to 24 mph, No Departance guests; (5) Shallow Sendle records -99.9 at 11:11 pm</li> </ol>
	11/28/2023	Celebrity Summit	2,590	7:35 AM	6.93	7.60	N	10	4:58 PM	1.45	2.69	N	15	Reverse	(1) Reverse departure; (2) Actual antical and departure times from video clips; (3) Arrival guits up to 21 mph; Departure guits up to 22 mph; (4) Shallow Sonde records 49:9 at 9:51 pm
	11/30/2023	Scarlet Lady	2,550	7:45 AM	6.26	6.32	NE	9	5:14 PM	2.21	3.10	E	14	Forward	<ol> <li>Actual arrival/departure times from video: (2) forward departure; (3) low turbidity; (4) Arrival gasts up to 21 mph, No Departure gasts; (5) Shallow Sonde records -99.9 at 2:16 am and 9:01 pm</li> </ol>
	12/1/2023	Seven Seas		11:24 AM		-	131	12	6:41 PM		3.23		6		<ol> <li>Achail arrival/ideparture times from video: (2) forward departure; (3) low turbidity; (4) No Arrival guess, No Departure guest; (5) Shallow Sonde records -99.9 at 726 am and 11:26 pm</li> </ol>
	12/2/2023	Celebrity Silhouette		6:46 AM	2.00	3.48	13E	8	4:36 PM	2.32	5.30	151.	7	Forward	Communication and assess on the first second first second first second first second seco
	12/4/2023	Camival Dwarn	3,646	10:31 AM	3.60	5.27	VAR	5	6:40 PM	2.12	5.81	N	5	Forward	<ol> <li>Turbidity at arrival (see video); (2) Arrival/departure times from video; (3) No Arrival guets; No Departure guets; (4) Shallow Sonde records. 99.9 at 10:11 am</li> </ol>
	12/5/2023	Carnival Conquest	3,581		1.65	4.84	NNE	12	1:36 PM	13.05	4.41	N	10	Reverse	Concerning the second sec
	12/8/2023	Celebrity Summit	2,590	7:41 AM	1.50	3.87	13E	15	4:50 PM	1.89	6.75	NE	7	Reverse	<ol> <li>Reverse departure; (2) Arrival/Departure based on video clips w/comments; (3) No Arrival guess, No Departure gues; (4) Shallow Sonde records -99.9 at 12:11 pm, 2:51 pm, and 3:36 pm</li> </ol>
	12/9/2023	MSC Magnifica	3,017	\$25 AM	1.83	3.76	1SE	10	5:48 PM	2.84	6.43	ENE	5	Reverse	(1) Reverse departure; (2) Arrival Departure based on video clips wicomments; (3) No Arrival guets, No Departure guets; (4) Shallow Sonde records -99.9 at 4:11 pm; (5) Shallow Sonde spikes to 243.35 NTU at 7:41 are
	12/10/2023	Celebrity Apex	3,373	1000 000	4.26	4.71	SE N	15	4:52 PM 5:30 PM	6.62	4.91	SSE N	7	Reverse	(1) Reverse department (2) Arrival/Department haved on video clips viscomments; (3) No-Arrival pushs, No Department pusci, (4) Shallow Scende records +98.9 at 11:06 am and 2:26 pm 31 June 101 June 1
	12/11/2023	Norwegian Jade Celebrity Summit	2,882	10:34 AM 2:39 AM	5.23	4.62	NNE	21	5:30 PM 5:06 PM	4.25	4.01	NNE	12		(1) Arrival from video; (2) No departure video velcent malfunction; (3) 19 NTU – depart tim; (4) Arrival gusts up to 29 mph. No Departure gusts; (5) Shallow Sonde neconds 499.94 + (31 pm. 30 mph.
	12/12/2023	American Glory	2,590	6:15AM	0.30	5.00	NNE	17	5:06 PM 4:41 PM	2.33	4.01	NNE	13	Reverse	<ol> <li>Revenue departure (2) Arrival Departure based on video clips w/comments; (3) Arrival guets up to 25 mph, No Departure guets; (4) Shallow Sonde records 49.9 at 11:46 am</li> <li>Small shin at Mallow deck; (2) Arrival Departure based on video clips w/comments; (3) Arrival guets up to 26 mph. No Departure guets; (4) Shallow Sonde records 49.9 at 11:46 am</li> </ol>
	12/12/2023	American Glory American Glory	49	6:15AM	2.93	4.67	NE	10	4:41 PM 3:51 PM	2.33	4.02	INE	15	NA	
m	12/12-13/2023	Ritz Carbon	298		42.93	9.55	NW	7	5:00 PM	10.37		N	14	NA	(1) Anisotropy an interpretation of the state of the s
8	12/20/2023	MSC Magnifica	3,017		6.32	8.13	NNE	12	5:02 PM	6.79	22.99	NE	14	Revense	11 Recent determine (2) Artical Designer Interface where the COLOMENT of determine (4) No. 1 and a set of the colour and a set of the COLOMENT of the Colour and a set of the COLOMENT of the Colour and a set of the Colour a
2023	12/21/2023	Niew Amsterdam	2,106	7:41 AM	8.83	8.63	NNE	13	4:44 PM	7.22	10.61	INE	9	Revenue	(1) Reverse departure (2) Arrival Departure based on video clips; (3) Arrival guests up to 21 mph. Departure quests up to 22 mph; (4) Shallow Sonde records -09.9 at 9:56 am
ι.	12/22/2023	Calabrity Summit	2,590		11.54	13.29	NE	12	5:00 PM	24.23	17.01	INL		NA	(1) Parine adjunction (a) Parine exploration measure cance edge (1) Parine power prezio (apr. edge adjunction (apr. edge adjunction)) (1) Parine have on video (1) (2) (2) departies based on schedules (3) Parine justes (apr. edge adjunction) parine justes (apr. edge adjunction)) (1) Parine have on video (1) (2) (2) departies (2) parine justes (apr. edge adjunction)) (3) Parine have on video (1) (2) (2) departies (2) parine justes (apr. edge adjunction)) (3) Parine have on video (1) (2) (2) departies (2) parine justes (2) parine justes (2) parine justes (2) parine pari
8	12/22/2023	American Glory	40	8:14 PM	6.57	10.12	NE	6	-	NA	NA	NA	NA	NA	(1) Privat searces intercently (2) experiment searce on Scientific (2) or Privat space of the Company of the Co
E	12/23/2023	MSC Explore 1	1.473	10.000	8.12	12.17	NNE	9	3:48 PM		8.38	NE	9	Revenue	(1) Privat status on visual conversal, (2) and cannot on substatus on substatus on substatus on visual conversal parts. (1) Revenue departure (2) Arrival Departure parts (3) Shallow Soude records /59.9 at 5.11 are (5) Shallow Soude splats (3) trave above 45 NTI:
<u>8</u>	12/24/2023	Carnival Dram	3,646	10:23 AM	6.79	8.77	NE	K	6:35 PM	28.16	29.54	SE.	20	Revenue	(1) Revenue depointer (2) Arrical Departure haved on values (1) 63-48/11/2 at 6.41 PM; (4) No Arrival parts, Departure parts up to 31 mpb; (5) Shallow Soude records 49/9 at 6.56 arr
December	12/25/2023	Celebrity Equinox	3,420	7:28 AM	20.75	19.21	SE	17	4:53 PM	133.94	115.77	ESE.	13	Revenue	11 Reverse departance (2) Arrival Departure based on video (2) 111 94 WTI in 476 PM (4) Arrival pages and to To web. No Departure pages (5) Statises, Sould records 49.4 million and the second statistical second second statistical second stat
<u> </u>	12/26/2023	Ritz Carbon	298	6:55 AM	10.04	10.60	CALM	0	4:45 PM	6.12	7.57	NW	9		(1) Small ship at Pier II; (2) no effect on turbidity; (5) No Arrival guests, No Departure guests; (4) Shallow Sonde Spikes to 58.9 NTU at 8:11 am
	12/27/2023	Celebrity Summit	2,590	7:29 AM	5.20	No Data	NE	3	4:44 PM	5.05	7.25	N	7	Forward	TI Tarbide, or knows TV S2 at 7-96 AM (2) fervices departure of no interaction tarbidey (2). No Annual state, No Dimension states (4) Shallow Sanda states (40) at 716 on and in 723 on
	12/29/2023	Nieuw Amsterdam	2,106	7:15 AM	6.02	18.20	NNW	12	3:43 PM	3.33	6.93	NW	12	Forward	11 Tarbaday splace to 53.17 at 126 AM (Beep Sender (2) Tarbaday splace to 352.16 at 1.46 pm (Studies Sender (3) Inevent Agencies of an installate; (4) No Amod ages, No Decomes space
	12/30/2023	American Glory	49	6:00 AM	3.96	7.41	NNW	10	PM	NA	NA	NA	NA	NA	(T) Arrival and departure times based on video; (2) Missing departure video, No Arrival guess, Departure time NA
	12/30/2023	Carnival Conquest	3,581	7:15 AM	4.34	17.94	NNW	9	1:34 PM	3.92	7.18	NW	9		(1) Arrival and departure times based on video; (2) forward departure w/ no impact on turbidity; (3) No Arrival guests. No Departure guests
	Trans	21													

### 2024 (Jan. - April 4)

date for To	y West Harbor	(2020)										
Carla for Mr	y west name	(2004)	Deep	Shallow Wi	4		Deep	Shallow	Wind			
			Turbida	ty Turbidity Direct	-		Turbidity	Turbidity		Wind Speed	Depature	
1	Date	Vessel Name	Capacity Arrival (NTU)	(NTU) (Am			(NTU)	(NTU)	(Departure)	(mph)	Direction	Constants
	1/1/2024	Carnival Dream	3,646 10:20 AM 3.74 2,860 7:30 AM 2.33	6.15 N		6:41 PM 4:54 PM	2.63	6.34	N SSE			1) Actual arrival/departure times from video: (2) forward departure; (3) low windshift; (4) No Antrival pasts, No Departure pasts
	1/3/2024	Scarlet Lady Battenberg	2,560 7:30 AM 2.33 3,210 7:28 AM 2.62	6.32 W3		404.054	2.11	0.35	N		Forward	<ol> <li>Actual arrival/departure times from vidao; (2) forward departure; (3) low turbidity; (4) No Arrival posts, No Departure guests</li> <li>Actual arrival/departure times from vidao; (2) forward departure; (3) low turbidity; (4) No Arrival posts, Departure guests up to 22 reph</li> </ol>
	1/5/2024	Silver Nova	728 8:33 AM 2.44			4:40 PM	2.26	6.09	ISE.	16		1 Acau arrival departure times from video; (2) newtras departure; (1) new mining; (1) new mini
1	1/6/2024	MSC Magnifica	3,017 R:30 AM 4.90	9.05 55	L 15	5:46 PM	4.57	8.92	SSE	9	Revenue	1) Actual arrival/departure times (video); (2) reverse departure; (5) 2 x tarbidry spike (i) departure; (4) Arrival guests up to 25 mph, No Departure guest; (5) Shallow Soude oplices to 79:54 NTU at 4:31 pm; (b) Shallow Soude records 499.9 at 1:31 am
1	1/7/2024	American Glory	49 <7:00 AM NA			NA	NA	NA	NA			No video available
	1/6/2024	Scarlet Lady		5.98 E3		4:49 PM	31.62	24.17	E			<ol> <li>Arrival Departure based on video; ; (2) Reverse departure w/ spike to 31 d2 NTU; (3) No Arrival guests, Departure guests up to 24 mply; (4) Shallow Soude spikes to 70.82 NTU at 12:41 pm</li> </ol>
	1/9/2024	Celebrity Summit				4:59PM		18.25				1) Artual arrival/departure (neuros) (video); (2) Strong caset wind; (5) ambient tarbidity - 20 NTU; (4) Arrival pasts up to 39 mph, No Departure pasts; (5) Shallow Sonde records +99.9 at 6-81 am and 8:26 am
	1/11/2024	Scarlet Lady Norwegian Gern		12.67 N 9.45 SS		4:54 PM 1:40 PM		8.67	ENE			<ol> <li>Revenue departures (2) Arrival Departure based on videor, (3) Arrival tarbidity up to 47.02 NT1; (4) No Arrival guets, No Departure guets.</li> <li>Actual arrival/departure times (video); (2) forward departure; (3) 2 x turbidity spike (i) departure; (4) No Arrival guets, No Departure guets; (5) Shallow Soude records -99.9 at 7:56 am, 1:56 pm, and 8:51 pm</li> </ol>
4	1/13/2024	Norwegian Jade		18.98 55		6:00 PM	_	9.05	N	14	NA	1) Annual annual private france (control and angle france) (control angle france) (control and control angle france) (control angle franc
2024	1/14/2024	American Glory	49 < 7:00 AM -	- N	NA NA	3:43 PM	6.87	10.65	N	12	NA	<ol> <li>Actual artical and departure times from video clips; [2] Artival gusts NA, No Departure gusts; (3) Shallow Sonde has [5] spikes &gt; 27 NTU</li> </ol>
	1/14/2024	Norwegian Pearl		8.31 NF		3:13 PM	3.28	7.04	N		Forward	1) Achual articalideparture times (video); (2) reverse from Pier II has forward departure; (3) No Artival guets, No Departure guets
Jamary	1/15/2024		49 < 7:00 AM -	- N			4.53	10.36				1) Artival based on est; (2) Artual departure from vehcarn (no video); (5). Artival gusts NA, No Departure gusts; (4) Shallow Sonde splices to 34.51 NTU at 12-46 pm
8	1/16/2024			8.07 S		1:59 PM 4:35 PM		10.12	WSW			1) Revenue departance; (2) Antival Departance haved on videoc; (5) No tarbidity impact; (4) No Antival pastes, No Departance paste; (5) Shallow Soude recorded [7] -99.9 points; (6) Shallow Soude recorded and and 10:2 at 6:00 pm
1 2	1/19/2024	Norwegian Jade Carnival Sunrise	2,882 10:18 AM 4.73 2,754 7:35 AM 3.48		15	4035 PM	3.73	7.40				1) Forward departure; (2) Actual arrival/departure from video; (3) 25:07 NTU: optice on arrival; (4) Arrial genesis on b 24 mpb. No Departure genes; (5) Shallow. Sondar recorded -969 at 1:21 arr., 3:51 arr., and 9:36 am 1) Toward departure; (2) Actual arrival/departure from video; (3) 25:07 NTU: optice on arrival; (4) Arrial genesis on b 24 mpb. No Departure genesis; (5) Shallow. Sondar recorded of 10 to arrival; (4) No Arrival and No Departure genesis; (5) Shallow from the 1:0 to arrival; (4) Arrival genesis on the 1:00 Arrival; (4) Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) Arrival; (5) Arrival; (5) No Departure genesis; (5) Shallow from the 1:0 Arrival; (5) Arriva
-	1/20/2024			6.74 3	15	3:55 PM	3.49	7.14	N	8	Revenue	<ol> <li>Revenue departure; (2) Arrival/departure from video; (3) No impact on turbidity; (4) No Arrival guets, No Departure guets; (5) Shallow Sonde recorded -99.9 at 8:46 pm and 9:16 pm.</li> <li>Turbidity at arrival; (2) Revenue departure; (3) Arrival/departure times from video; (4) Arrival guets, up to 23 mph, Departure guets; up to 25 mph.</li> </ol>
1	1/21/2024	American Glory	49 fc10 AM 2.91	7.11 N2	E 13	NA	NA	NA	NA	NA	NA	No video available ; (2) Arrival guests up to 23 raph, Departure guests NA; (3) Shallow Sonde spices to 50.5 NTU at 11-41 am
	1/21/2024	Celebrity Apex	3,373 R:32 AM 3.23	7.27 N		4:40 PM	3.62	6.02				<ol> <li>Actual artical/departure times from video: (2) reverse departure; (3) low turbidity; (4) Artical guests up to 29 mph.</li> </ol>
	1/25/2024	Scarlet Lady	2,860 7:56 AM 50.21	38.30 13		5:22 PM	71.90		ESE.			1) Arrival Departure (video); (2) Turbidity (a) arrival = 50.21 NTU; (3) 71.9 NTU (a) departure; (4) Arrival pasts up to 30 mph, No Departure pasts
	1/26/2024		<ol> <li>3,463</li> <li>7:36 AM</li> <li>3.017</li> <li>8:25 AM</li> <li>20:91</li> </ol>			5:00 PM		16.05				1) Arrival Departure (video); (2) departs forward; (5) no substantial impacts on turbidity; (4) No Arrival guests. No Departure guests.
1	1/25-29/2024	MSC Magnifica American Glory	3,017 8:25 AM 20.91 49 5:50 AM 5.49			6:07 PM 6:05 PM	3.82	7.72	ESE. NNW	5	NA	<ol> <li>Arrival Departure (vidao); (2) departs reverse; (3) 20.91 NTU on arrival; (4) No Arrival gusts, No Departure gusts</li> <li>Arrival Departure (vidao); (2) No Arrival gusts, Departure gusts up to 28 mph</li> </ol>
	1/25/2024	Norwegian Jade					15.09	14.35	NNW	30	Ferward	1) Annual Departure (video); (2) departs formation goes, compared goes approximation and the strength (3) 17 NTU-0 and the strength (3) 17 NTU-0 and the strength (4) No Arrival goes, Departure goes up to 28 mpl; (5) -99.9 recorded on Shallow Sould at 141 am
1	1/29/2024	Carnival Datam	3,646 10:30 AM 26.88	25.86 NB	N 15	7:22 PM		11.36		15	Ferward	<ol> <li>Arrival Departure (video); (2) departs forward but wheversal; (3) 26.88 NTU on arrival; (4) Arrival guess up to 29 mph, Departure guess up to 23 mph</li> </ol>
	1/31/2024	Norwegian Pearl	2,394 7:39 AM 6.49	62.60 N	Y 5	4:00 PM	6.41	57.45	NNW	10	Terward	<ol> <li>Arrival Departure (video); (2) too apparent impacts on turbidity; (3) No Arrival guets, No Departure guets</li> </ol>
	2/3/2024	MSC Magnifica	3,017 8:22 AM 7.98	6.42 N7	E 3	5:55 PM	6.36	6.09	ENE	6	Ferward	1) Arrival Deparare (video; [2] no apparent impacts on turbidity; [3] No Arrival guids, No Departure guide; [3] - 49.9 recorded on Shallow Soude at [8-4] am
	2/4/2024	American Glory Cornical Glory	49 6:02 AM 16:26 2:980 9:23 AM 11:79	10.28 53	E 14	4-41.PM	11.46	10.85	www	10	- Revenue	No departure video available; (2) No Arrival guets, Departure guets NA; (3) Shallow Sonde spikes to 323.22 NTU at 4:36 per, no wind guets after 11 arr; (4)-99.9 recorded on Shallow Sonde at 6:46 am 1) Revenue departure; (2) Actual arrival/departure times from video; (3) no apparent impact on turbidity; (4) No Arrival guets, No Departure guets
	26-7/2024	Carnival Paradise		8.03 NB	W 21	NA	NA	-	-	-	-	() Arrival from (dot) (2) Departure delayed due to wink (2) under to wink (2) arrival arriv
1	2/8/2024	Scarlet Lady	2,860 7:42 AM 40.48	14.01 N2	E 9	5:05 PM	23.67	12.66	E	14	Reverse	1) Arrival Departure (video); [2) departs reverse; [3] 40.48 NTU on arrival; [4] No Arrival guess. No Departure guess
+	2/9/2024	Celebrity Silhouette				4:43 PM		13.57				1) Arrival Departure (video); (2) no apparent impacts on turbidity; (3) No Arrival guets, No Departure guets
2024	2/10/2024	Seven Seas Splendor		11.23 E9	E 5	2:13 PM	7.50	10.93	ESE.	13	Forward	11 Artical Departure (vidio), (2) No Artical pairs. No Departure parts (1) Studios: Social epision 46, 70 MIU at 240 pm and 115,25 MIU at 401 pm
N 1	2/12/2024	American Glory Carnival Dream	49 < 7:00 AM - 3.646 10:22 AM 14:10	10.68 55		- 4:22PM	12.25	14.74	Vap	$\vdash$	NA Revenue	1) Arrival from vides (2) No departure vides wheam mallinetise; (3) Days Sould 19 NU: - depart time, East for wind speak and direction; (4) Shallow Sould spikes above 250 NU: during possible arrival and departure time; (5) No wind guess for whole day 1) Arrival from vides; (2) No digentian video wheam mallinetise; (3) Days Sould (3) Nu (3) Days (3) Da
February	2/16/2024	Zaandam	1,432 7:22 AM 4.12	2.98 - 1	5	4:42 PM	2.69	2.95	ISE.	12	Forward	1) Arrival Departure (video); (2) no apparent impacts on turbidity; (3) No Arrival guests, Departure guests up to 22 mpb; (4) Eao 2 (Deep Sonde) neeeds -99.9 at 11:01 are
1 8	2/17/2024	Norwegian Gern	2,394 7:30 AM 3.58		9	2:55 PM	6.14	9.54	SSW	8	Revense	
5	2/20/2024	Norwegian Pearl	2,394 7:30 AM 2.56	4.34 NB		4:02 PM	2.87	3.30	NNW			1) Arrival from schedule (no video); (2) Actual departure (see video); (3) No impact on tarbidity; (4) No Arrival pasts, No Departure pasts.
1 <u>1</u>	2/21/2024	Silver Dawn Scarlet Lady	596 9:41 AM 2.58 2.860 - 8:00 AM 9.31			4:42 PM 5:08 PM	_	2.65	NNW E			<ol> <li>Revenue departance (2) Artival Departance hased on video clips; (3) 92.63 NTU at departance on; (4) Artival guests up to 21 mph, No Departance guests</li> <li>Artival from schedule (no video); (2) Actual departance (see video); (3) 26.15 NTU at departance on; (4) No Artival Departance guests (Artival on: satisfies time range for time dots needed); (5) Exo 2 (Deep Sonde) records: -99.9 at 4:31 pm</li> </ol>
	2/23/2024	Celebrity Silhouette				4:51 PM	41.55	12.42	SW	12	Ferward	1) Annual total control (a) (a) (a) (a) (a) (b) (a) (a) (a) (a) (a) (a) (a) (a) (a) (a
1	2/24/2024	MSC Magnifica	3,017 9:03 AM 3.54	3.13 NB	N 7	5:43 PM	15.63	2.87	NNW	15	Reverse	1) Arrival Departure (video); (2) ; (3) No Arrival gusts, No Departure gusts
	2/26/2024	Carnival Datam		2.27 N		6:33 PM	4.05	6.11	E	8	Reverse	1) Arrival Departure based on video; (2) No apparent impact on turbidity; (3) No Arrival guests, No Departure guests; (4) Exo 2 (Deep Soude) neceritie -99.9 at 1:56 am
	2/27/2024	Carnival Conquest	3,581 6:55 AM 2.70 2,590 7:40 AM 3.17	3.20 N		1:27 PM 4:52 PM			151			<ol> <li>Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival guests, No Departure guests; (4) Exo 1 Soude (Recording for shallow ) seconds -99.9 at 3:d5 pm</li> <li>Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) Arrival guests up to 23 mph, No Departure guests; (4) -99.9 recorded on Shallow Soude at 10:06 pm</li> </ol>
	3/2/2024	MSC Magnifica	3.017 R32 AM 3.53			5:53 PM	3.49					
1	3/3/2024	American Glory	49 < 7:00 AM -		-			11.72	E			
1	3/3/2024		3,373 7:52 AM 3.76			NA	-	11.72	E	9	Forward NA	1) Arrival Departure based on video; (2) No apparent impact on tarbiday; (3) No Arrival guets, No Departure guets; (4) -99.9 mconded on Shallow Sende at 11:21 am, 2:46 pm.
	3/4/2024			15.00 13		4:53 PM	- 4.10	9.48	- E - W	a - a	Forward NA Reverse	1) Arrival Departure based on video; (2) No apparent impact on turbidity; (3) No Arrival guests, No Departure guests; (4)-99.9 mconded on Shallow Sonde at 11:21 am, 3:46 pm 1) Small departure filesco on turbidity (1) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (1) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (1) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (2) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (3) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (4) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm (4) Arrival Departure filesco on turbidity; (3) No Arrival guest, No Departure guests; (4) Smallow Sonde at 11:21 am, 3:46 pm (4) Arrival Departure filesco on turbidity; (5) No Arrival guest, No Departure guest; (4) Smallow Sonde at 11:21 am, 3:46 pm (4) Arrival Departure filesco on turbidity; (5) No Arrival guest, Arrival guest; (4) Smallow Sonde at 11:21 am, 3:46 pm (4) Arrival Departure filesco on turbidity; (5) No Arrival guest; (4) Smallow Sonde at 11:21 am, 3:46 pm (4) Arrival Departure filesco on turbidity; (5) No Arrival guest; (5) Arri
1		CONTRACTOR CONTRACTOR CONTRACTOR	r 746 12:00 PM 3.44	4.87 13		4:53 PM 6:55 PM	- 4.10	9.48 3.17	E - W E	2 2 2 0	Forward NA Reverse Forward	1) Arrival Departure based on video; (2) No apparent impact on tarbiday; (3) No Arrival guets, No Departure guets; (4) -99.9 mconded on Shallow Sende at 11:21 am, 2:46 pm.
	3/5/2024	Carnival Glory		4.87 13		4:53 PM 6:55 PM 4:47 PM	- 4.10	9.48	E W E ESE	10 i i i i i i i i i i i i i i i i i i i	Forward NA Reverse Forward Reverse	1) Arrival Uspaniar based on video: (2) No apparent impact on arbitrary; (3) No Arrival pacts, No Departure pace; (4) -99.9 monoided on Shallow Sonde at 11:21 am, 2-16 pm, and 7-16 pm. 1) Small daip at Part A; (3) no apparent effect on tarbitrary. 1) Small daip at Part A; (3) no apparent effect on tarbitrary. 1) Small daip at Part A; (3) no apparent effect on tarbitrary. 1) No Arrival pack, No Departure pact, (4) -99.9 monoided on Shallow Sonde at 2:11 am, 2-26 am, and 2:41 pm. 1) No Arrival pack, No Departure pact, (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2-26 am, and 2:41 pm. 1) No Arrival pack, No Departure pact, (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2-26 am, and 2:41 pm. 1) The Arrival pack, No Departure pact, (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2-26 am, and 2:41 pm.
	3/5/2024 3/7/2024 3/9/2024	Caminal Glory Scarlet Lady	r 746 12:00 PM 3.44	4.87 13 13.35 1 14.85	E 9 8	4:53 PM 6:55 PM	4.10 3.68 3.36 3.46	9.48 3.17 6.46 7.21	E • E ISE SW	9 - 3 8 7	Forward NA Reverse Forward Reverse Forward	<ol> <li>Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival guests, No Departure guests; (4) -99.9 mconded on Shallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm</li> <li>Small ship at Par A; (2) no apparent effect on tarbidity;</li> <li>Monormal Departure (1) Construct and the structure (1) No Arrival guests, No Departure guest; (4) -99.9 mconded on Shallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm,</li> <li>Monormal Departure (1) No Arrival guests; (3) No Arrival guests, No Departure guest; (4) -99.9 mconded on Shallow Sonde at 11:21 am, 11:21 am, 11:40 pm, and 7:46 pm,</li> <li>Monormal Departure guest; (2) 99.9 mconded on Shallow Sonde at 2:21 am, 12:21 am, 11:21 am, and 2:41 pm,</li> <li>Monormal Departure guest; (2) No Arrival guests, No Departure guest; (4) Notice Social end and the structure (1) No Arrival guest, No Departure guest; (2) Notice Social end (2) Notice Social</li></ol>
	3/5/2024 3/7/2024 3/9/2024 3/9/2024	Caminal Glory Scarlet Lady	r 746 12:00 PM 3.44 2.980 8:33 AM 3.41 2.860 -8:00 AM -	4.87 13 13.35 1 14.85 - 5.15 5	E 9 8 - 7	4:53 PM 6:55 PM 4:47 PM 5:06 PM	- 4.10 3.68 3.36 3.46 5.82	11.72 9.48 3.17 6.46 7.21 9.45	E W E ESE	9 - 3 8 7 10	Forward NA Reverse Forward Reverse Forward NA	<ol> <li>Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival gasts, No Departure gasts; (4) -99.9 mconded on Shallow Sonde at 11-21 am, 246 pm, and 7-46 pm</li> <li>Small adap at Fort A; (3) no apparent infect on tarbidity;</li> <li>No Arrival gasts, No Departure gasts; (2) -99.9 mconded on Shallow Sonde at 2-31 am, 2-26 am, 8-21 am, 11-51 am, and 2-41 pm</li> <li>No Arrival gasts, No Departure gasts; (2) -99.9 mconded on Shallow Sonde at 2-31 am, 2-26 am, 8-21 am, 11-51 am, and 2-41 pm</li> <li>Tarbidity epice at 8-21 Pm (32 22 NTL) in The Sonde (2). No Arrival gasts, No Departure gasts; (3) -99.9 mconded on Shallow Sonde at 2-31 am, 2-26 am, 8-21 am, 11-51 am, and 2-41 pm</li> <li>Tarbidity epice at 8-21 Pm (32 22 NTL) in The Sonde (2). No Arrival gasts, No Departure gasts; (4) -99.9 mconded on Shallow Sonde at 2-31 pm, and 2-41 pm</li> <li>Tarbidity epice at 8-21 PM (10). Starbidity gasts, No Departure gasts; (2) -99.9 mconded on Shallow Sonde at 2-31 pm, and 2-41 pm</li> <li>Tarbidity epice at 8-21 PM (10). Its NTL1 inform at 7-26 am.</li> <li>Tarbidity epice at 501 PM (10). Its NTL1 inform at 7-26 am.</li> </ol>
		Caminal Glory Scarlet Lady Celebrity Silhouette MSC Explora American Glory	r 746 12:00 PM 3.44 2.980 8:33 AM 3.41 2.980	4.87 15 13.35 1 14.85 - 5.15 5 9.04 N 4.53 50	E 9 8 - 7 4 NA 7	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM	- 4.10 3.68 3.36 3.46 5.82	11.72 9.48 3.17 6.46 7.21 9.45	E W E ESE SW ESE NA NNW	9 - 3 8 7 10 NA 16	Forward NA Reverse Forward Reverse Forward NA NA Forward	<ol> <li>Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival guests, No Departure guests; (4) -99.9 mconded on Shallow Sende at 11:21 am, 3:46 pm, and 7:46 pm</li> <li>Small dap at Par A; (2) no apparent effect on tarbidity;</li> <li>No Arrival guests, No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 5:26 am, 10:21 am, and 2:41 pm.</li> <li>Harrival guests, No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 5:26 am, 10:21 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 5:26 am, 10:21 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 5:26 am, 10:21 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 10:20 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 10:20 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 2:31 am, 10:20 am, and 2:41 pm.</li> <li>Harrival guests No. No Departure guest; (2) -99.9 mconded on Shallow Sende at 1:20 am, 10:20 am, 10:20</li></ol>
24		Camisal Glory Scarlet Lady Celebrity Silhouette MSC Explora American Glory Norwegian Sun	r 746 12:00 PM 3.44 2.980 8:33 AM 3.41 2.980 -8:00 AM - 1.463 7:33 AM 4.79 1.473 7:23 AM 3.75 49 6:38 AM 3.71 1.936 6:45 AM 3.70	4.87 [5] 13.35 [1] 14.95 5.15 [5] 9.04 [N] 4.53 [5] 4.53 [5]	E 9 8 - 7 4 NA 7 4 NA 7 9 7 9	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:07 PM 6:45 PM 2:04 PM	- 4.10 3.66 3.36 5.82 3.87 3.94 4.25	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73	E W E ISE SW ISE NA NW WSW	9 - 3 8 7 10 NA 16 10	Forward NA Reverse Forward Reverse Forward NA NA Forward Forward	1) Arrival Usparature based on video: (2) No apparent impact on turbidity; (3) No Arrival pasts, No Deparature pasts; (4) -99.9 monoided on Shallow Sonde at 11:21 am, 2-16 pm, and 7-16 pm. 1) Small days as Par A; (3) pro apparent effect on turbidity. (1) No Arrival pasts, No Deparature pasts; (4) -99.9 monoided on Shallow Sonde at 2:11 am, 2:50 am, and 2:41 pm. (1) No Arrival pasts, No Deparature pasts; (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2:50 pm. (2) No Arrival pasts, No Deparature pasts; (3) -99.9 monoided on Shallow Sonde at 2:11 am, 2:50 am, and 2:41 pm. (1) No Arrival pasts, No Deparature pasts; (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2:50 am, and 2:41 pm. (1) Arrival pasts, No Deparature pasts; (2) Shallow Sonde at 2:11 am, 2:50 am, (2) Shallow Sonde at 2:10 mm. (1) Small nubbidity optics at 7:10 [10] -99.9 monoided on Shallow Sonde at 10:25 am. (2) Small on Deparature pasts; (2) Shallow Sonde NTU takes at 2:26 am. (2) Arrival pasts, No. Deparature pasts; (2) Shallow Sonde recorded [4] -99.9 points at 1:65 am. (1) Arrival pasts, Past pasts; (2) Shallow Sonde (2) Shallow Sonde recorded [4] -99.9 points at 1:65 am. (1) Small nubbidity optics at 7:26 AM (7:06 NTU) on Deep Sonde; (2) Shallow Sonde recorded [4] -99.9 points at 1:65 am. (1) Arrival Deparature based on video; (2) Shallow Sonde recorded [4] -99.9 points at 1:65 am. (1) Arrival Deparature based on video; (2) Shallow Sonde; (2) Shallow Sonde recorded [4] -99.9 points at 1:65 am. (1) Arrival Deparature based on video; (2) Shallow Sonde; (2) Shallow Sonde recorded [4] -99.9 points at 1:16 am, and 9:26 pm. (1) Arrival Deparature based on video; (2) Shallow Sonde; (2) Shallow Sonde recorded [4] -99.9 points at 1:16 am, and 9:26 pm. (1) Arrival Deparature based on video; (2) Shallow Sonde; (2) Shallow Sonde recorded [4] -99.9 points at 1:16 am, and 9:26 pm. (1) Arrival Deparature based on video; (2) Shallow Sonde;
3024		Caminal Glory Scarlet Lady Celebrity Silhosaette MSC Explora American Glory Norwegian Sun Caminal Dream	7         746         12:00 PM         3:44           2:980         8:33 AM         3:41           2:380         -8:30 AM         -           1:463         7:33 AM         4:79           1:473         7:23 AM         5:75           49         6:18 AM         3:73           1:976         6:45 AM         3:73           1:645         10:18 AM         3:17	4.87 13 13.35 1 14.85 5.15 5 9.04 N 4.53 57 4.53 57 8.41 N	E 9 8 - 7 4 NA 7 9 7 9 7 9	4:55 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:07 PM 6:45 PM 2:04 PM 6:37 PM	- 4.10 3.66 3.36 5.82 3.87 3.94 4.25	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73 10.79	E W E ISE SW ISE NA NNW WSW E	9 - - 3 8 7 7 10 NA 16 10 15	Forward NA Reverse Forward Reverse Forward NA NA Forward Reverse	(1) Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival gasts, No Departure gasts; (4) -99.9 monoided on Shallow Soule at 11:21 am, 246 pm, and 7-46 pm (1) Small ship at Par A; (3) no apparent effect on tarbidity (1) Small ship at Par A; (3) no apparent effect on tarbidity; (1) No Arrival gasts, No Departure gasts; (2) -99.9 monoided on Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gasts; (2) -99.9 monoided on Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gasts; (2) Shallow Soule Not Departure gasts; (1) Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gast; (2) Shallow Soule Not Departure gasts; (2) Shallow Soule at 250 am, 251 pm; and 651 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule NTU takes at 7.26 am (1) Arrival gasts, No Departure gast; (2) Shallow Soule Recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival Departure based on video; (2) Arrival gasts, Departure gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule at 200 am, (1) Arrival Departure (video; (2) Arrival gasts, Departure gasts; (4) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (1) Arrival Departure (video; (2) Arrival gasts, Departure gasts; (4) Shallow Soule at 20 am, (2) Arrival gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (4) Arrival Breart (video; (2) Arrival gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (4) Arrival gasts; (4) Shallow Soule at no tarrival gasts, Departure
h 2024		Camisal Glory Scarlet Lady Celebrity Silhouette MSC Explora American Glory Norwegian Sun	7         746         12:00 PM         3:44           2:090         8:33 AM         3:41           2:090         8:33 AM         3:41           2:090         8:33 AM         4:79           1:463         7:33 AM         4:79           1:473         7:23 AM         5:75           49         6:18 AM         3:73           1:576         6:48 AM         3:70           1:645         10:18 AM         3:17	4.87 13 13.35 1 14.85 - 5.15 5 9.04 N 4.53 57 4.53 57 8.41 N	E 9 8 - 7 4 NA 7 9 7 9 7 9	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:07 PM 6:45 PM 2:04 PM	- 4.10 3.66 3.36 5.82 3.87 3.94 4.25	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73	E W E ISE SW ISE NA NNW WSW E E	9 - - - - - - - - - - - - - - - - - - -	Forward NA Reverse Forward Reverse Forward Forward Forward Reverse Forward	1) Arrival Departure based on video; (2) No apparent impact on tarbidity; (1) No Arrival guests, No Departure guests; (4) -99.9 monoided on Shallow Sonde at 11:21 am, 3:46 pm, and 7:46 pm.          1) Small dap at Par A; (2) no apparent effect on tarbidity;       (1) No Arrival guests, No Departure effect on tarbidity;         1) Small dap at Par A; (2) no apparent effect on tarbidity.       (1) No Arrival guests, No Departure guests;       (2) Arrival guests, No Departure guests;       (2) Arrival guest;       (3) Arrival guest;       (3) Arrival guest;       (3) Arrival guest;       (4) Arrival guest;
rch 2024		Camisal Glory Scarlet Lady Celebrity Silhouette MSC Explora American Glory Norweptan Sun Camiyal Dinam Camiyal Dinam	7         746         12:00 PM         5.44           2:900         8:513 AM         3.41           2:860         -8:09 AM         -           1         3:661         7:13 AM         4.79           1         3:661         7:13 AM         3.79           1.973         7:23 AM         3.79           1.976         6:45 AM         3.70           1.956         5:45 AM         3.70           1.645         7:26 AM         3.82	4.87 13 13.35 1 13.35 1 5.15 5 5.15 5 4.53 57 4.53 57 4.53 57 8.41 N 5.13 EP 2.87 1	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:07 PM 6:45 PM 2:04 PM 6:37 PM 1:50 PM	- 4.10 3.68 3.36 3.46 5.82 3.87 3.94 4.23 3.80 3.70 3.44	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73 10.79 9.79	E W E ISE SW ESE NA NNW WSW E E E ESE	9 - 3 8 7 10 NA 16 10 15 16 14	Forward NA Reverse Forward Reverse Forward Forward Reverse Forward Forward Forward	(1) Arrival Departure based on video; (2) No apparent impact on tarbidity; (3) No Arrival gasts, No Departure gasts; (4) -99.9 monoided on Shallow Soule at 11:21 am, 246 pm, and 7-46 pm (1) Small ship at Par A; (3) no apparent effect on tarbidity (1) Small ship at Par A; (3) no apparent effect on tarbidity; (1) No Arrival gasts, No Departure gasts; (2) -99.9 monoided on Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gasts; (2) -99.9 monoided on Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gasts; (2) Shallow Soule Not Departure gasts; (1) Shallow Soule at 251 am, 124 am, and 244 pm (1) Arrival gasts, No Departure gast; (2) Shallow Soule Not Departure gasts; (2) Shallow Soule at 250 am, 251 pm; and 651 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule NTU takes at 7.26 am (1) Arrival gasts, No Departure gast; (2) Shallow Soule Recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival gasts, No Departure gast; (2) Shallow Soule recorded on Shallow Soule at 104 pm; (1) Arrival Departure based on video; (2) Arrival gasts, Departure gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule at 200 am, (1) Arrival Departure (video; (2) Arrival gasts, Departure gasts; (4) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (1) Arrival Departure (video; (2) Arrival gasts, Departure gasts; (4) Shallow Soule at 20 am, (2) Arrival gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (4) Arrival Breart (video; (2) Arrival gasts; (3) No Arrival gasts, Departure gasts; (4) Shallow Soule recorded in 40.20 pm; (4) Arrival gasts; (4) Shallow Soule at no tarrival gasts, Departure
March 2024		Camisal Glory Scarlet Lady Celebrity Silboactie MSC Explora American Glory Norwegtan San Carnival Dream Carnival Conquest Norwegtan Pearl	7         748         12:00 PM         5.44           2:000         8:513 AM         3.41           2:860         -8:00 AM         -           1         3:651         7:33 AM         4.79           1         3:651         7:33 AM         3.79           1.975         6:45 AM         3.70           1.646         10:18 AM         3.70           1.646         10:18 AM         3.70           1.645         7:25 AM         3.82           2.994         6:52 AM         3.87           1.017         8:14 AM         3.71           1.017         8:14 AM         3.13	4.57 12 13.35 1 4.19 4.53 5 9.04 N 4.53 ST 8.41 N 5.13 12 8.41 N 5.13 12 2.57 1 9.66 S	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:47 PM 4:07 PM 6:45 PM 2:04 PM 6:37 PM 1:59 PM 3:348 PM	- 4.10 3.68 3.36 5.82 3.87 3.94 4.25 3.86 3.70 3.44 3.40	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.34	E - - - - - - - - - - - - -	9 - 3 8 7 10 NA 16 10 15 15 16 14 6	Forward NA Reverse Forward Reverse Forward NA Forward Forward Forward Forward Forward Forward Forward NA	1) Arrival Departure based on videos: (2) No apparent impact on tarbiday; (3) No Aerival pasts, No Departure pasts; (4) -99.9 monoided on Shallow Sonde at 11:21 am, 2-66 pm, and 7-66 pm          1) Small daip as Par A; (3) po apparent effect on tarbiday         1) Small daip as Par A; (3) po apparent effect on tarbiday         1) No Arrival pasts, No Departure gote; (3) -99.9 monoid on Shallow Sonde at 2:11 am, 2-56 am, No2 J am, 1-26 am         1) Small daips as Par A; (3) po apparent effect on tarbiday         1) No Arrival pasts, No Departure pasts; (3) -99.9 monoid at 0.51 km/s of sona and 2-16 km
March 2024		Carnival Glory Scarlist Lady Celebrity Silboattie MSC Explora Amarican Glory Norwegian San Carnival Dearn Carnival Conquet Norwegian Pearl MSC Magnifica Celebrity Apax Calmirican Glory	r         3.46.         12:00 PM         3.44           2,980         8:13 AM         3.41           2,860         -8:09 AM         -           1,463         7:33 AM         3.75           49         6:28 AM         3.75           49         6:28 AM         3.75           1,916         6:45 AM         3.77           1,926         6:45 AM         3.77           1,936         6:45 AM         3.71           1,936         6:45 AM         3.71           1,841         7:26 AM         3.82           2,394         6:45 AM         3.82           2,394         6:45 AM         3.71           1,017         8:44 AM         3.71           1,017         8:44 AM         3.71           3,073         7:10 AM         3.15           49         6:42 AM         2.84	4.57 12 13.35 1 5.15 5 9.04 N 4.53 ST 8.41 N 5.13 12 8.41 N 5.13 12 9.06 S	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:47 PM 4:07 PM 6:07 PM 6:07 PM 6:07 PM 5:04 PM 1:59 PM 5:04 PM 5:04 PM	- 4.10 3.68 3.36 5.82 3.87 3.94 4.25 3.86 3.70 3.44 3.40	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.50	E W E ESE SW ESE NA NNW WSW E E E E SSE SSE SSE NE	9 - 3 8 7 10 NA 16 10 15 15 16 14 6	Forward NA Reverse Forward Reverse Forward NA NA Forward Forward Forward Forward Forward NA NA	1) Arrival Usparature based on video. (2) No apparent impact on tarbidity. (3) No Arrival guests, No Departure guests (4) -99.9 monoided on Shallow Sonde at 11:21 am, 24.6 pm, and 7-46 pm. 1) Small ships at Par A; (3) no apparent effect on tarbidity. 1) Small ships at Par A; (3) no apparent effect on tarbidity. 1) No Arrival guests, No Departure guest (2) -99.9 meconided on Shallow Sonde at 221 am, 124 am, and 244 pm. 1) No Arrival guest, No Departure guest (2) Shallow Sonde at 271 am, 124 am, 124 am, and 244 pm. 1) Arrival guests, No Departure guest (2) Shallow Sonde NTU: takes at 7.26 am. 1) Small arbidity: spike at 250 MVI. on Darp Sonde; (2) (1) -99.9 meconided on Shallow Sonde at 10:26 am. 1) Small arbidity: spike at 250 MVI. (10 INTU) in Darp Sonde; (2) (1) Shallow Sonde at 10:26 am. 1) Small arbidity: spike at 250 MVI. (10 INTU) in Darp Sonde; (2) (2) (2) Shallow Sonde at 10:26 am. 1) Arrival guests, No Departure guest (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am, 10:16 am, 10:10 am (4).499.9 micestation on Shallow Sonde at 10:26 am. 1) Arrival Departure based on video. (2) Ko apparent impact on tarbidity; (1) No Arrival guests, No Departure guest (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am, 10:16 am, 10:16 am, 10:10 am, 10:10 am, 10:11 am. 1) Arrival Departure based on video. (2) Ko apparent impact on tarbidity; (1) No Arrival guests, No Departure guest (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am, 10:16 am, 10:16 am. 1) Arrival Departure guest (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am, 10:16 am, 10:16 am. 1) Arrival Departure guest (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am, 10:16 am. 1) Arrival Departure video. (2) Shallow Sonde meconided [4] -99.9 points at 1:16 am, 10:16 am, 10:16 am. 1) Arrival guest, No Departure guest (2) Shallow So
March 2024		Carnitial Glory Scarliet Lady Coloberts Subwatte MSC Explora American Glory Norwagian Sun Carnitial Conquest Narwagian Pearl NSC Magnifica Colobrity Apex American Glory Norwagian Sun	r         748.         12:00 PM         3.44           2.980         r:31 AM         3.41           2.860         r:800 AM         -           1         3.463         7:33 AM         4.29           1.463         7:33 AM         3.79           4.90         r:51 AM         3.71           1.916         r:645 AM         3.71           1.916         r:645 AM         3.71           1.946         9:018 AM         3.71           1.946         9:018 AM         3.71           1.946         9:018 AM         3.71           1.946         1:26 AM         3.82           2.944         r:52 AM         3.71           1.951         r:54 AM         3.71           1.975         7:19 AM         3.15           40         6:42 AM         3.71           1.975         7:19 AM         5.15           40         6:42 AM         2.84	4.87 13 15.35 1 4.87 2 9.04 8 4.53 57 8.41 8 5.41 8 5.41 8 5.41 8 5.41 53 5.41 53 5.41 53 5.41 53 5.41 53 5.41 53 5.41 8 5.41 8 5.5 8 5.	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:64 PM 6:45 PM 2:04 PM 1:50 PM 5:42 PM 4:34 PM 6:55 PM 2:05 PM	- 4.10 1.68 1.46 5.82 1.87 1.94 4.25 1.86 1.70 1.44 1.40 2.5.36 6.01 4.27	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.75 10.79 9.79 11.54 7.80 20.11 7.57 7.26	E W E ESE SW USE NA NNW WSW E E ESE SSE SSE SSE SSW	9 - 3 8 7 10 NA 15 16 15 15 14 6 9 10 8	Forward NA Revenue Forward Reverue Forward NA NA Forward Forward Forward Forward Forward NA NA NA NA	<ul> <li>(1) Arrival Departure based on video; (2) to appearent impact on tarbidity;</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) No Arrival guests, No Departure guests; (2) -993 recorded on Shallow Sonde at 2:11 am, 1:24 am, and 2:41 pm.</li> <li>(1) Arrival guests, No Departure guest; (2) Shallow Sonde at 2:11 am, 1:25 am, 6:12 barris, 6:11 barris, 6:11 barris, 6:11 barris, 6:11 barris, 6:12 barris, 6:11 barris, 6:1</li></ul>
March 2024		Carnival Glory Scarlist Lady Celebrity Silboattie MSC Explora Amarican Glory Norwegian San Carnival Dearn Carnival Conquet Norwegian Pearl MSC Magnifica Celebrity Apax Calmirican Glory	r         3.46.         1.2:00 PM         3.44           2.08D         8:17 AM         3.41           2.08D         8:17 AM         3.44           2.08D         8:17 AM         3.44           1.463         7:13 AM         3.75           40         6:18 AM         3.73           1.976         6:45 AM         3.73           1.946         10:18 AM         3.70           1.546         10:18 AM         3.71           1.946         10:18 AM         3.71           1.917         6:45 AM         3.87           3.171         7:26 AM         3.82           3.171         7:219 AM         3.15           49         6:42 AM         3.81           49         6:42 AM         3.81           49         6:42 AM         3.81           49         6:42 AM         2.84           1.916         6:43 AM         2.84           3.916         6:45 AM         2.84	4.57 12 13.35 1 4.19 4.53 5 9.04 N 4.53 ST 8.41 N 5.13 12 8.41 N 5.13 12 2.57 1 9.66 S	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:44 PM 6:45 PM 6:45 PM 1:50 PM 1:50 PM 3:348 PM 5:32 PM 4:34 PM	- 4.10 1.68 1.46 5.82 1.87 1.94 4.25 1.86 1.70 1.44 1.40 2.5.36 6.01 4.27	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.50	E W E ESE SW ESE NA NNW WSW E ESE ESE SSE SSE SSE SSW	9 - 3 8 7 10 NA 15 16 15 15 14 6 9 10 8	Forward NA Revense Forward Reverse Forward Forward Forward Forward Forward Forward NA NA NA NA NA NA NA NA	<ul> <li>I) Arrival Usparature based on videos. (2) No apparent ilingat on tarbiday. (3) No Arrival guests, No Deparature guests (4) -99.9 monoided on Shallow Sonde at 11:21 am, 246 pm, and 7-46 pm.</li> <li>I) Small daip at Par A; (3) no apparent effect on tarbiday.</li> <li>I) No Arrival guests, No Deparature guests (2) -99.9 monoided on Shallow Sonde at 2:11 am, 2:26 am, and 2:41 pm.</li> <li>I) No Arrival guests, No Deparature guest (2) Shallow Sonde at 2:11 am, 2:26 am, (21 am, 1:26 am, and 2:24 pm.</li> <li>I) Arrival guests, No Deparature guest (2) Shallow Sonde in TU1 takin at 7:26 am.</li> <li>I) Small arbitday update at 2:01 PM (10) INTU1) on Darp Sonde(; 2) (1) -99.9 monoided on Shallow Sonde at 1:26 am, 1:26 am, and 2:24 pm.</li> <li>I) Small arbitday update at 2:01 PM (10) INTU1) on Darp Sonde(; 2) (1) -99.9 monoided on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitday update at 2:01 PM (10) INTU1) on Darp Sonde(; 2) (1) -99.9 monoided on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitday update at 2:01 PM (10) INTU1) on Darp Sonde(; 2) (1) -99.9 monoided on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitday update at 2:01 PM (10) INTU1) on Darp Sonde(; 2) (1) -99.9 monoided no Shallow Sonde at 10:26 am.</li> <li>I) Arrival Darpature based on video, (2) Shallow Sonde monoid 14] -99.9 points at 1:16 am, 10:16 am, 11:06 am, and 9:26 pm.</li> <li>I) Arrival Darpature based on video, (2) Shallow Sonde monoid 14] -99.9 points at 1:16 am, 10:16 am, 11:06 am, and 9:26 pm.</li> <li>I) Arrival Darpature based on video, (2) Turbidity update at 2:31 am (160:44 NTI) no dap at that time, (3) -99.9 monoided on Shallow Sonde at 2:51 am.</li> <li>I) Arrival guest, No Deparature guest, (2) Turbidity update at 2:31 am (160:44 NTI) no dap at that time, (3) -99.9 monoided on Shallow Sonde.</li> <li>I) Arrival guest, No Deparature guest, (2) Turbidity update at 2:31 am (160:44 NTI) no dap at that time, (3) -99.9 monoided on Shallow Sonde.</li> <li>I) Arrival guest, No Deparature guest, (2) Turbidity update at</li></ul>
March 2024		Carnisal Glory Scarlist Lady Celebrity Stibuarthe MSIC Explora American Glory Norwegian San Carnisal Disam Norwegian Pearl MSIC Magnifica Celebrity Apex American Glory Norwegian San Scarliet Lady	r         74.         12:00 PM         3.44           2.980         96:13 AM         3.41           2.860         -6:09 AM         -           1.463         7:33 AM         3.79           4.971         7:33 AM         3.79           4.971         7:33 AM         3.79           4.97         6:18 AM         3.71           1.916         6:45 AM         3.71           1.916         6:45 AM         3.82           2.840         7:26 AM         3.82           2.841         5:26 AM         3.82           2.814         6:25 AM         3.82           2.814         6:25 AM         3.82           2.814         6:25 AM         3.82           2.814         6:45 AM         3.71           1.917         8:14 AM         3.71           1.917         8:44 AM         3.71           1.917         8:44 AM         2.84           1.916         6:45 AM         2	4.87 13 15.35 1 4.87 2 9.04 8 4.53 57 8.41 8 5.41 8 5.41 8 5.41 8 5.41 53 5.41 53 5.41 53 5.41 53 5.41 53 5.41 53 5.41 8 5.41 8 5.5 8 5.	E 9 	4:53 PM 6:55 PM 4:47 PM 5:06 PM 4:44 PM 4:64 PM 6:45 PM 2:04 PM 1:50 PM 5:42 PM 4:34 PM 6:55 PM 2:05 PM	- 4.10 1.68 1.46 5.82 1.87 1.94 4.25 1.86 1.70 1.44 1.40 2.5.36 6.01 4.27	11.72 9.48 3.17 6.46 7.21 9.45 8.19 8.38 9.75 10.79 9.79 11.54 7.80 20.11 7.57 7.26	E W E ESE SW USE NA NNW WSW E E ESE SSE SSE SSE SSW	9 - 3 8 7 10 NA 15 16 15 15 14 6 9 10 8	Forward NA Reverse Forward Reverse Forward Forward Forward Forward Forward Forward Forward NA NA NA NA NA NA Reverse	<ul> <li>(1) Arrival Departure based on video; (2) to appearent impact on tarbidity;</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) Sonald ship at Par A; (2) no appearent effect on tarbidity.</li> <li>(1) No Arrival guests, No Departure guests; (2) -993 recorded on Shallow Sonde at 2:11 am, 1:24 am, and 2:41 pm.</li> <li>(1) Arrival guests, No Departure guest; (2) Shallow Sonde at 2:11 am, 1:25 am, 6:12 barris, 6:11 barris, 6:11 barris, 6:11 barris, 6:11 barris, 6:12 barris, 6:11 barris, 6:1</li></ul>
March 2024		Caminal Glory Scatte Lady Celeberty Silbourne MSC Explora American Glory Networgint San Caminal Conquen Varinital Conquen Varinital Conquen Varinital Conquen Varinita Data MSC Magnifica Celebrity Apex American Glory Networgint San Scatte Lady Networgint Gamer Celebrity Silbourne Celebrity Silbourne	r         3.46.         1.2:00 PM         3.44           2,090         R.13 AM         3.41           2,860         -K309 AM         -           1,463         7:33 AM         3.75           4.90         cf.38 AM         3.75           4.91         cf.38 AM         3.75           4.92         cf.38 AM         3.75           1,916         cf.48 AM         3.71           1,916         fc.48 AM         3.71           1,916         fc.48 AM         3.71           1,817         7:26 AM         3.82           2,394         cf.52 AM         3.82           3,017         7:19 AM         3.17           3,016         cf.42 AM         2.54           4.90         cf.43 AM         2.54           1,016         cf.48 AM         2.64           1,016         r.54 AM         2.64           1,016         r.54 AM         2.64           1,0463         No Show	4.87 12 15.59 1 5.15 2 9.04 N 4.55 S 4.45 S 5.41 N 5.41 S 5.41	E 9 8 - 7 NA 7 9 14 14 14 14 15 8 14 14 15 8 9 - 7 9 14 14 8 8 9 - 7 9 14 15 8 9 9 14 15 8 9 9 14 15 8 9 9 15 15 15 15 15 15 15 15 15 15	4:51 PM 6:55 PM 6:45 PM 5:06 PM 5:06 PM 6:45 PM 6:45 PM 6:45 PM 1:30 PM 6:45 P	4.10 1.68 3.36 5.82 3.87 3.94 4.25 3.87 3.94 4.25 3.86 3.70 3.40 2.5.36 6.01 4.27 5.62	11.72 9.48 3.17 6.46 7.21 9.45 8.18 9.73 10.79 8.58 9.73 10.79 9.79 11.84 7.80 20.11 7.57 7.36 7.45	E W E ISE SW ISE SW WSW E E ISE SSE SSE SSE SSE SSE SSE SSE SSE	9 3 8 7 10 NA 16 10 15 16 14 6 9 10 8 22 8	Ferward NA Reverse Forward Reverse Forward NA NA Forward Forward Forward Forward NA NA NA NA NA NA NA NA NA NA	1) Arrival Useparater based on videos, (2) No apparent integrat on tarbiday; (3) No Arrival guests, No Deparater guests, (4) -99.9 monoled on Shallow Sonde at 11:21 an, 3:46 pm, and 7:46 pm 1) Small daip at Par A; (3) no apparent effect on tarbiday 1) No Arrival guests, No Deparater guest (2) -99.9 monoled on Shallow Sonde at 2:11 an, 1:25 ani, 1:02 ani, 1:
March 2024		Canitral Glory Scatter Laby Calebrity, Silowatta MSC Explora American Glory Norwagitas Nats Cartrola Conqueot Norwagitas Paraf MSC Mannifica Celebrity Apes American Glory Norwagitas Kan Scatter Laby Norwagita Gam Calebrity, Silowatta Seven Saw Grandan Cartrola Dreim	z         74.         12:00 PM         3.44           2.980         9:31 AM         3.41           2.860         -6:09 AM         -           1.463         7:33 AM         4.79           1.463         7:33 AM         3.79           4.9         6:18 AM         3.71           1.97         6:48 AM         3.71           1.976         6:48 AM         3.71           1.546         0:18 AM         3.71           1.5471         0:18 AM         3.71           1.5481         7:26 AM         3.82           2.1944         6:42 AM         3.71           1.517         5:294         6:42 AM         3.71           1.517         7:29 AM         3.82         2.194         6:42 AM         3.71           1.517         7:39 AM         3.82         2.860         7:19 AM         3.71           1.916         6:42 AM         2.84         1.916         6:42 AM         2.84           1.916         6:42 AM         2.84         1.916         6:42 AM         2.84           1.916         6:42 AM         2.84         1.936         6:43 AM         2.84           1.916         6:42 AM </td <td>4.87 12 15.39 1 15.39 1 15.3 2 0.04 N 4.43 S 4.43 S 4.43 S 4.43 S 5.13 12 2.47 1 5.13 12 2.47 1 5.41 23 9.66 S 2.47 S 1.476 S 2.475 S 2.475</td> <td>E 9 8 - 7 NA 7 9 7 9 14 E 6 8 9 14 E 9 14 E 9 14 E 9 - 8 9 - - - - - - - - - - - - -</td> <td>4:51 PM 6:55 PM 4:47 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 5:44 PM 5:44 PM 5:44 PM 5:44 PM 5:45 PM 5:45 PM 6:55 P</td> <td>- 4.10 1.68 1.36 1.36 1.46 5.82 1.37 1.94 4.23 1.70 1.44 1.40 2.5.36 6.01 4.27 - - - - - - - - - - - - -</td> <td>11.72 9.48 3.17 9.48 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.30 20.11 7.57 7.36 7.36 7.36 7.36 7.36 9.7</td> <td>E W E SW ESE SW ESE NA NSW WSW E E E SSE SSE SSE SSW ESE SSW ESE</td> <td>9 3 8 7 10 NA 15 15 15 16 19 8 9 9 8 22 5 22</td> <td>Ferward NA Revense Ferward Perward Perward Perward Perward Perward Perward Perward NA NA NA NA NA NA NA Revense Revense</td> <td><ul> <li>1) Arrival Departure based on video: (2) No approver impact on arbidray; (3) No Arrival guests, No Departure guest; (4) -99.9 monded on Shallow Sonde at 11:21 am, 2-46 pm.</li> <li>1) Small dag at Par A; (2) no approver effect on tarbidray.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest status of 1111 at 1200 pm. 6000 (2000</li></ul></td>	4.87 12 15.39 1 15.39 1 15.3 2 0.04 N 4.43 S 4.43 S 4.43 S 4.43 S 5.13 12 2.47 1 5.13 12 2.47 1 5.41 23 9.66 S 2.47 S 1.476 S 2.475	E 9 8 - 7 NA 7 9 7 9 14 E 6 8 9 14 E 9 14 E 9 14 E 9 - 8 9 - - - - - - - - - - - - -	4:51 PM 6:55 PM 4:47 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 5:44 PM 5:44 PM 5:44 PM 5:44 PM 5:45 PM 5:45 PM 6:55 P	- 4.10 1.68 1.36 1.36 1.46 5.82 1.37 1.94 4.23 1.70 1.44 1.40 2.5.36 6.01 4.27 - - - - - - - - - - - - -	11.72 9.48 3.17 9.48 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.30 20.11 7.57 7.36 7.36 7.36 7.36 7.36 9.7	E W E SW ESE SW ESE NA NSW WSW E E E SSE SSE SSE SSW ESE SSW ESE	9 3 8 7 10 NA 15 15 15 16 19 8 9 9 8 22 5 22	Ferward NA Revense Ferward Perward Perward Perward Perward Perward Perward Perward NA NA NA NA NA NA NA Revense Revense	<ul> <li>1) Arrival Departure based on video: (2) No approver impact on arbidray; (3) No Arrival guests, No Departure guest; (4) -99.9 monded on Shallow Sonde at 11:21 am, 2-46 pm.</li> <li>1) Small dag at Par A; (2) no approver effect on tarbidray.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest status of 1111 at 1200 pm. 6000 (2000</li></ul>
March 2024		Cantrol Glory Scatter Laby Calebrity Silboarth MSC Explora Amarican Glory Nerwegita Sata Cantrol Dram Cartrol Compare Nerwegita Pari MSC Magnifica Calebrity Apax American Glory Nerwegita Near Scatter Laby Nerwegita Stan Scatter Laby Nerwegita Stan Scatter Laby Nerwegita Stan Scatter Laby Nerwegita Stan Scatter Laby Nerwegita Stan Scatter Laby	r         3.46.         12:00 PM         3.44           2.08D         8:17 AM         3.41           2.08D         8:17 AM         3.41           2.08D         -8:09 AM         -           1.463         7:33 AM         3.75           40         6:18 AM         3.73           1.976         6:48 AM         3.73           1.976         6:48 AM         3.73           1.976         6:45 AM         3.73           2.194         6:52 AM         3.87           2.194         6:52 AM         3.87           3.071         5:19 AM         3.17           3.017         8:54 AM         3.17           3.017         8:54 AM         3.18           4.9         6:42 AM         3.84           3.016         6:48 AM         2.94           4.9         6:42 AM         2.84           3.016         6:48 AM         2.94           3.080         7:19 AM         3.18           3.841         No Show         -           3.842         No Show         -           1.546         No Show         -           3.927         7:13 AM         16:27	4.87 12 15.59 1 5.15 2 9.04 N 4.55 S 4.45 S 5.41 N 5.41 S 5.41	E 9 8 - 7 NA 7 9 7 9 14 E 6 8 9 14 E 9 14 E 9 5 8 9 - 5 8 9 - 7 - 7 9 - 7 9 - 14 - 8 - 8 - - - - - - - - - - - - -	4:51 PM 6:55 PM 6:45 PM 5:06 PM 5:06 PM 6:45 PM 6:45 PM 6:45 PM 1:30 PM 6:45 P	4.10 1.68 3.36 5.82 3.87 3.94 4.25 3.87 3.94 4.25 3.86 3.70 3.40 2.5.36 6.01 4.27 5.62	11.72 9.48 3.17 6.46 7.21 9.45 8.18 9.73 10.79 8.58 9.73 10.79 9.79 11.84 7.80 20.11 7.57 7.36 7.45	E W E ISE SW ISE SW WSW E E ISE SSE SSE SSE SSE SSE SSE SSE SSE	9 3 8 7 10 NA 16 10 15 16 14 6 9 10 8 22 8	Fernard NA Revense Forward Reverse Forward NA NA NA NA Forward Forward Forward Forward Forward NA NA NA NA NA NA Reverse Forward Reverse Reverse	<ul> <li>I) Arrival Papatane based on video; (2) is a paparent impact on subdity; (3). No Aerical gases, No Departane gases; (4): 49.9 monohol on Shallow Sonde at 11:21 am, 1-66 pm, and 7-66 pm.</li> <li>I) Small obligs at Par A; (2) on opporter atflict on tarbidity.</li> <li>I) No Aerical gases, No Departane gases; (2): 49.9 monohol on Shallow Sonde at 2:31 am, 52.6 am, 82.1 am, 11:21 am, 20.6 am and 2:41 pm.</li> <li>I) Horizon gases at ACL press/Bases and Part ACL (2): 50.8 mole sonde at 2:31 am, 52.6 am, 82.1 am, 11:21 am, 20.6 am at 2:30 m.</li> <li>I) Small arbitrary epike at 52.6 Million Bases Sonde (2): (3): 49.9 monohol on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitrary epike at 52.6 Million Bases Sonde; (2): (3): 49.9 monohol on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitrary epike at 52.6 Million Bases Sonde; (2): (3): 49.9 monohol on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitrary epike at 52.6 Million Bases Sonde; (2): (3): 49.9 monohol on Shallow Sonde at 10:26 am.</li> <li>I) Small arbitrary epike at 52.6 Million Bases Sonde; (2): (3): 49.9 monohol on Shallow Sonde at 10:26 am.</li> <li>I) Arrival gases, No Departer gases; (2): Shallow Sonde monohol gases, (10): (4): 60.4 Million Bases Sonde; (2): (3): 49.9 monohol on shallow; (3): No Aerival gases, Departane gases; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): 49.0 million Bases Sonde; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): 49.0 million Bases Sonde; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): 49.0 million Bases Sonde; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): 49.0 million Bases Sonde; (3): Shallow Sonde reconder [4]: 49.9 sponter interact; (3): 49.0 million Bases Sonde; (3): Bases Bases</li></ul>
March 2024		Canitral Glory Scatter Laby Calebrity, Silowatta MSC Explora American Glory Norwagitas Nats Cartrola Conqueot Norwagitas Paraf MSC Mannifica Celebrity Apes American Glory Norwagitas Kan Scatter Laby Norwagita Gam Calebrity, Silowatta Seven Saw Grandan Cartrola Dreim	z         74.         12:00 PM         3.44           2.980         9:31 AM         3.41           2.860         -6:09 AM         -           1.463         7:33 AM         4.79           1.463         7:33 AM         3.79           4.9         6:18 AM         3.71           1.97         6:48 AM         3.71           1.976         6:48 AM         3.71           1.546         0:18 AM         3.71           1.5471         0:18 AM         3.71           1.5481         7:26 AM         3.82           2.1944         6:42 AM         3.71           1.517         5:294         6:42 AM         3.71           1.517         7:29 AM         3.82         2.194         6:42 AM         3.71           1.517         7:39 AM         3.82         2.860         7:19 AM         3.71           1.916         6:42 AM         2.84         1.916         6:42 AM         2.84           1.916         6:42 AM         2.84         1.916         6:42 AM         2.84           1.916         6:42 AM         2.84         1.936         6:43 AM         2.84           1.916         6:42 AM </td <td>4.87 12 15.39 1 15.39 1 15.3 2 0.04 N 4.43 S 4.43 S 4.43 S 4.43 S 5.13 12 2.47 1 5.13 12 2.47 1 5.41 23 9.66 S 2.47 S 1.476 S 2.475 S 2.475</td> <td>E 9 8 - 7 NA 7 9 7 9 14 E 6 8 8 9 1 9 1 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - - - 9 - - - 9 - - - - - - - - - - - - -</td> <td>4:51 PM 6:55 PM 4:47 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 5:44 PM 5:44 PM 5:44 PM 5:44 PM 5:45 PM 5:45 PM 6:55 P</td> <td>- 4.10 1.68 1.36 1.36 1.46 5.82 1.37 1.94 4.23 1.70 1.44 1.40 2.5.36 6.01 4.27 - - - - - - - - - - - - -</td> <td>11.72 9.48 3.17 9.48 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.30 20.11 7.57 7.36 7.36 7.36 7.36 7.36 9.7</td> <td>E W E SW ESE SW ESE NA NSW WSW E E E SSE SSE SSE SSW ESE SSW ESE</td> <td>9 3 8 7 10 NA 15 15 15 16 19 8 9 9 8 22 5 22</td> <td>Fernard NA Revense Forward Reverse Forward NA NA NA NA Forward Forward Forward Forward Forward NA NA NA NA NA NA Reverse Forward Reverse Reverse</td> <td><ul> <li>1) Arrival Departure based on video: (2) No approver impact on arbidray; (3) No Arrival guests, No Departure guest; (4) -99.9 monded on Shallow Sonde at 11:21 am, 2-46 pm.</li> <li>1) Small dag at Par A; (2) no approver effect on tarbidray.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest status of the parture guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.51 am, 1021 am, 1124 guest Shallow Sonde at 2.52 am, 1021 am, 1124 guest Shallow Sonde at 1922 am</li> <li>1) Small nabidity splice at 7.26 AM (7.96 NTU) on Daep Sonde; (2) Shallow Sonde at 1922 am</li> <li>1) Arrival Departure based on video (2) No approver import on arbidray; (5) No Arrival guest, Sci Status, Coll Shallow Sonde at 2.51 am, 1024 am, 1196 am, 119</li></ul></td>	4.87 12 15.39 1 15.39 1 15.3 2 0.04 N 4.43 S 4.43 S 4.43 S 4.43 S 5.13 12 2.47 1 5.13 12 2.47 1 5.41 23 9.66 S 2.47 S 1.476 S 2.475	E 9 8 - 7 NA 7 9 7 9 14 E 6 8 8 9 1 9 1 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - - - 9 - - - 9 - - - - - - - - - - - - -	4:51 PM 6:55 PM 4:47 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 4:44 PM 5:44 PM 5:44 PM 5:44 PM 5:44 PM 5:45 PM 5:45 PM 6:55 P	- 4.10 1.68 1.36 1.36 1.46 5.82 1.37 1.94 4.23 1.70 1.44 1.40 2.5.36 6.01 4.27 - - - - - - - - - - - - -	11.72 9.48 3.17 9.48 7.21 9.45 8.19 8.38 9.73 10.79 9.79 11.54 7.30 20.11 7.57 7.36 7.36 7.36 7.36 7.36 9.7	E W E SW ESE SW ESE NA NSW WSW E E E SSE SSE SSE SSW ESE SSW ESE	9 3 8 7 10 NA 15 15 15 16 19 8 9 9 8 22 5 22	Fernard NA Revense Forward Reverse Forward NA NA NA NA Forward Forward Forward Forward Forward NA NA NA NA NA NA Reverse Forward Reverse Reverse	<ul> <li>1) Arrival Departure based on video: (2) No approver impact on arbidray; (3) No Arrival guests, No Departure guest; (4) -99.9 monded on Shallow Sonde at 11:21 am, 2-46 pm.</li> <li>1) Small dag at Par A; (2) no approver effect on tarbidray.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest.</li> <li>1) No Arrival guests, No Departure guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest status of the parture guest; (2) -99.9 monded on Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.11 am, 1.26 am, 1021 am, 1124 guest Shallow Sonde at 2.51 am, 1021 am, 1124 guest Shallow Sonde at 2.52 am, 1021 am, 1124 guest Shallow Sonde at 1922 am</li> <li>1) Small nabidity splice at 7.26 AM (7.96 NTU) on Daep Sonde; (2) Shallow Sonde at 1922 am</li> <li>1) Arrival Departure based on video (2) No approver import on arbidray; (5) No Arrival guest, Sci Status, Coll Shallow Sonde at 2.51 am, 1024 am, 1196 am, 119</li></ul>
March 2024		Cantrol Glory Scatte Laby Celeberts Silbourne MSC Explora American Glory Nerwegian San Cantrol Decam Varrival Conquest Norwegian San Celebrity Apex Celebrity Apex American Glory Norwegian San Scatte Laby Norwegian San Scatte Laby Norwegian Gandar Celebrity Silbourne Scatter Laby Norwegian Grandur Cantrol Decam MSC Magnifica	r         3.46.         1.2:00 PM         3.44           2,980         8:13 AM         3.41           2,860         -8:09 AM         -           1,463         7:13 AM         3.75           49         6:28 AM         3.75           49         6:28 AM         3.75           49         6:28 AM         3.77           1,473         7:23 AM         3.82           2,894         6:45 AM         3.77           1,675         6:45 AM         3.87           2,894         6:52 AM         3.87           1,975         6:45 AM         3.87           1,976         6:45 AM         3.87           2,894         6:52 AM         3.87           1,976         6:45 AM         2.84           1,976         6:48 AM         2.84           1,845         N:58mw         -           2,394         No Show         -           1,465         N:84         19:71 </td <td>4.87 12 15.19 1 15.19 1 15.15 2 9.04 8 4.53 57 4.53 57 4.53 57 4.53 57 4.53 57 5.41 58 5.41 58 2.67 5.41 58 2.67 14.75 5 2.73 5 2.67 14.75 5 2.73 14.75 5 2.73 14.75 2.7 14.75 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7</td> <td>E 9 8 - 7 NA 7 9 9 14 E 6 8 E 9 14 8 E 9 14 8 8 8 9 - 7 8 15 9 - 15 15 15 15 15 15 15 15 15 15</td> <td>4:51 PM ed55 PM 4:54 79 M 4:54 79 M 4:54 79 M 5:56 PM 4:54 PM 6:57 PM 6:57 PM 4:54 PM 6:57 PM 4:54 PM 5:54 PM 5:55 PM 5:54 PM 5:55 PM 5:54 PM 5:55 PM</td> <td>- 4.10 3.68 3.36 5.32 3.87 3.94 4.22 3.86 3.70 4.22 5.62 5.62 - - - - - - - - - - - - -</td> <td>11.72 9.48 3.17 9.48 7.21 9.46 7.21 9.721 9.721 9.721 9.73 9.73 7.80 7.80 7.80 7.80 7.80 7.80 7.80 7.80</td> <td>E W E SW ESE SW ESE SW E E E E SSE SSE S</td> <td>9 - - - - - - - - - - - - -</td> <td>Forward NA Revense Forward NA NA NA Forward Forward Forward Forward Forward Forward NA NA NA NA Revense - Revense Revense -</td> <td><ol> <li>Jambi Departure based on video: (2) No appeared inegat on harbitaty; (3): No Arrial gasts, No Departure gasts; (4): 499.9 accoded on Shallies Sonds at 11:21 am, 1-56 pm, and 7-66 pm</li> <li>Shandi dags at Prof. [2] Congruent effect on harbitaty at 120 in the constant state of the location state of the location</li></ol></td>	4.87 12 15.19 1 15.19 1 15.15 2 9.04 8 4.53 57 4.53 57 4.53 57 4.53 57 4.53 57 5.41 58 5.41 58 2.67 5.41 58 2.67 14.75 5 2.73 5 2.67 14.75 5 2.73 14.75 5 2.73 14.75 2.7 14.75 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7	E 9 8 - 7 NA 7 9 9 14 E 6 8 E 9 14 8 E 9 14 8 8 8 9 - 7 8 15 9 - 15 15 15 15 15 15 15 15 15 15	4:51 PM ed55 PM 4:54 79 M 4:54 79 M 4:54 79 M 5:56 PM 4:54 PM 6:57 PM 6:57 PM 4:54 PM 6:57 PM 4:54 PM 5:54 PM 5:55 PM 5:54 PM 5:55 PM 5:54 PM 5:55 PM	- 4.10 3.68 3.36 5.32 3.87 3.94 4.22 3.86 3.70 4.22 5.62 5.62 - - - - - - - - - - - - -	11.72 9.48 3.17 9.48 7.21 9.46 7.21 9.721 9.721 9.721 9.73 9.73 7.80 7.80 7.80 7.80 7.80 7.80 7.80 7.80	E W E SW ESE SW ESE SW E E E E SSE SSE S	9 - - - - - - - - - - - - -	Forward NA Revense Forward NA NA NA Forward Forward Forward Forward Forward Forward NA NA NA NA Revense - Revense Revense -	<ol> <li>Jambi Departure based on video: (2) No appeared inegat on harbitaty; (3): No Arrial gasts, No Departure gasts; (4): 499.9 accoded on Shallies Sonds at 11:21 am, 1-56 pm, and 7-66 pm</li> <li>Shandi dags at Prof. [2] Congruent effect on harbitaty at 120 in the constant state of the location state of the location</li></ol>
March 2024		Canitral Glory Scatter Laby Celebrity Silowatte MCC Explora American Glory Norwegitan Nan Cartival Conquest Norwegitan Stat Celebrity Apes American Glory Norwegitan Stat Scatter Laby Norwegitan Genn Calibrity Silowatta Ganto Doran Cartival Statistics	r         74.         12:00 PM         3.44           2.980         9:31 AM         3.41           2.860         -6:09 AM         -           1.463         7:33 AM         4.79           1.463         7:33 AM         3.71           4.9         6:18 AM         3.71           1.91         1.671         7:33 AM         3.71           1.956         6:48 AM         3.71         1.581         7:24 AM         3.82           2.594         6:72 AM         3.82         2.594         6.32         3.82           1.517         7:19 AM         3.82         2.594         6.52 AM         3.82           2.504         6:642 AM         2.84         1.936         6:642 AM         2.84           1.936         6:642 AM         2.84         1.936         6:42 AM         2.84           1.936         6:642 AM         2.84         1.936         6:43 AM         1.98           2.840         7:39 AM         10.75         1.863         10.85         1.845           3.82         2.840         7:39 AM         10.75         1.845         1.937           1.8463         10.92 AM         10.75         1.846	4.87 12 15.19 1 15.15 2 16.15 2 16.	E 9 S - - 7 NA 7 9 7 9 14 E 6 8 9 2 9 2 8 8 9 - - 8 8 9 - - - - - - - - - - - - -	4:51 PM 6:65 PM 6:45 PM 5:56 PM 5:56 PM 4:47 PM 4:67 PM 6:45 PM 5:46 P	4.10 1.68 1.36 1.36 1.37 1.94 4.23 1.36 1.37 1.94 4.23 1.36 6.01 4.27 5.62	11.72 9.48 3.17 8.70 8.18 9.73 10.79 9.79 11.84 7.80 7.85 7.75 7.75 7.75 9.79 11.84 7.85 7.75 7.75 7.75 7.75 7.75	E W E SSE SSE NA NAW WSW E E E E SSE SSE SSE SSE SSE SSE SS	9 3 8 7 10 NA 15 15 16 16 15 16 16 15 16 8 9 9 22	Forward NA Reverse Forward Reverse Forward NA NA Forward Forward Torward NA NA NA NA NA NA Reverse - - - - - - - - - - - - - - - - - - -	<ul> <li>(1) Arrial Departure based as video; (2) No generation regard on Arrial gues, No Departure gues; (4) -00.9 methods on Shallow Sende at 11:21 an, 13:46 pm, and 7:46 pm, and 7:46 pm.</li> <li>(1) Simul dugs the PA : (2) no generation regard on Arrial gues, No Departure gues; (2) -00.9 methods on Shallow Sende at 2:11 an, 10:4 an, 8:21 an, 11:41 an, and 2:44 pm.</li> <li>(1) No Arrival gues, No Departure gue; (2) -00.9 methods on Shallow Sende at 2:11 an, 10:4 an, 8:21 an, 11:41 an, and 2:44 pm.</li> <li>(2) Arrival gues, No Departure gue; (2) -00.9 methods on Shallow Sende at 10:20 an.</li> <li>(3) Arrival gues, No Departure gues; (2) Arrival gues, No Departure gues; (4) -00.9 methods on Shallow Sende at 10:20 methods on Shallow Sende at 2:11 an, 10:4 an, 10:4</li></ul>
March 2024	149/2024 319/2024 319/2024 319/2024 319/2024 319/2024 319/2024 319/2024 319/2024 321/2024 321/2024 321/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024 322/2024	Cantinal Glory Scatter Laby Calebrity Silboarthe MSC Explora Annarican Glory Nerwegitas Kata Cantinal Company Nerwegitas Paral MSC Magnifica Calebrity Apax Annarican Glory Norwegitas Nerwegitas Gen Norwegitas Nerwegitas Gen Scatter Laby Norwegitas Sen Scatter Laby Norwegitas Gen Scatter Laby Norwegitas Gen Cantinal Duam Cantinal Duam Cantinal Duam Cantinal Startine MSC Magnifica Calebrity Samuti	r         7.86.         1.2:00 PM         3.44           2,980         96.13 AM         3.41           2,860         -6:09 AM         -           1,463         7:33 AM         3.79           49         6:18 AM         3.71           49         6:18 AM         3.71           1,916         6:45 AM         3.71           1,916         6:45 AM         3.71           1,916         6:45 AM         3.72           1,936         6:45 AM         3.82           2,304         6:52 AM         3.82           2,304         6:52 AM         3.82           2,304         6:52 AM         3.82           2,304         6:52 AM         3.82           2,356         6:48 AM         2.86           2,356         6:48 AM         2.86           2,356         7:30 AM         10.75           3,356         6:48 AM         2.86           2,354         No Show         -           3,56         1.646         30.27 AM           1,566         30.23 AM         16.97           1,581         7:13 AM         16.27           1,516         No Show         -	4.87 12 15.19 1 15.15 2 16.15 2 16.	E 9 8 - 7 NA 7 9 9 14 E 6 8 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 8 8 9 - 14 8 8 - 9 - 14 8 8 - 9 - 14 8 - 8 - 9 - 14 8 - 8 - 9 - 14 - 8 - 9 - 9 - 14 - 8 - 9 - 9 - 14 - 8 - 9 - 9 - - - - - - - - - - - - -	4:51 PM 6:65 PM 6:45 PM 5:56 PM 5:56 PM 4:47 PM 4:67 PM 6:45 PM 5:46 P		11.72 9.48 3.17 8.70 8.18 9.73 10.79 9.79 11.84 7.80 7.85 7.75 7.75 7.75 9.79 11.84 7.85 7.75 7.75 7.75 7.75 7.75	E W E SSE SSE NA NAW WSW E E E E SSE SSE SSE SSE SSE SSE SS	9 3 8 7 10 NA 15 15 16 16 15 16 16 15 16 8 9 9 22	Forward NA Revense Forward Reverse Forward Forward Forward Forward Forward Reverse Reverse Reverse Reverse Reverse Forward Torward Reverse Reverse Reverse Reverse Reverse	<ol> <li>Jambi Departure based on video: (2) No appeared inegat on harbitaty; (3): No Arrial gasts, No Departure gasts; (4): 499.9 accoded on Shallies Sonds at 11:21 am, 1-56 pm, and 7-66 pm</li> <li>Shandi dags at Prof. [2] Congruent effect on harbitaty at 120 in the constant state of the location state of the location</li></ol>

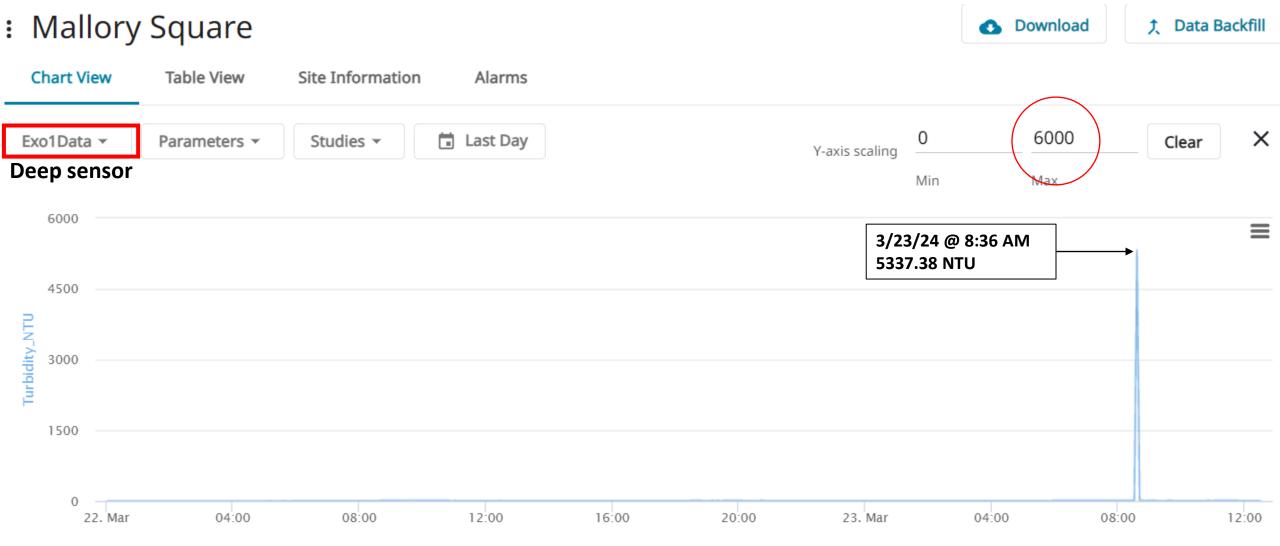
### : Mallory Square



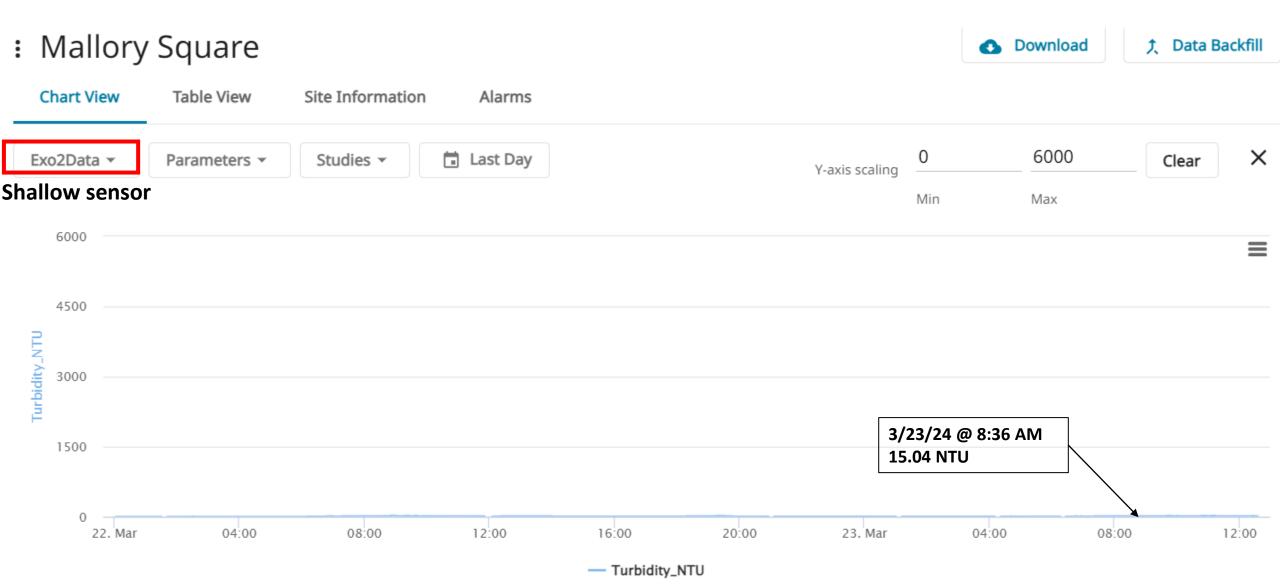
↑ Data Backfill

Ownload

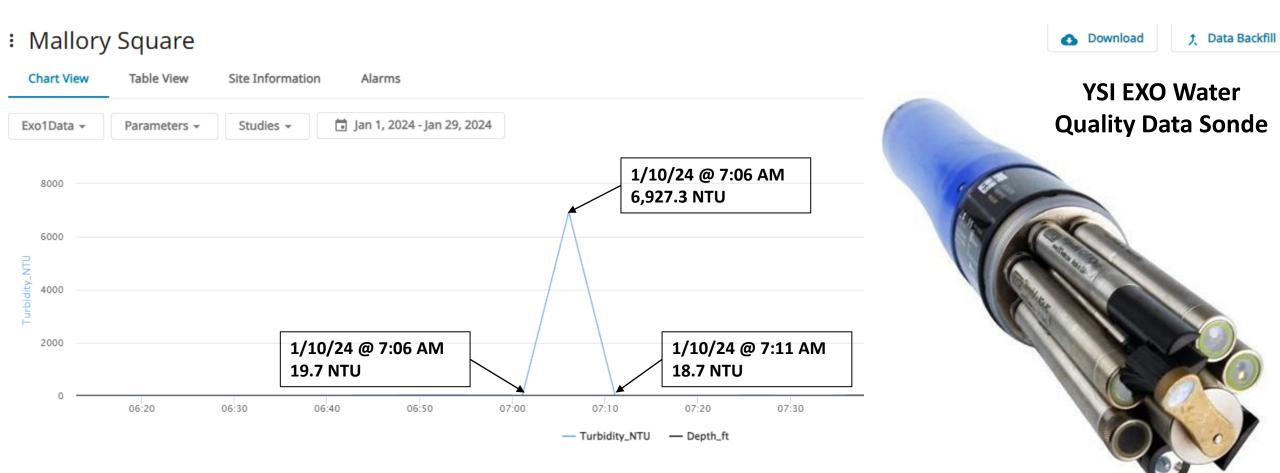
### Turbidity Anomaly (5337.38 NTU)



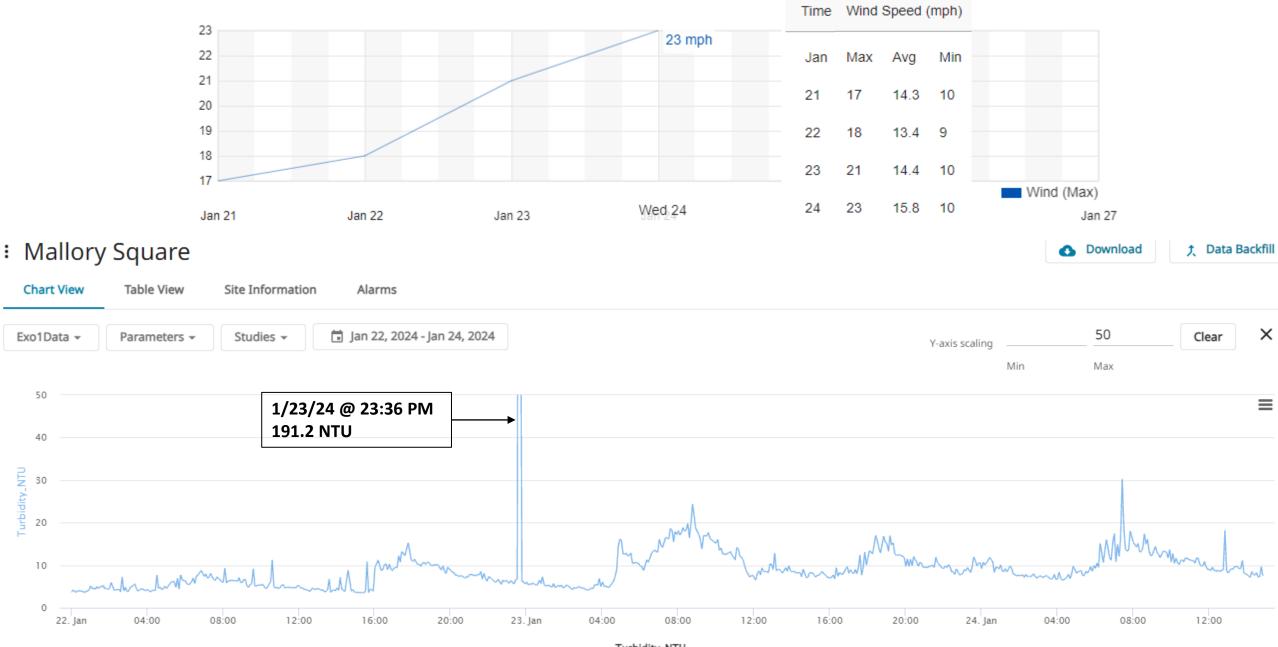
### Shallow (1 m) Turbidity Sensor



#### **Turbidity Anomalies**



Wind event Jan. 21-24



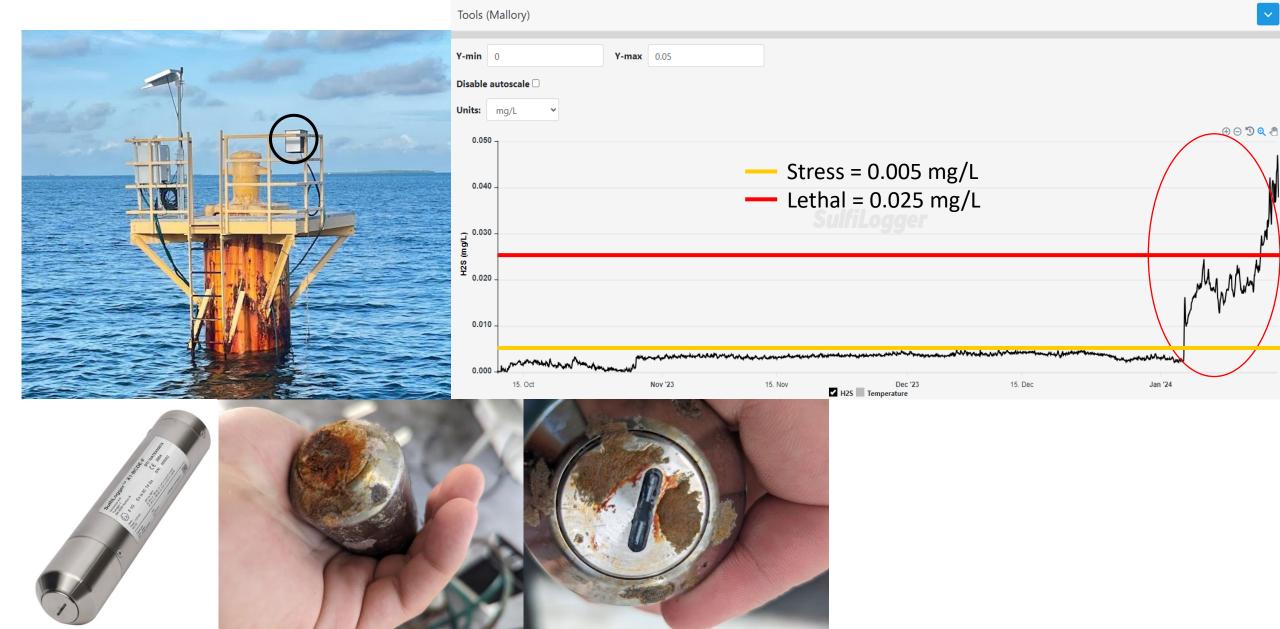
### **Objective 2**

Expand water quality monitoring to eight AOC around the islands of Key West using an Autonomous Underwater Vehicle equipped with sensors for dissolved oxygen, temperature, salinity, turbidity, and total algae.



#### **Objectives 5** - Expand water quality monitoring to marine environment near Stock Island Landfill for toxic pollutants

(i.e. hydrogen sulfide).





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#### Special thanks to:

- CFK Marine Science Technicians, Research Assistants, and Scientific Dive Team
- Florida Department of Environmental Protection (FDEP)
- Florida International University (FIU)
- Environmental Protection Agency (EPA)

### **Questions?**