

Chemical Analysis Report

NE-DIST-2024-01-30-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algae Bloom Response NEROC-as needed**
Request ID: **RQ-2023-08-21-59**
Customer: **NE-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
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Certified by: Marek Topolski, Environmental Specialist III

Date Certified: 09-FEB-2024 10:51

A handwritten signature in black ink, appearing to read "Marek Topolski", with a stylized, flowing script.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Stella Lake - Boat Ramp

Collection Date/Time: 01/29/2024 11:50

Field ID: NEHAB0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2464076	DEP SOP: NU-094-1	Color (true)	42		PCU	P440644	
2464077	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P440976	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P440953	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P440843	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P440808	
2464078	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P440635	
2464079	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P440621	
		Cylindrospermopsin	0.10	U	ug/L	P440619	
		Desmethyl microcystin LR	0.25	U	ug/L	P440619	
		Microcystin HiLR	0.25	U	ug/L	P440619	
		Microcystin HtyR	0.25	U	ug/L	P440619	
		Microcystin LA	0.10	U	ug/L	P440619	
		Microcystin LF	0.10	U	ug/L	P440619	
		Microcystin LR	0.25	U	ug/L	P440619	
		Microcystin LW	0.25	U	ug/L	P440619	
		Microcystin LY	0.10	U	ug/L	P440619	
		Microcystin RR	0.10	U	ug/L	P440619	
		Microcystin WR	0.50	U	ug/L	P440619	
		Neosaxitoxin	0.50	U	ug/L	P440621	
		Microcystin YR	0.25	U	ug/L	P440619	
		Saxitoxin	0.50	U	ug/L	P440621	
		Nodularin-R	0.10	U	ug/L	P440619	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P440644

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P440976

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440953

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P440843

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P440808

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440635

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P440619

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P440621

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P440644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P440976

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440953

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P440843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P440808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.9		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P440619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	89.8		P	40 - 150
Desmethyl microcystin LR	74.1		P	40 - 150
Microcystin H1LR	80.7		P	40 - 150
Microcystin HtyR	85.6		P	40 - 150
Microcystin LA	88.6		P	40 - 150
Microcystin LF	87.1		P	40 - 150
Microcystin LR	78.2		P	40 - 150
Microcystin LW	86.8		P	40 - 150
Microcystin LY	89.8		P	40 - 150
Microcystin RR	94.8		P	40 - 150
Microcystin WR	77.6		P	40 - 150
Microcystin YR	89.3		P	40 - 150
Nodularin-R	90.3		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P440621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	97.7		P	40 - 150
Neosaxitoxin	89.8		P	40 - 150
Saxitoxin	73.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P440976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464295	Ammonia-N	95.4	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2465863	Kjeldahl Nitrogen	96.6	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P440843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464405	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P440808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464077	Total-P	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464153	O-Phosphate-P	101	99.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P440619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464079	Cylindrospermopsin	102	104	P/P	40 - 150
2464079	Desmethyl microcystin LR	82.9	85.7	P/P	40 - 150
2464079	Microcystin HiLR	86.1	93.1	P/P	40 - 150
2464079	Microcystin HtyR	93.9	96.0	P/P	40 - 150
2464079	Microcystin LA	101	96.1	P/P	40 - 150
2464079	Microcystin LF	100	101	P/P	40 - 150
2464079	Microcystin LR	85.4	89.6	P/P	40 - 150
2464079	Microcystin LW	98.4	104	P/P	40 - 150
2464079	Microcystin LY	96.6	98.3	P/P	40 - 150
2464079	Microcystin RR	104	103	P/P	40 - 150
2464079	Microcystin WR	80.5	90.5	P/P	40 - 150
2464079	Microcystin YR	92.4	94.7	P/P	40 - 150
2464079	Nodularin-R	99.5	96.0	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P440621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2464079	Anatoxin-a	102	104	P/P	40 - 150
2464079	Neosaxitoxin	94.1	95.5	P/P	40 - 150
2464079	Saxitoxin	80.7	83.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P440644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464012	Color (true)	0.581	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P440976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464295	Ammonia-N	0.745	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P440953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2465863	Kjeldahl Nitrogen	2.40	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P440843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464405	NO2NO3-N	0.180	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P440808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464077	Total-P	2.99	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P440635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464153	O-Phosphate-P	1.39	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P440619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464079	Cylindrospermopsin	1.22	Spike	P	0 - 30
2464079	Desmethyl microcystin LR	3.33	Spike	P	0 - 30
2464079	Microcystin HtIR	7.84	Spike	P	0 - 30
2464079	Microcystin HtyR	2.28	Spike	P	0 - 30
2464079	Microcystin LA	5.31	Spike	P	0 - 30
2464079	Microcystin LF	0.168	Spike	P	0 - 30
2464079	Microcystin LR	4.82	Spike	P	0 - 30
2464079	Microcystin LW	5.65	Spike	P	0 - 30
2464079	Microcystin LY	1.72	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P440619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464079	Microcystin RR	1.08	Spike	P	0 - 30
2464079	Microcystin WR	11.7	Spike	P	0 - 30
2464079	Microcystin YR	2.52	Spike	P	0 - 30
2464079	Nodularin-R	3.65	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P440621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2464079	Anatoxin-a	2.12	Spike	P	0 - 30
2464079	Neosaxitoxin	1.58	Spike	P	0 - 30
2464079	Saxitoxin	3.13	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Surrogates

Lab Sample ID: 2464079
Field Sample ID: NEHAB0115

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	116	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	76.2	P	30 - 160

Quality Assurance Report

Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: 124038
Included Lab Sample IDs: 2464077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A123896
Included Lab Sample IDs: 2464078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1
Run ID: A123898
Included Lab Sample IDs: 2464076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.8	99.5	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A123948
Included Lab Sample IDs: 2464079

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	95.5	98.7	P/P	50 - 160
Desmethyl microcystin LR	74.7	84.7	P/P	50 - 160
Microcystin HILR	84.6	85.7	P/P	50 - 160
Microcystin HtyR	84.2	91.6	P/P	50 - 160
Microcystin LA	93.8	98.7	P/P	50 - 160
Microcystin LF	95.4	92.3	P/P	50 - 160
Microcystin LR	80.6	86.7	P/P	50 - 160
Microcystin LW	94.1	97.9	P/P	50 - 160
Microcystin LY	96.4	96.6	P/P	50 - 160
Microcystin RR	99.4	99.6	P/P	50 - 160
Microcystin WR	76.9	85.0	P/P	50 - 160
Microcystin YR	85.6	92.8	P/P	50 - 160
Nodularin-R	96.7	96.1	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A123958
Included Lab Sample IDs: 2464079

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	109	104	P/P	50 - 160
Neosaxitoxin	118	113	P/P	50 - 160
Saxitoxin	94.9	94.2	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A123963
Included Lab Sample IDs: 2464077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	108	108	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A123976
Included Lab Sample IDs: 2464077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A124011
Included Lab Sample IDs: 2464077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	101				0.581	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	95.4	94.6			0.745
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	96.6	99.8			2.40
EPA 353.2 Rev. 2.0	NO2NO3-N	106	100				0.180
EPA 365.1 Rev. 2.0	Total-P	105	102	106			2.99
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	101	99.9			1.39
EPA 8321B	Anatoxin-a	97.7	102	104			2.12
	Cylindrospermopsin	89.8	104	102			1.22
	Desmethyl microcystin LR	74.1	85.7	82.9			3.33
	Microcystin HILR	80.7	93.1	86.1			7.84
	Microcystin HtyR	85.6	96.0	93.9			2.28
	Microcystin LA	88.6	96.1	101			5.31
	Microcystin LF	87.1	100	101			0.168
	Microcystin LR	78.2	89.6	85.4			4.82
	Microcystin LW	86.8	98.4	104			5.65
	Microcystin LY	89.8	98.3	96.6			1.72
	Microcystin RR	94.8	103	104			1.08
	Microcystin WR	77.6	90.5	80.5			11.7
	Microcystin YR	89.3	94.7	92.4			2.52
	Neosaxitoxin	89.8	94.1	95.5			1.58
	Nodularin-R	90.3	96.0	99.5			3.65
	Saxitoxin	73.5	80.7	83.2			3.13

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2464076
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2464077
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2464077
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2464077
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2464077
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2464078
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2464079
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2464079

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	01/30/2024			01/30/2024 14:39	Samantha L Bates	2464076
EPA 350.1 Rev. 2.0	01/30/2024			02/06/2024 12:37	Kenneth H Lee	2464077
EPA 351.2 Rev. 2.0	01/30/2024	02/06/2024 11:55	Samantha L Bates	02/07/2024 10:22	Samantha L Bates	2464077
EPA 353.2 Rev. 2.0	01/30/2024			02/01/2024 14:29	Fadila Guebre	2464077
EPA 365.1 Rev. 2.0	01/30/2024	02/01/2024 15:22	Adam P Silver	02/02/2024 12:27	Simonne.V. Calhoun	2464077
EPA 365.1 Rev. 2.0 dissolved	01/30/2024			01/30/2024 13:42	Adam P Silver	2464078
EPA 8321B	01/30/2024	02/01/2024 08:00	Hana Lee	02/01/2024 11:21	Hana Lee	2464079
	01/30/2024	02/01/2024 12:00	Hana Lee	02/01/2024 17:15	Hana Lee	2464079