1818 New York Ave. NE, Ste 231, Washington, DC 20002

Telephone: (301) 595-3783 www.salutinc.com

February 26, 2021

Prince George's County Public Schools Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772

Attention: Alex Baylor

alex.baylor@pgcps.org

Subject: Indoor Air Quality Survey

Vansville Elementary School 6813 Ammendale Road #1243

Beltsville, MD 20705

#### Mr. Baylor:

On January 29, 2021, a Soil and Land Use Technology, Inc. (SaLUT) Industrial Hygienist conducted an indoor air quality (IAQ) evaluation at Vansville Elementary School, a property maintained by Prince George's County Public Schools (PGCPS) located at 6813 Ammendale Road #1243, Beltsville, MD 20705. The inspection was performed in accordance with PGCPS contract number IFB 022-19.

#### <u>Methodology</u>

The IAQ evaluation conducted by SaLUT included a visual assessment, IAQ instrumentation screening, and a collection of interior air samples for mold in representative locations throughout the building. Additionally, one building exterior environmental air sample was taken for comparison.

Air-borne fungal spore samples were collected on *Air-O-Cell* cassettes using a Buck BioAire calibrated pump. The air samples were taken between three and five feet from the ground. In tandem with collecting mold samples, real-time readings for carbon dioxide, carbon monoxide, temperature and relative humidity were collected using a Fluke 975 Air Meter in representative areas within the facility.

The fungal spore air samples were delivered to EMSL Analytical, Inc. of Beltsville, Maryland for analysis. Fungal spores and particulates in air samples were analyzed by Optical Microscopy (methods EMSL 05-TP-003 and ASTM D7391). The sample chain-of-custody and laboratory reports are attached.



## **Observations**

The table below summarizes the main observations from the IAQ survey at Vansville Elementary School, visited on January 29, 2021.

**Table 1-Observations** 

Location	Summary of Observations 01-29-2021
Main Office	2' x 2' ceiling tiles and carpet;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
	Central AC.
Multi-Purpose Room	2' x 2' ceiling tiles and 12"x 12" tile floor;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
	Central AC.
Media Center	2'x 2' ceiling tiles and 12"x 12" tile floor;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
	Central AC.
Room A106	2' x 4' ceiling tiles and 12" x 12" tile floor;
	No visual signs of microbial growth, and no odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
	Central AC.
Room A217	2' x 4' ceiling tiles and 12" x 12" tile floor;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
7	Central AC.
Room A223	2' x 4' ceiling tiles and 12" x 12" tile floor;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
D C10/	Central AC.
Room C106	2'x 4' ceiling tiles and 12"x 12" tile floor;
	No visual signs of microbial growth;
	Mild odor;
	No visible dust on floor/other furniture surfaces;
	No visible dust around ventilator;
	Central AC.
Outside Exterior EV Sample	Cloudy, chilly and windy



#### Measurements of Indoor Environmental Quality Parameters

Table 2 depicts a summary of average measurements of comfort.

#### **Temperature**

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) have published recommendations for year round acceptable temperatures in Standard 55-2010 *Thermal Environmental Conditions for Human Occupancy*. The winter comfort range is 20 to 24°C (68 to 75°F) and 23 to 26°C (73 to 79°F) is the summer comfort range. The temperature readings were within the ASHRAE recommended ranges.

### Relative Humidity (RH)

RH is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 60%. ASHRAE Standard 62.1-2010 *Ventilation for Acceptable Indoor Air Quality* recommends a maximum indoor RH of 65% to preclude the likelihood of condensation on cool surfaces encouraging mold growth. The RH readings were within the ASHRAE recommended ranges in the representative areas.

### Carbon Dioxide (CO<sub>2</sub>)

Under conditions of maximum occupancy, ASHRAE Standard 62.1-2010, Appendix C, infers that the acceptable CO<sub>2</sub> upper limit is the prevailing outdoor CO<sub>2</sub> concentration plus 700 parts per million (ppm). On the day of the space evaluation, the outdoor (building exterior) CO<sub>2</sub> concentration was approximately 398 ppm therefore indoor concentrations should not exceed approximately 1,098 ppm (700 + 398). The maximum average interior CO<sub>2</sub> concentration detected was 466 ppm in the Room A217, a range within the ASHRAE recommendations, per Table 2 below.

#### Carbon Monoxide (CO)

CO is a colorless and odorless gas that is produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are major sources of CO. All registered CO concentrations were below the EPA National Ambient Air Quality Standard (NAAQS) of 9 ppm, per Table 2 below.



Table 2: Vansville Elementary School-Instrumental Screening Levels January 29, 2021 (9:30 AM-11:30 AM)

Sample Location	Temp <sup>0</sup> F	RH%	CO ppm	CO <sub>2</sub> ppm
Standards	ASHRAE 68 to 75°F*	ASHRAE <65%	NAAQS 9	ASHRAE 1,098
Main Office	69.0	21.8	0	463
Multi-Purpose Room	68.0	20.0	0	423
Media Center	68.0	22.4	0	429
Room A106	70.7	18.8	0	421
Room A217	68.0	21.0	0	466
Room A223	69.0	21.0	0	392
Room C106	69.0	18.0	0	417
Outside Exterior EV Sample	41.0	14.0	0	398

PM - Particulate Matter size

°F – Degrees Fahrenheit

CO - Carbon Monoxide

ppm – parts per million

μg/m³ – micrograms per cubic meter

RH% - % Relative Humidity

CO<sub>2</sub> - Carbon Dioxide

\* - Winter Comfort Range

### Mold-in-Air Samples

There are no definitive regulations or standardized guidelines for addressing airborne mold in an indoor setting. If building systems (ventilation, envelope) are functioning properly, the indoor population profile should mimic what is encountered outdoors and the concentrations should be below the outdoor (building exterior) environmental sample levels.

**Table 3:** Summarizes airborne mold spore sampling results and locations. On January 29, 2021, total mold counts in representative samples (spore count/m³ of air) in all the areas inspected were lower than the outdoor concentrations with the exception of Room A217. Laboratory analysis follows this report (see attachment).



## Table 3: Vansville Elementary School Measurements of Mold-in-Air Samples January 29, 2021 (9:30 AM-11:30 AM)

Spore Types	Main Office	Multi-Purpose Room	Media Center	Room A106
Alternaria (Ulocladium)	-	-	-	-
Ascospores	-	-	-	-
Aspergillus/Penicillium	100	90	-	30*
Basidiospores	-	-	-	-
Bipolaris++	-	-	-	-
Chaetomium	-	-	-	-
Cladosporium	-	-	-	10*
Curvularia	-	-	-	-
Ерісоссит	-	-	-	-
Fusarium	-	-	-	-
Ganoderma	-	-	-	-
Myxomycetes++	-	-	-	-
Pithomyces++	-	-	-	-
Rust	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-
Unidentifiable Spores	-	-	-	-
Zygomycetes	-	-	-	-
Nigrospora	-	-	-	-
Hyphal Fragment	-	-	-	-
Insect Fragment	-	-	-	-
Pollen		-	-	-
Total Fungi	100	90	None Detect	40

<sup>\*</sup> Spore Counts per cubic meter of air (Counts/m<sup>3</sup>).

<sup>++</sup>Includes other spores with similar morphology.



## Table 3: Vansville Elementary School Measurements of Mold-in-Air Samples continued January 29, 2021 (9:30 AM-11:30 AM)

Spore Types	Room A217	Room A223	Room C106	Outside Exterior EV Sample	Field Blank
Alternaria (Ulocladium)	-	-	-	-	-
Ascospores	-	-	-	-	-
Aspergillus/Penicillium	200	-	-	90	-
Basidiospores	-	-	-	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	-	-	-	-	-
Curvularia	-	-	-	-	-
Ерісоссит	-	-	-	90	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	-	-
Pithomyces++	-	-	-	-	-
Rust	-	-	40	-	-
Scopulariopsis/Microascus	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Nigrospora	-	-	-	-	-
Hyphal Fragment	-	-	40	-	-
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-
Total Fungi	200	None Detect	80	180	No Trace

<sup>\*</sup>Spore Counts per cubic meter of air (Counts/m<sup>3</sup>).

 $<sup>+\\ +</sup> Includes other spores with similar morphology.$ 



#### **Findings and Conclusions**

The comfort parameters (i.e., temperature, RH, CO<sub>2</sub>, and CO levels) in the representative areas conform to ASHRAE and/or NAAQS guidelines. On January 29, 2021 total mold counts in representative area samples (spore count/m³ of air) in all the areas inspected were lower than the outdoor concentrations with the exception of Room A217. However, total mold count in Room A217 did not indicate amplified mold growth.

Thank you for the opportunity to provide industrial hygiene services for PGCPS. If you have any questions, please contact me at 301.595.3783.

Sincerely,

Chaminda Jayatilake, PE, CIH, CSP, CHMM

Certified Industrial Hygienist

Soil and Land Use Technology Inc. (SaLUT)

#### Attachment

Attachment - Mold Spore Sample Analytical Results and Chain-of-Custody Forms

# **Attachment**

Mold Spore Sample Analytical Results and Chain-of-Custody Forms



Attention: Indika Jayatilake

**SaLUT** 

Suite 231

EMSL Order: 372101510 Customer ID: SALU50

**Customer PO:** Project ID:

> Phone: (301) 595-3783 Fax: (301) 595-3787

Collected Date: 01/29/2021

Received Date: 02/01/2021 09:00 AM

Analyzed Date: 02/03/2021

Project: PGPCS IAQ Reports 19-035 Vansville ES

1818 New York Avenue, NE

Washington, DC 20002

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	372101510-0001 31917622 75 Main Office			372101510-0002 31917651 75 Multi Purpose Room				72101510-0003 31917602 75 Media Center	
Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count Count/M³ % of Tota		
Alternaria (Ulocladium)	-	-	_	-	-	-	-	-	_
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	3	100	100	2	90	100	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	3	100	100	2	90	100	-	None Detect	-
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



Vincent luzzolino, M.S., Laboratory Manager or other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-EMLAP Accredited #100194

Initial report from: 02/03/2021 04:38 PM



**EMSL Order:** 372101510 **Customer ID:** SALU50

Customer PO: Project ID:

 Attention:
 Indika Jayatilake
 Phone: (301) 595-3783

 SaLUT
 Fax: (301) 595-3787

1818 New York Avenue, NE Collected Date: 01/29/2021

Suite 231 Received Date: 02/01/2021 09:00 AM

Washington, DC 20002 Analyzed Date: 02/03/2021

Project: PGPCS IAQ Reports 19-035 Vansville ES

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L):	3	372101510-0004     372101510-0005     372101510-0006       31917653     31917665     31917678       75     75     75			31917665				
Sample Location:		Room A106			Room A223			Room A217	
Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M <sup>3</sup>	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	2*	30*	75	-	-	-	4	200	100
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1*	10*	25	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	3	40	100	-	None Detect	-	4	200	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-		-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



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Suite 231 Received Date: 02/01/2021 09:00 AM

Washington, DC 20002 Analyzed Date: 02/03/2021

Project: PGPCS IAQ Reports 19-035 Vansville ES

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L):		372101510-0007     372101510-0008     372101510-0009       31917660     31917628     31917637       75     75			31917628				
Sample Location:		utside Sample		Room C106				Field Blank	
Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	2	90	50	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	2	90	50	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	1	40	100	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	4	180	100	1	40	100	_	None Detect	-
Hyphal Fragment	-	-	-	1	40	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	0	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	0*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	-	-
Background (1-5)	-	1	-	-	1	-	-	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



Vincent luzzolino, M.S., Laboratory Manager or other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-EMLAP Accredited #100194

Initial report from: 02/03/2021 04:38 PM

OrderID: 372101510

EMSL ANALYTICAL, INC.

# Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

10768 Baltimore Avenue

372101510

RECEIVED EMSBelfsville, MD 20705 CINNAMINSORHONE: (301) 937-5700 FAX: (301) 937-5701

Company Name: S	Company Name: SaLUT			If 'Bill To' is different, note instructions in Comments					
Street: 1818 New		NE Suite 231		Third Party	Billing requ	ires written auti	horization from third	d party.	
City: Washington	St	tate/Province: D	С	Zip/Postal Code: 20002 Country: US					
Report To (Name):	Indika Jayatila	ike	-	Telephone #: 301	1-595-378	83	· ^4 - 6	0.1 7 (1.0	
Email Address: ija	yatilake@salut	tinc.com		Fax #: 301-595-3787 Purchase Order:					
Project Name/Num	ber: PGPCS IAQ Rep	ports 19-035 Vansvil	le ES	ES Please Provide Results: ☐ Fax ☐ Email					
U.S. State Samples	Taken: MD	Project	Zip Code:					☐ Residential	
	The state of the s			ed: 🗌 Biocide Use				4 4 4 4	
Public V	Vater Supply Sa			y automatically be	•	to DOH if	required by st	ate.	
☐ 3 Hour	6 Hour	☐ 24 Hour	Ind Time (TAT)  ☐ 48 Hour	Options - Please 0		6 Hour	☐ 1 Week	☐ 2 Week	
□ 3 nour	6 Hour	24 Hour		y Test Codes	s	6 Hour	1 vveek	□ 2 Week	
M001 Air-O-Cell M030 Micro 5  M041 Fungal Direct E. M169 Pollen ID & Enu M280 Dust Characteri M281 Dust Characteri M005 Viable Fungi- Ai M006 Viable Fungi- Ai Aspergillus, Cladospoi Count) M007 Culturable fungi Count) M008 Culturable fungi Penicillium, Aspergillus Species ID & Count) M009 Bacteria Culture M010 Bacteria Count ai M011 Bacteria Count	meration zation Level-1 zation Level-2 r Samples (Genus r Samples (Include rium, Stachybotrys - Surface Samples s, Cladosporium, S Gram Stain & Cot Level-1 Gram Stain & Co	ID & Count) es Penicillium, s Species ID & s (Genus ID & s (Includes Stachybotrys unt ninent	M024 Pseudon M015 Heterotr M017 Total Co M018 Total Co M114 Total Co (Colilert MPN* M019 Fecal Co M020 Fecal Si M029 Enteroc M129 Enteroc M180 Real Tir M025 Sewage	oliform (MFT*) treptococcus (MFT*) occi (MFT*) occi (Enterolert P/A***) ne qPCR-ERMI 36 Par screen –Water (MFT*) rane Filtration Technique	eration	M116 Sew M117 Sew M013 Sew M133 Meth (MRSA) M031 Rapi Detection & M014 Endo M044 Grou Dust Mite) Other See	e Analytical Price Analysis Pleas	ater (MPN**) rab (P/A***) rab (MFT*) rab (MFT*) raph 'aureus  B Mycobacteria  Dog, Cockroach,  Guide	
Name of Sampler:	Jay 1	volang		Signature of Sam	pler:	1	>		
Sample #	Sample Locat	tion/Description	Sample Type	Potable/ NonPotable (Only for Waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)	
Example A1	Kitchen Sink/Ta	ар	Water	□ P □NP	M017	100 mL	9/1/13 4:00 PM		
				☐ P ☐NP					
				☐ P ☐NP					
			<b> </b>	☐ P ☐NP					
			<u> </u>	□ P □NP	_			In the second	
Client Sample # (s	): -		Total # of	Samples: 9		Lab Use Onl		res / No	
Relinquished (Clie	nt):	Nchang	THE REAL PROPERTY.	Date: 1/29/2	٨)		13:45		
Received (Lab):	Chalir	in FR		Date: 2/1/3	21	Time:	900		
Comments/Specia	Instructions:						e spinister of		

Page 1 of 2 EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

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OrderID: 372101510



# Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

EMSL Analytical, Inc.

RECEIVED 10768 Baltimore Avenue

372101510

CINN AMINSON, Beltsville, MD 20705

2021 FEB - I A II: 58x: (301) 937-5700

Additional pages of the chain of custody are only necessary if needed for additional sample information.

Date/Time Collected	Temperature (°C) (Lab Use Only)
1/29/21	
12:01	
1/29/21	
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1/29/21 1/29/21 12:30	
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