Regulated Research Institutional/Industrial Setting Form (1C)

This form must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

Student's Name(s) Ethan Sontarp

Title of Project Modeling Uranium Uptake in Fossilized Teeth and Bones: INSIGHT INTO POTENTIAL FOR LONG-TERM URANIUM WASTE STORAGE IN PHOSPHATES

To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:

(Responses must be on the form as it is required to be displayed at student's project booth; please do not print double-sided.)

The student(s) conducted research at my work site:

1. Did you or your proxy (e.g. graduate student, postdoc, employee) mentor or provide substantial guidance to the student researcher? ☑ Yes ☐ No
   a. If no, describe your and/or your institution's role with the student researcher and his/her project (e.g. supervised use of equipment on site without ongoing mentorship and sign below.

   b. If yes, complete questions 2–5.

2. Is the student's research project a subset of your ongoing research or work? Use questions 3, 4 and 5 to detail how the student's project was similar and/or different from ongoing research or work at your site. ☑ Yes ☐ No

3. Describe the independence and creativity with which the student:
   a. developed the hypotheses or engineering goals for the research project

   This project was generated after an "unsuccessful" project from the previous year. The student was involved in discussions and planning for this project, but the overall idea and questions for this experiment were developed by Dr. Troy Rasbury, as she is an expert in uranium and its role and activity in the environment.

   b. designed the methodology for his/her research project

   The methodology for the modeling project was designed during multiple discussions with Dr. Rasbury, Dr. William Holt, and the student. The analyses that were supplied into the model were solely done by the student including where to sample and how. The development of the code for the model was developed by the student working with Jae Kim, who is an expert in MatLab.

   c. analyzed and interpreted data

   A synthetic dataset was created by the student to test and confirm the accuracy of the model. This testing phase involved multiple iterations and after each iteration, discussion with Dr. Rasbury, Dr. Holt, the student and myself. Once the model was determined to be accurate mathematically, the data was input, analyzed and interpreted by the student himself.

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4. Detail the student's role in conducting the research (e.g. data collection, specific procedures performed). Differentiate what the student observed and what the student actually did.

The student independently did all the sample preparation and data analysis using our Agilent 7500cx LA-ICP-MS. All data reduction and analysis of the data was independently done by the student using Iolite software and IsoPlot. Further data reduction was completed by the student using just Excel. The model this data was input into was designed and written in a joint effort with the student participating in every step and all discussions. After the model was determined to be mathematically accurate (using synthetic data created by the student), the student input the data into the model and interpreted the results.

5. Did the student(s) work on the project as part of a group? ☑ Yes ☐ No
If yes, how many individuals were in the group and who were they (e.g. high school students, graduate students, faculty, professional researchers)?

Yes, this project was worked on with Dr. Troy Rasbury, Dr. William Holt, graduate student Jae Kim, and myself, a professional researcher.

I attest that the student has conducted the work as indicated above and that any required review and approval by institutional regulatory board (IRB/IACUC/IBC) has been obtained. Copies are attached if applicable.
I further acknowledge that the student will be presenting this work publicly in competition and I have communicated with the student research regarding any requirements for my review and/or restrictions of what is publicized.

Kathleen Wooton		Senior Researcher; Lab Manager
Supervising Adult's Printed Name	Signature	Title
Stony Brook University		19 Nov 2019
Institution		Date Signed (must be after experimentation) (mm/dd/yy)
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