



SRNL-L3100-2015-00108 Rev. 0

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SDU2A Core Sample Test Designation

Introduction

Core-drilling of Saltstone Disposal Unit (SDU) Cell 2A was conducted between April 18th and May 6th, 2015 in order to extract samples of field-emplaced saltstone. The primary objectives of extracting samples from SDU Cell 2A are to enable measurement of field-emplaced samples with respect to properties that influence long-term performance, such as saturated hydraulic conductivity, and to compare the measured properties for field-emplaced samples with simulated samples prepared in the laboratory. After extraction the cores were placed into inerting tubes (flushed with 99.99% N₂) and transported to the Savannah River National Laboratory (SRNL) for storage pending analysis. TTQAP SRNL-RP-2014-01199, Rev. 1 [1] provides information on the associated work scope and the experimental plan is described in SRNL-L3100-2015-00073, Rev. 0. The subsequent text also provides information of the receipt and storage of samples at SRNL, photo documentation of the samples, and preliminary designation of core section samples for specific analyses.

Sample Receipt & Storage

Cores extracted from SDU Cell 2A were placed into inerting tubes on the SDU roof top, inerted with nitrogen, and subsequently secured in transport containers and delivered to SRNL. Figure 1 depicts two samples upon arrival at SRNL.



Figure 1: Transport container containing two samples in inerting tubes

As illustrated in Figure 2, each inerting tube was separately introduced into the inerting chamber, unpacked, and the samples photographed, cataloged, and repackaged in plastic bags that were placed in lockable, air-tight containers.

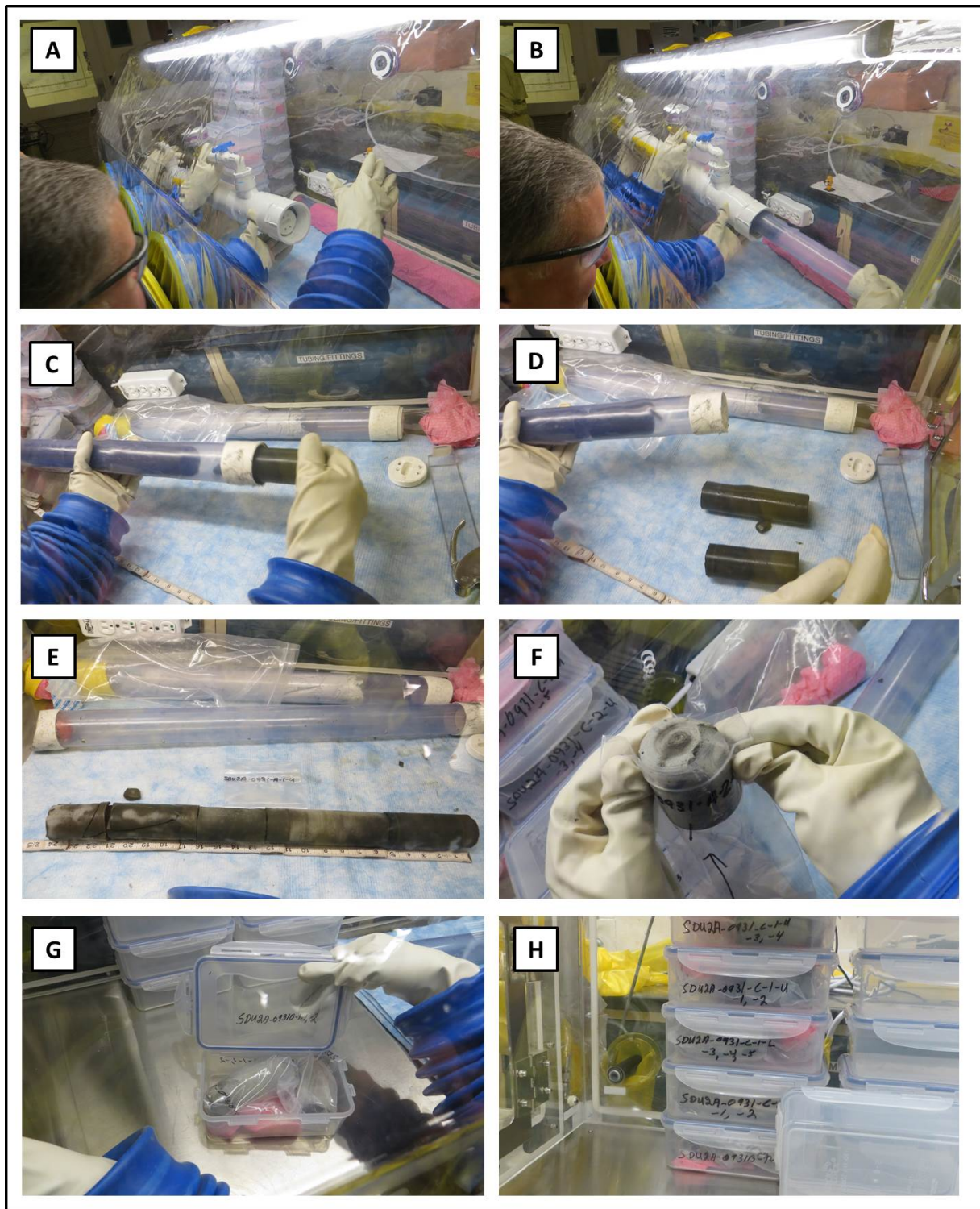


Figure 2: (A) Introduction of inerting tube into inert chamber; (B) removal of PVC extraction tube containing core sample; (C&D) removal of core samples from extraction tube; (E) Layout and cataloging core section samples; (F) repacking core sections into plastic bags; (G&H) enclosing bagged core sections in air tight containers for storage in the inert chamber pending analysis.

Sample Analysis

Table 1 details the analysis to be performed on core samples extracted from SDU Cell 2A.

Table 1: Proposed analysis for SDU Cell 2A core samples

PROPERTY	SAMPLE CONFIGURATION	SAMPLE MASS OR DIMENSIONS
Density, Porosity, Moisture Content	Fractured samples – exposure to O ₂ will not affect data	≈10 grams
Saturated Hydraulic Conductivity	Cylindrical sample with little or no observable surface damage	2 in. x 2 in. (D x H)
pH/Eh	Fractured samples ground for measurement – run in replicate; one from interior, one from surface	≈10 grams
Total Activity (⁹⁰ Sr, ⁷⁹ Se, ¹²⁹ I, ²²⁶ Ra)	Fractured samples – exposure to O ₂ will not affect data	≈10 grams for each isotope
Distribution Coefficient (K_d) (⁹⁰ Sr, ⁷⁹ Se, ¹²⁹ I, ²²⁶ Ra)	Sub-sample removed from interior of intact sample to ensure minimal O ₂ exposure – sub-sample ground for measurement	≈10 grams for all isotopes – leachate separated for individual isotope measurements
⁹⁹Tc K_d (Total Activity and K_d)	Sub-sample removed from interior of intact sample to ensure minimal O ₂ exposure – sub-sample ground for measurement	≈10 grams
Tc(VII) / Tc(Total) Ratio,	Sub-sample removed from interior of intact sample to ensure minimal O ₂ exposure – sub-sample ground for measurement	≈10 grams
Nitrate/Nitrite Conc.	Sub-sample removed from interior of intact sample to ensure minimal O ₂ exposure – sub-sample ground for measurement	≈10 grams

Note: Based on an approximate cured saltstone density of 1.7 g/cc each, a 1 inch length of core has a mass of approximately 90 grams.

Photographs of the cores extracted from SDU Cell 2A are provided in Appendices 1 and 2. Appendix 1 provides information regarding the analysis proposed for each core section while Appendix 2 documents the array of photos taken to record the physical integrity of each core section.

Two core lengths (denoted upper (U) and lower (L)) were retrieved from Ports A and C, Holes 1 and 2. Only a single core length was retrieved from Port B. Each core length was named with

sampling event (SDU2A-0931), Port (A, B, or C), Hole (1 or 2), Upper or Lower (U or L), and core section number starting with 1 at the top. Therefore the 2nd section from the lower core from hole 1 at Port A would be labeled SDU2A-0931-A-1-L-2. Details of the field coring process are described in SRR-CWDA-2015-00066, Rev. 0 [2]. Each core length is divided into multiple core section samples due to the existence of through-diameter fractures that occurred during the core-drilling and extraction processes; fractures were observed to have occurred both at and between cold joints. The lower cores are of primary interest and are associated with the August 2013 time-frame during which the cell was filled to around a 16-foot elevation and comparative saltstone material was retrieved from the grout hopper outlet in the Saltstone Production Facility (SPF). The relevance of the 16-foot height and the comparative SPF material is described in SRR-SPT-2012-00049, Rev. 1 [3]. The analyses indicated in Table 1 will be conducted on 6 samples, preferably lower cores (noting, however, that only 5 lower cores were retrieved). Upper cores may be utilized for the analyses in the event that the lower cores have been compromised such that they do not possess the physical integrity to perform saturated hydraulic conductivity (SHC), or their interiors have been exposed to atmospheric oxygen.

The type of analysis to be performed on each core section sample has been determined by SRR and SRNL, and is defined in the tables that accompany each core photo in Appendix 1. Those core sections that appear to have optimal physical integrity (from visual examination) are reserved for SHC testing. Additional intact samples from which interior samples (uncompromised by exposure to atmospheric oxygen) can be collected are designated for determination of ⁹⁹Tc oxidation state, K_d analysis of ⁹⁹Tc, ⁹⁰Sr, ⁷⁹Se, ¹²⁹I, ²²⁶Ra, and reduction potential (E_h). In some instances in which insufficient, uncompromised core samples exist, the aforementioned chemical analyses can be conducted on sample remnants from sectioning for SHC analysis. Analysis insensitive to oxygen exposure can be performed on fractured core sections. Core sections designated for specific analyses may be modified based on findings during sample preparation. For example, if a sample intended for SHC measurement fractures during sectioning an alternative core section will be designated. The first choice for an alternate core section should be an intact sample from the same lower core portion (i.e., same Port/Hole), the second should be an intact core section from the upper core length from the same Port/Hole, and the third an intact core section (lower then upper core length) from another Port/Hole.

References

1. SRNL-RP-2014-01199, Rev. 1, *Task Technical and Quality Assurance Plan for SRNL Support for Saltstone Sampling and Analysis*, May 2015.
2. SRR-CWDA-2015-00066, Rev. 0, *Summary of Saltstone Disposal Unit 2A Core Drill Activities*, May 2015.
3. SRR-SPT-2012-00049, Rev. 1, *Saltstone Sampling and Analyses Plan*, May 2012.

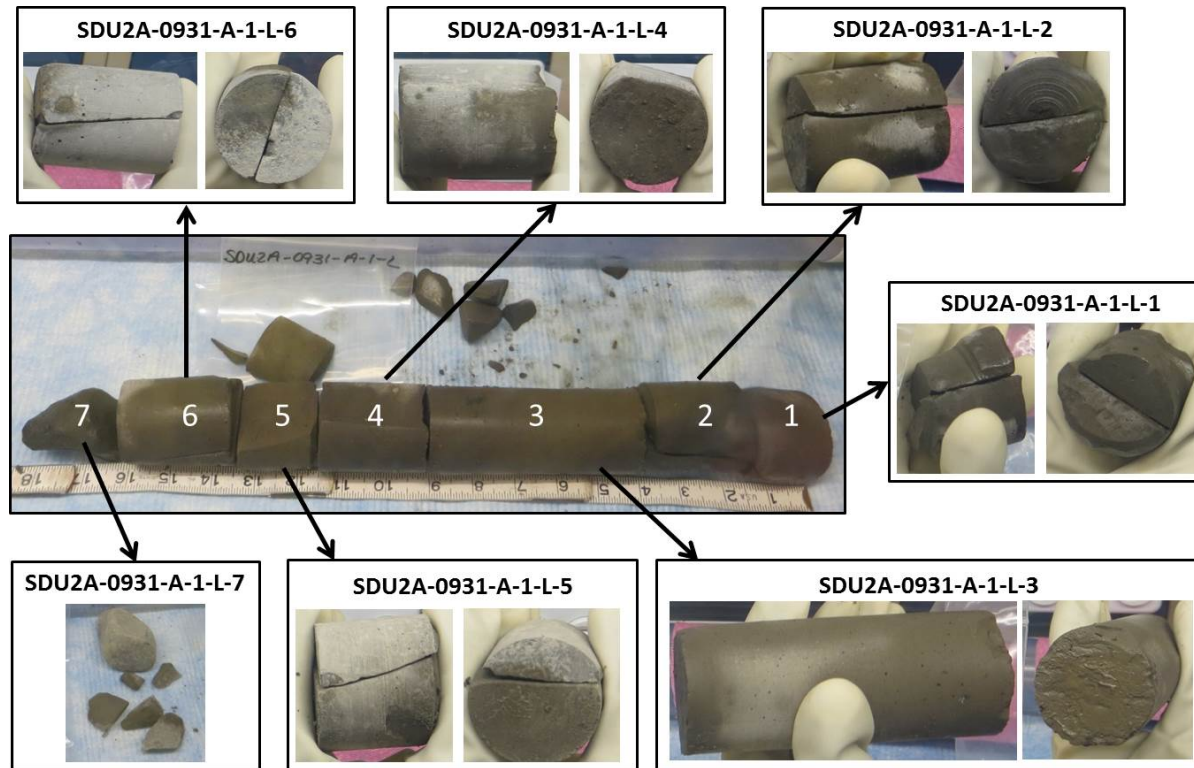
Appendices

1. Core Section Designation for Chemical and Physical Analyses
2. Photo Documentation of Core Sections

APPENDIX 1

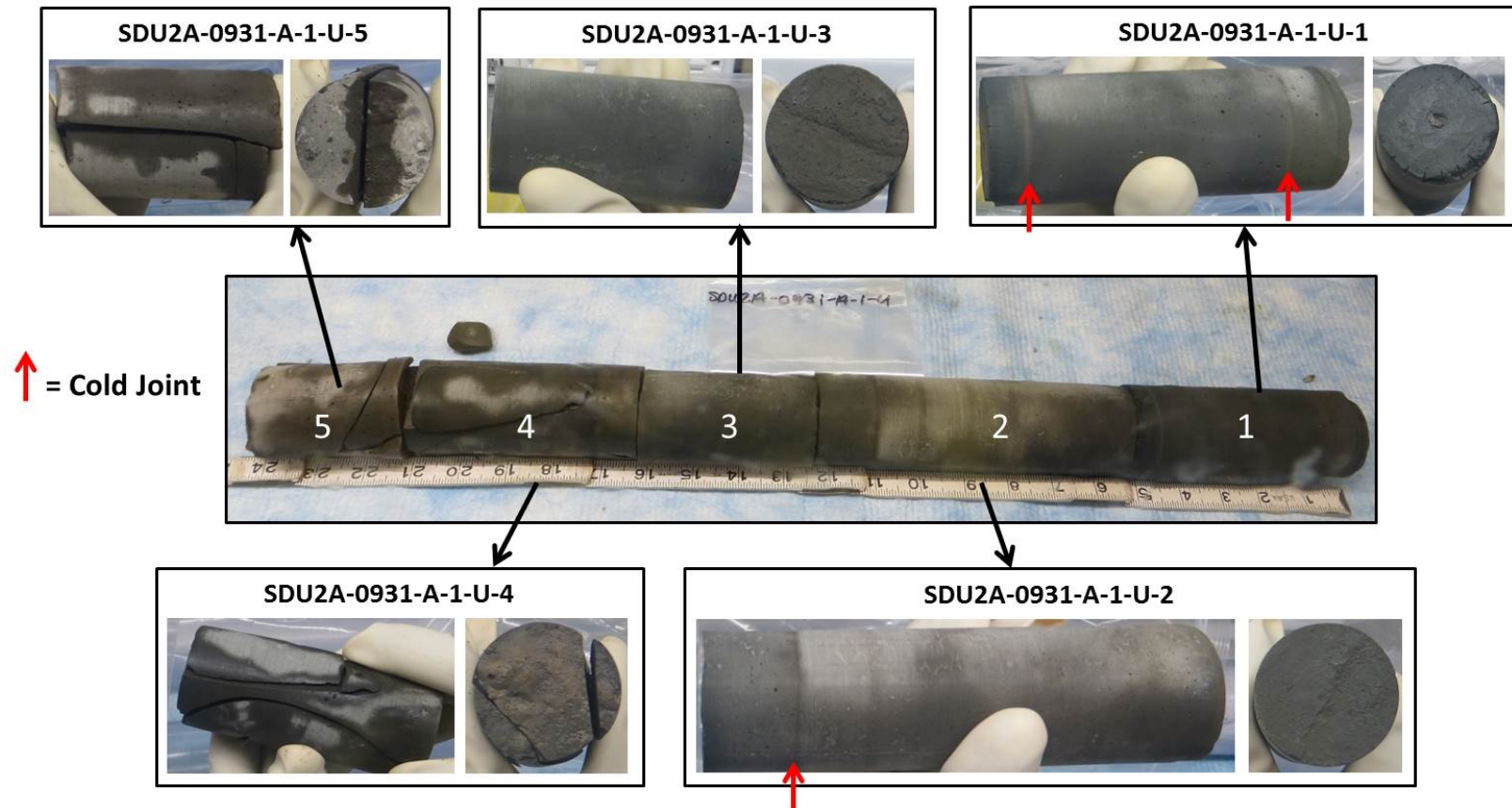
Core Section Designation for Chemical and Physical Analyses

Sample ID: SDU2A-0931-A-1-L (Lower Core Portion Extracted from Port A – Drill Position 1 on May 6, 2015)



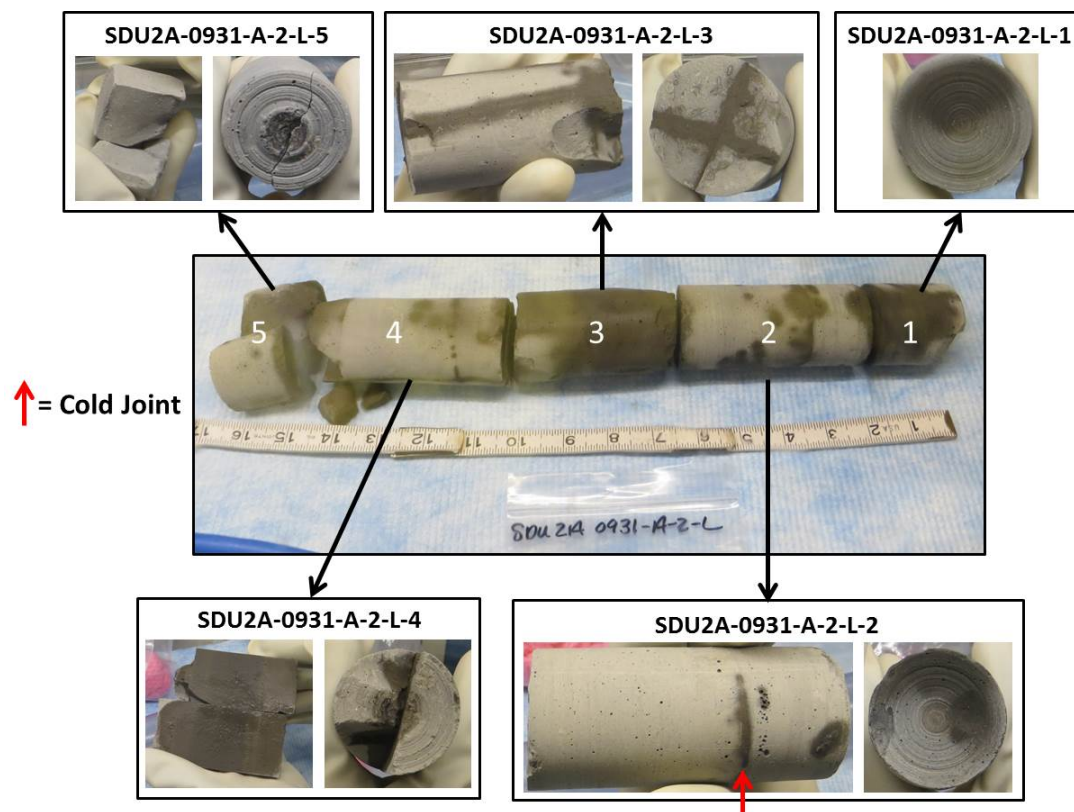
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	8/16/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> Spare
2	8/16/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> Spare
3	8/14/13	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Total activity and K_d (except Tc) on end sections removed during SHC sample cutting – for K_d material must be removed from sample interior
4	8/14/13	<ul style="list-style-type: none"> Piece fractured off vertical edge 	<ul style="list-style-type: none"> Tc total activity, Tc K_d, & Tc(VII) conc. – for K_d and Tc(VII) conc. material must be removed from sample interior
5	8/12/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> Density, porosity, & moisture content
6	8/11/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> pH / E_h –material from sample interior
7	8/11/13	<ul style="list-style-type: none"> Fractured into multiple pieces 	<ul style="list-style-type: none"> Spare

Sample ID: SDU2A-0931-A-1-U (Upper Core Portion Extracted from Port A – Drill Position 1 on May 6, 2015)



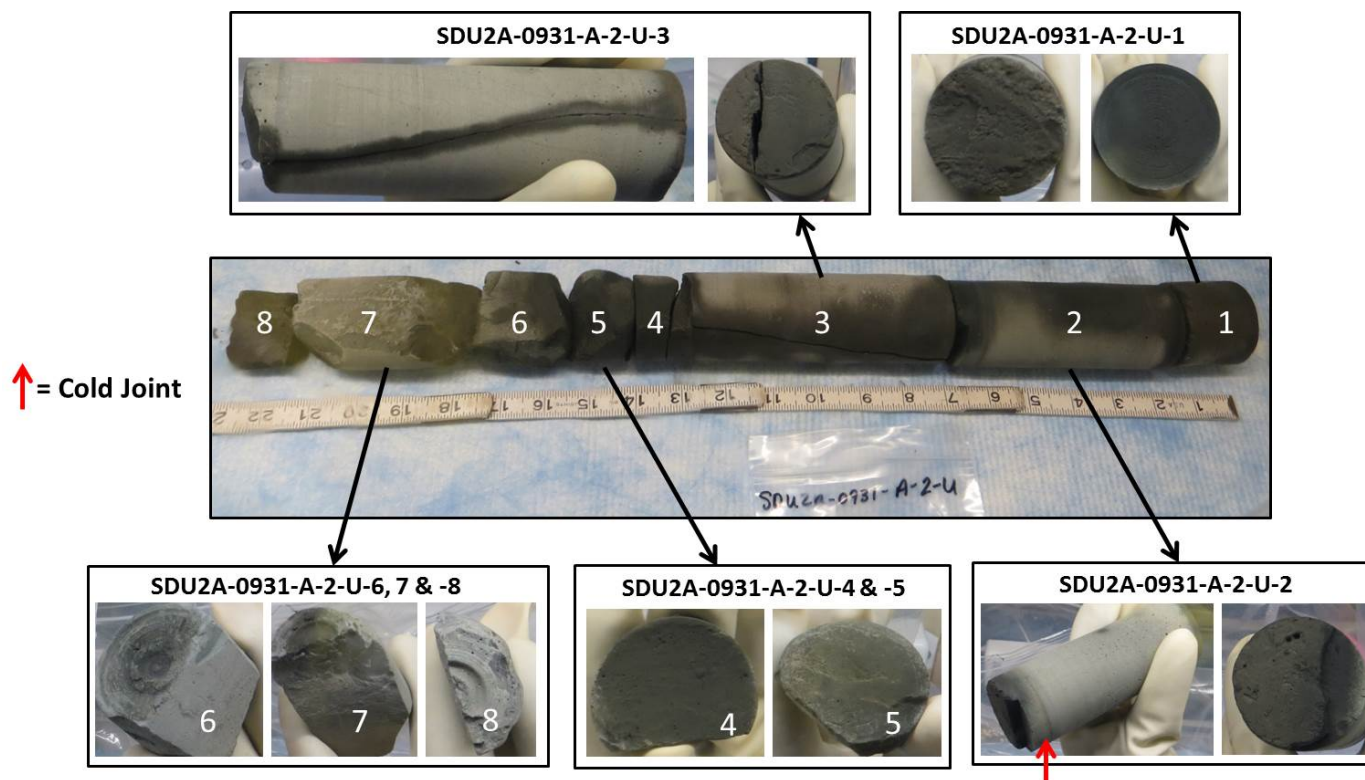
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	5/29/14	<ul style="list-style-type: none"> Intact – 2 cold joints observed 	<ul style="list-style-type: none"> Total activity and K_d (except Tc) – for K_d material must be removed from sample interior
2	5/21/14 & 5/28/14	<ul style="list-style-type: none"> Intact – 1 cold joint observed 	<ul style="list-style-type: none"> Tc total activity, Tc K_d, & Tc(VII) conc. – for K_d and Tc(VII) conc. material must be removed from sample interior pH / E_h – for E_h material must be removed from sample interior
3	5/20/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint
4	12/16/13 & 5/19/14	<ul style="list-style-type: none"> Fractured into multiple pieces 	<ul style="list-style-type: none"> Density, porosity, & moisture content
5	12/11/13	<ul style="list-style-type: none"> Fractured into multiple pieces 	<ul style="list-style-type: none"> Spare

Sample ID: SDU2A-0931-A-2-L (Lower Core Portion Extracted from Port A – Drill Position 2 on May 5, 2015)



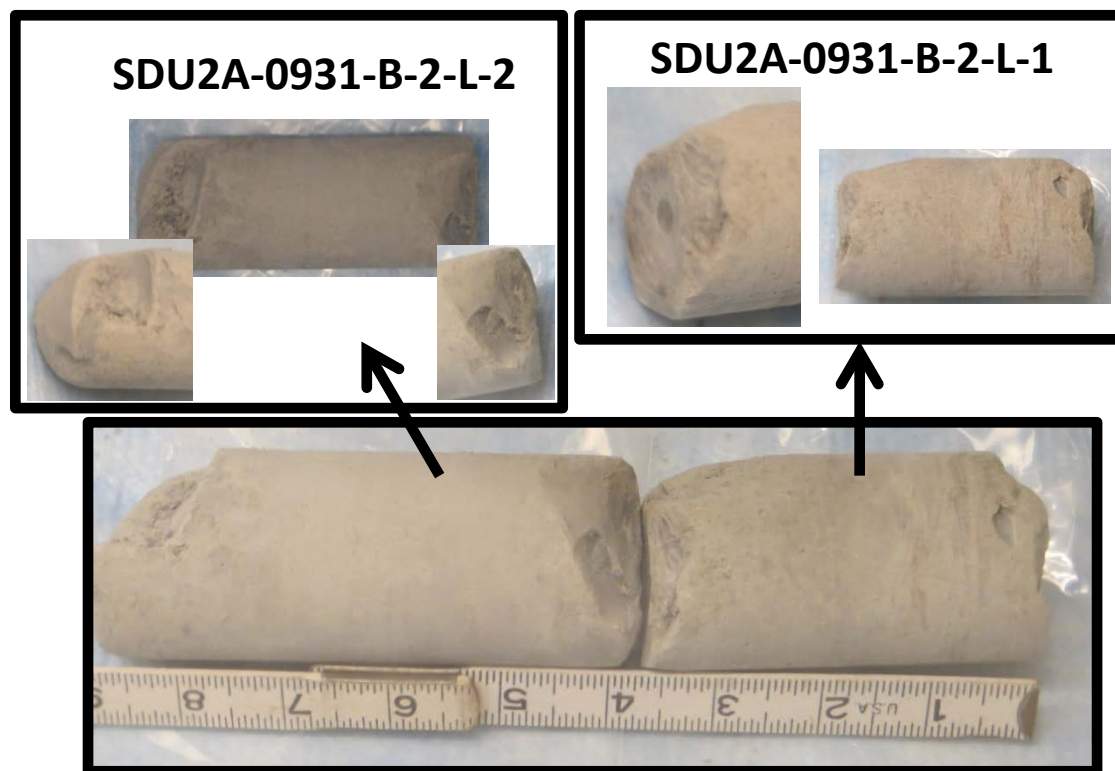
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	12/11/13	<ul style="list-style-type: none"> Piece fractured off one end – circular scoring pattern on ends 	<ul style="list-style-type: none"> Total activity and K_d (except Tc) – for K_d material must be removed from sample interior
2	8/16/13	<ul style="list-style-type: none"> Intact – 1 cold joint observed – circular scoring pattern on ends 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Tc total activity, Tc K_d, & Tc(VII) conc. on end sections removed during SHC sample cutting – for K_d and Tc(VII) conc. material must be removed from sample interior
3	8/14/13 & 8/16/13	<ul style="list-style-type: none"> Pieces fractured from end – cross-shaped fracture filled with wet fines 	<ul style="list-style-type: none"> Spare
4	8/14/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> pH / E_h – for E_h material must be removed from sample interior
5	8/12/13	<ul style="list-style-type: none"> Split vertically – circular scoring pattern 	<ul style="list-style-type: none"> Density, porosity, & moisture content

Sample ID: SDU2A-0931-A-2-U (Upper Core Portion Extracted from Port A – Drill Position 2 on May 5, 2015)



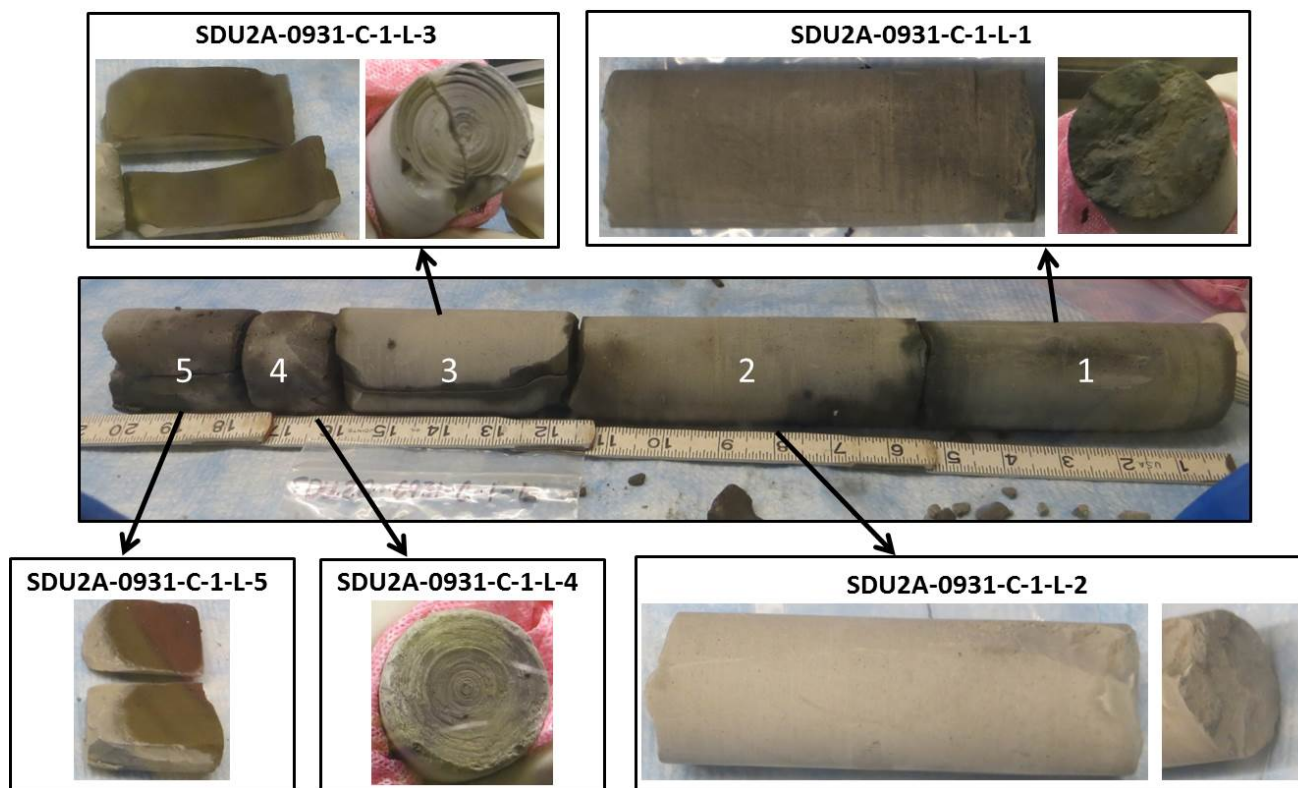
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	6/3/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Total activity and K_d (except Tc) – for K_d material must be removed from sample interior
2	5/28/14 & 5/29/14	<ul style="list-style-type: none"> Intact – 1 cold joint observed 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Tc total activity, Tc K_d, & Tc(VII) conc. on end sections removed during SHC sample cutting – for K_d and Tc(VII) conc. material must be removed from sample interior
3	5/21/14 & 5/28/14	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> pH / E_h – for E_h material must be removed from sample interior
4	5/21/14	<ul style="list-style-type: none"> Lowest sections fractured into multiple pieces 	<ul style="list-style-type: none"> Density, porosity, & moisture content
5	5/20/14		
6	5/19/14		
7	12/16/13 & 5/19/14		
8	12/16/13		

Sample ID: SDU2A-0931-B-2-L (Lower Core Portion Extracted from Port B – Drill Position 2 on April 22, 2015)



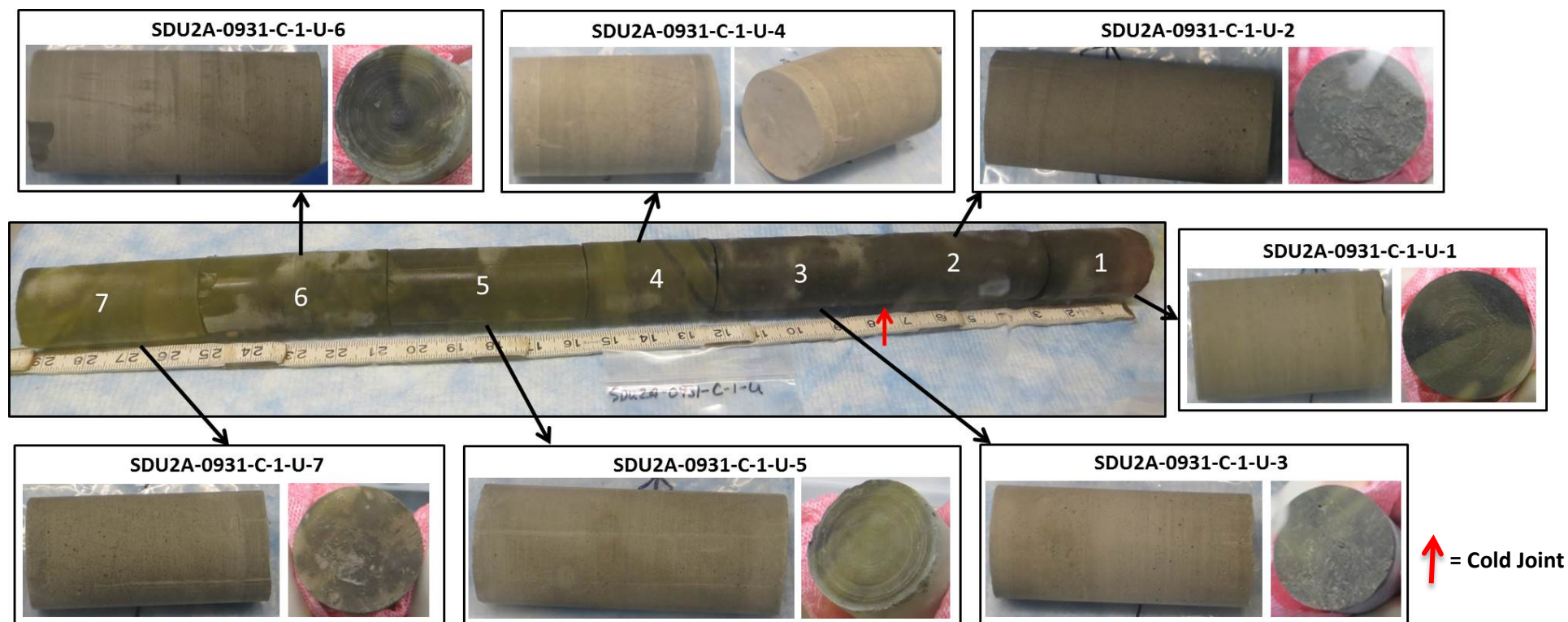
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	8/16/13	<ul style="list-style-type: none"> Intact but ends worn and small pieces fractured off 	<ul style="list-style-type: none"> Tc total activity, Tc K_d, & Tc(VII) conc. – for K_d and Tc(VII) conc. material must be removed from sample interior pH / E_h – for E_h material must be removed from sample interior
2	8/14/13 & 8/16/13		<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Total activity and K_d (except Tc) on one end section removed during SHC sample cutting – for K_d material must be removed from sample interior Density, porosity, & moisture content on other end section removed during SHC sample cutting

Sample ID: SDU2A-0931-C-1-L (Lower Core Portion Extracted from Port C – Drill Position 1 on April 28, 2015)



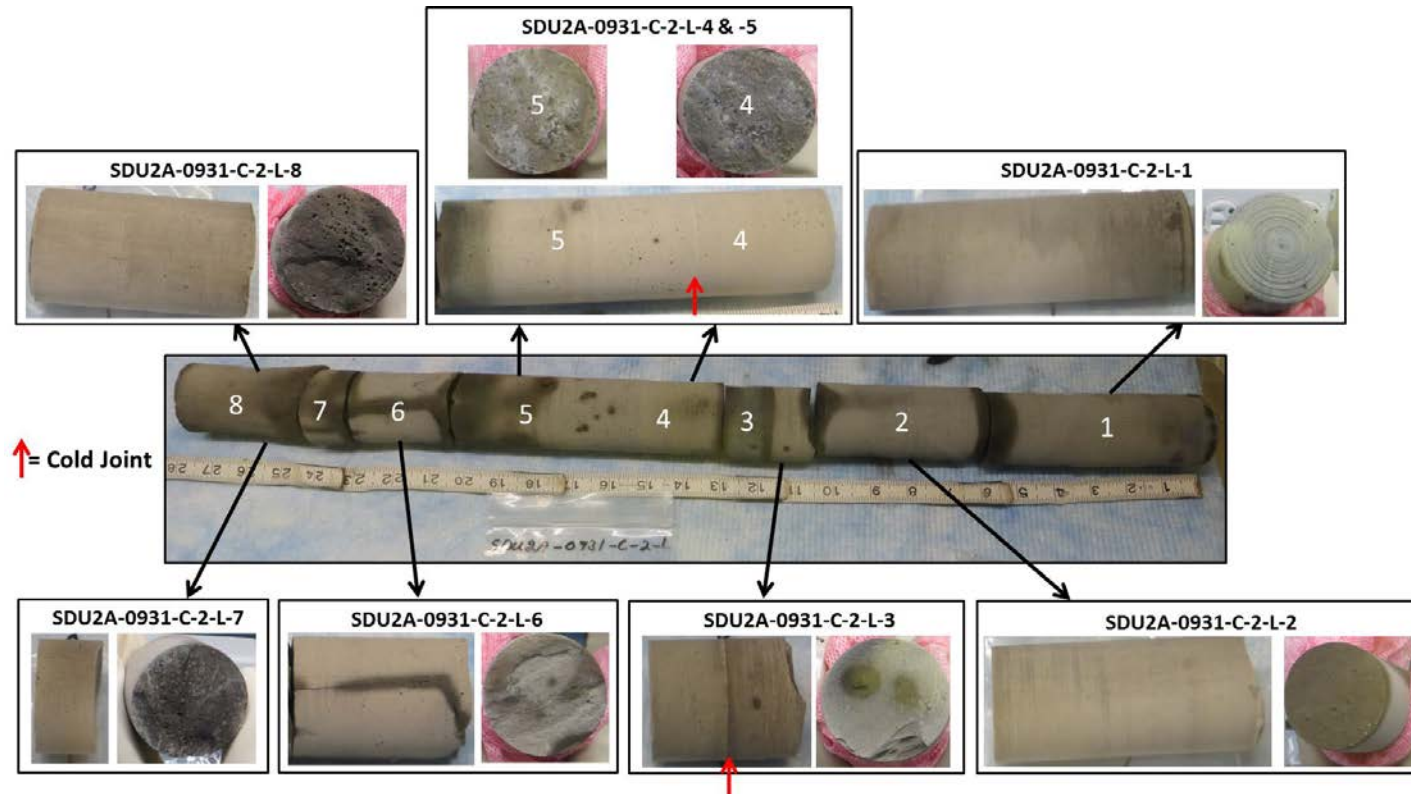
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	12/11/13 & 12/16/13	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Spare
2	8/16/13	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Tc total activity, Tc K_d, & Tc(VII) conc. on one end section removed during SHC sample cutting – for K_d and Tc(VII) conc. material must be removed from sample interior Total activity and K_d (except Tc) on other end section removed during SHC sample cutting – for K_d material must be removed from sample interior
3	8/14/13	<ul style="list-style-type: none"> Split vertically – circular scoring pattern on ends 	<ul style="list-style-type: none"> Spare
4	8/14/13	<ul style="list-style-type: none"> Intact but ends worn 	<ul style="list-style-type: none"> pH / E_h – for E_h material must be removed from sample interior
5	8/13/13	<ul style="list-style-type: none"> Split vertically 	<ul style="list-style-type: none"> Density, porosity, & moisture content

Sample ID: SDU2A-0931-C-1-U (Upper Core Portion Extracted from Port C – Drill Position 1 on April 28, 2015)



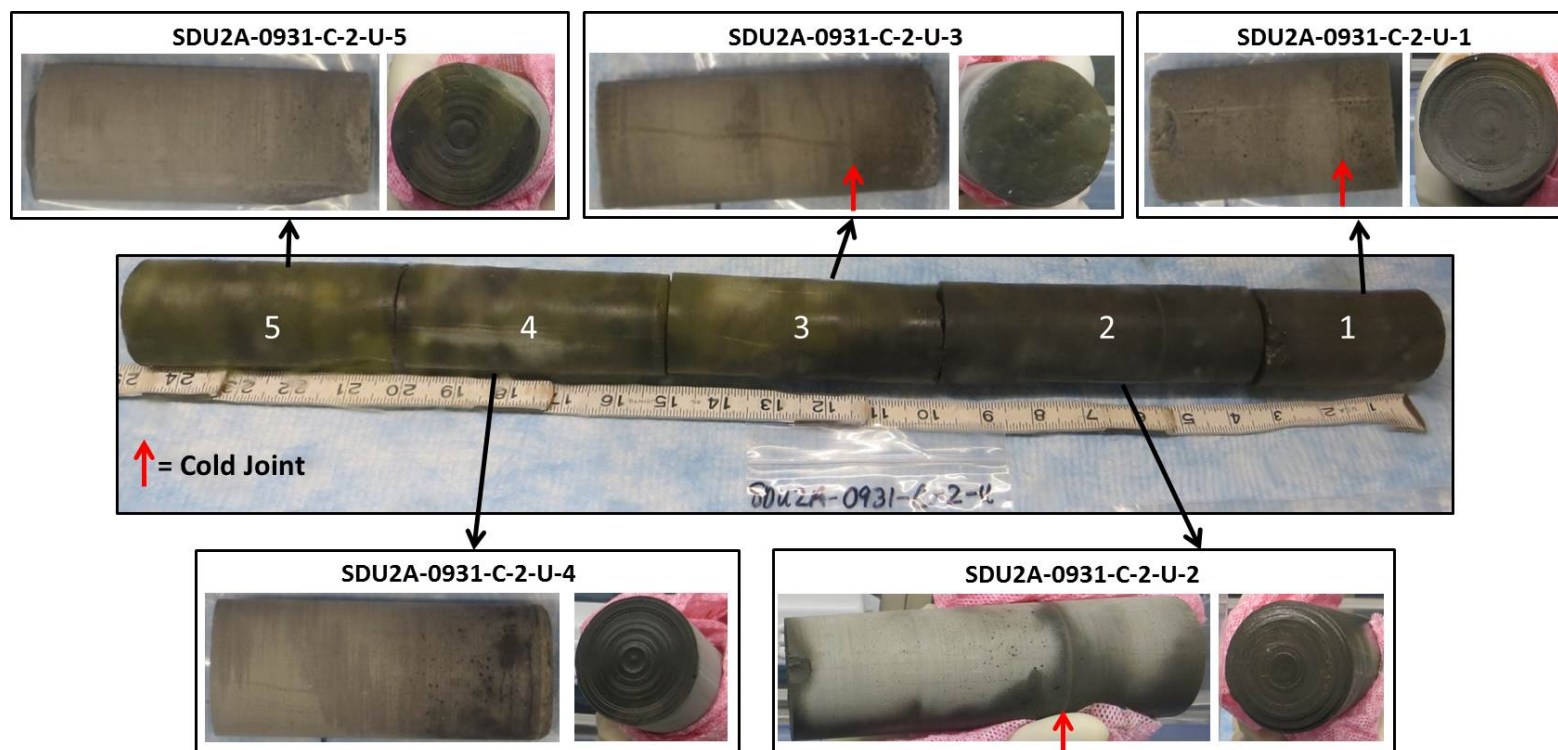
#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	6/9/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Spare
2	6/5/14	<ul style="list-style-type: none"> Intact – sample broken at cold joint to produce samples 2 & 3 	<ul style="list-style-type: none"> Spare
3	6/3/14 & 6/5/14		<ul style="list-style-type: none"> Spare
4	5/29/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Spare
5	5/28/14 & 5/29/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Tc total activity, Tc K_d, & Tc(VII) conc.– for K_d and Tc(VII) conc. material must be removed from sample interior
6	5/20/14 & 5/21/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> Total activity and K_d (except Tc) – for K_d material must be removed from sample interior
7	5/19/14 & 5/20/14	<ul style="list-style-type: none"> Intact 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Density, porosity, & moisture content on one end section removed during SHC sample cutting pH / E_h – for E_h material must be removed from sample interior

Sample ID: SDU2A-0931-C-2-L (Lower Core Portion Extracted from Port C – Drill Position 2 on April 30, 2015)



#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	8/16/13	• Intact	• Spare
2	8/14/13	• Intact	• Total activity and K_d (except T_c) – for K_d material must be removed from sample interior
3	8/12/13 & 8/14/13	• Intact – 1 cold joint observed	• Spare
4	8/11/13 & 8/12/13	• Intact – sample broken at cold joint to produce samples 4 & 5	• T_c total activity, $T_c K_d$, & $T_c(VII)$ conc. – for K_d and $T_c(VII)$ material must be removed from sample interior
5	8/11/13		• SHC – ensure 2" sample sectioned for SHC does not include a cold joint
6	8/10/13 & 8/11/13	• Split vertically	• Density, porosity, & moisture content
7	8/10/13	• Intact	• pH / E_h – for E_h material must be removed from sample interior
8	8/10/13	• Intact	• Spare

Sample ID: SDU2A-0931-C-2-U (Upper Core Portion Extracted from Port C – Drill Position 2 on April 30, 2015)



#	Approx. Pour Date	Physical Appearance	Possible Test(s)
1	6/5/14 & 6/3/14	<ul style="list-style-type: none"> Intact – circular scoring pattern on end 	<ul style="list-style-type: none"> Spare
2	6/3/14 & 5/29/14	<ul style="list-style-type: none"> Intact – circular scoring pattern on end – 1 cold joint observed 	<ul style="list-style-type: none"> Spare
3	5/21/14 & 5/28/14	<ul style="list-style-type: none"> Intact – 1 cold joint observed 	<ul style="list-style-type: none"> Tc total activity, Tc K_d, & Tc(VII) conc. – for K_d and Tc(VII) material must be removed from sample interior
4	5/19/14 & 5/20/14	<ul style="list-style-type: none"> Intact – circular scoring pattern on end 	<ul style="list-style-type: none"> Total activity and K_d (except Tc) – for K_d material must be removed from sample interior pH / E_h – for E_h material must be removed from sample interior
5	12/11/13 & 12/16/13	<ul style="list-style-type: none"> Intact but piece fractured off one end 	<ul style="list-style-type: none"> SHC – ensure 2" sample sectioned for SHC does not include a cold joint Density, porosity, & moisture content on end sections removed during SHC sample cutting

APPENDIX 2

Photo Documentation of Core Sections

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Figure 1 SDU2A-0931-A-1-L in core tube



Figure 2 SDU2A-0931-A-1-L

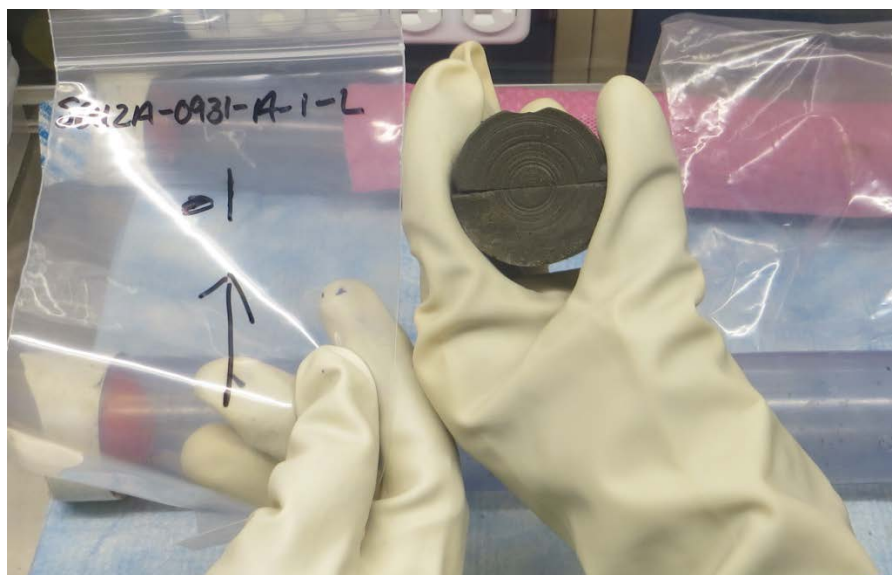


Figure 3 SDU2A-0931-A-1-L-1 top

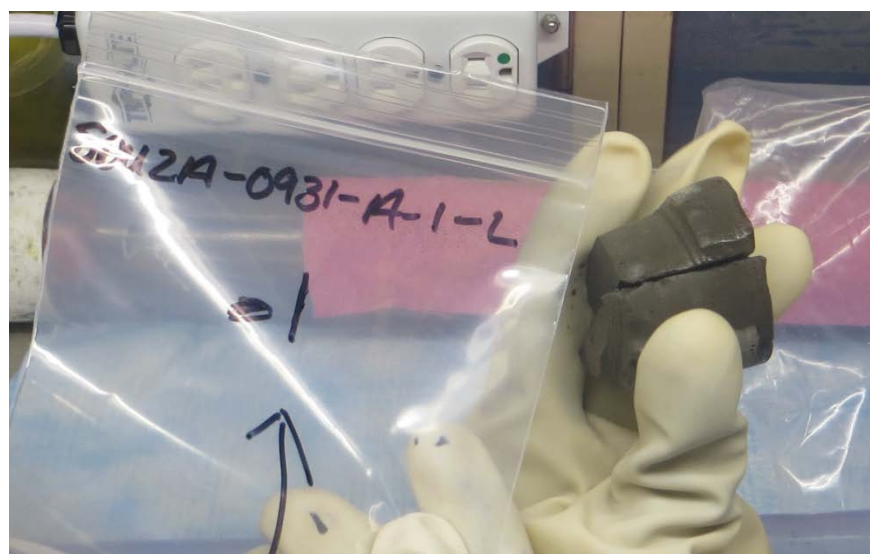


Figure 4 SDU2A-0931-A-1-L-1 side

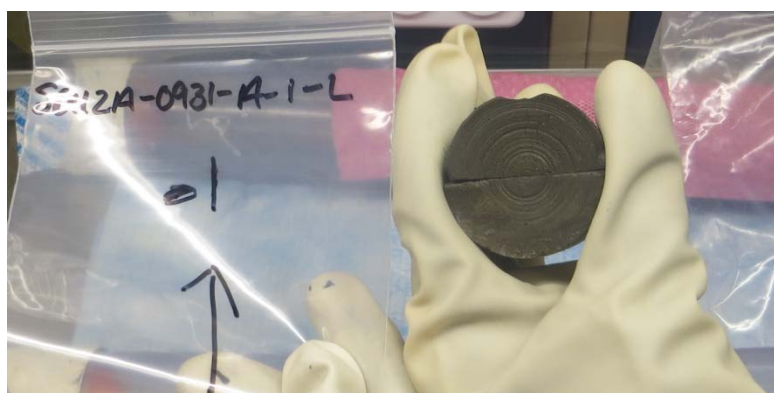


Figure 5 SDU2A-0931-A-1-L-1 bottom

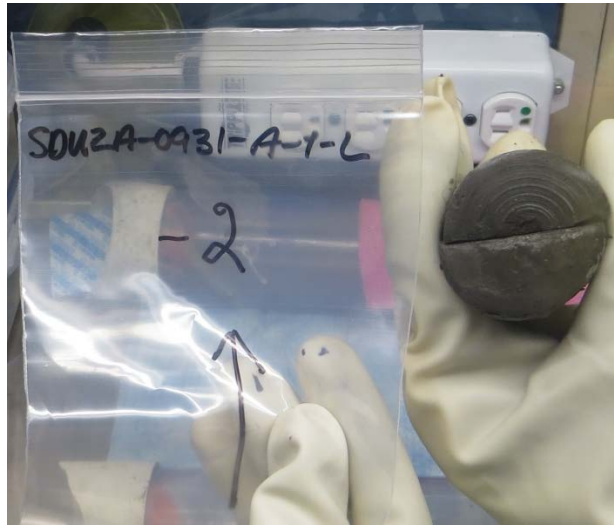


Figure 6 SDU2A-0931-A-1-L-2 top

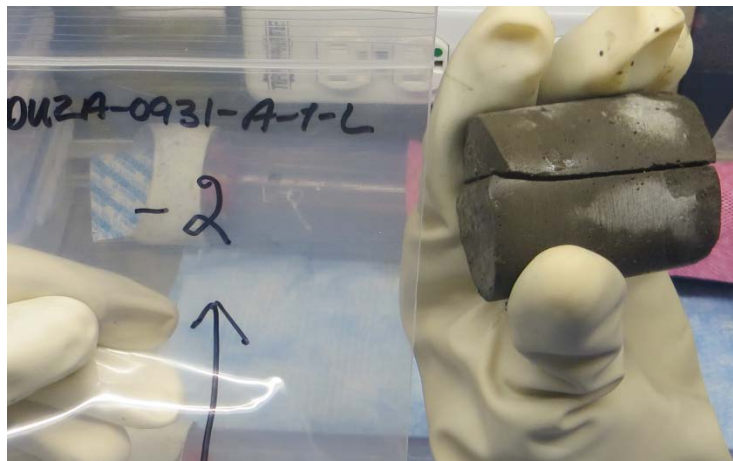


Figure 7 SDU2A-0931-A-1-L-2 side

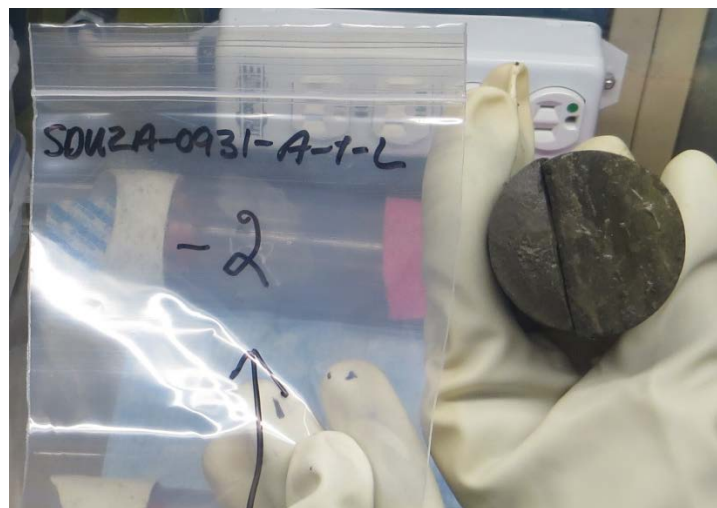


Figure 8 SDU2A-0931-A-1-L-2 bottom

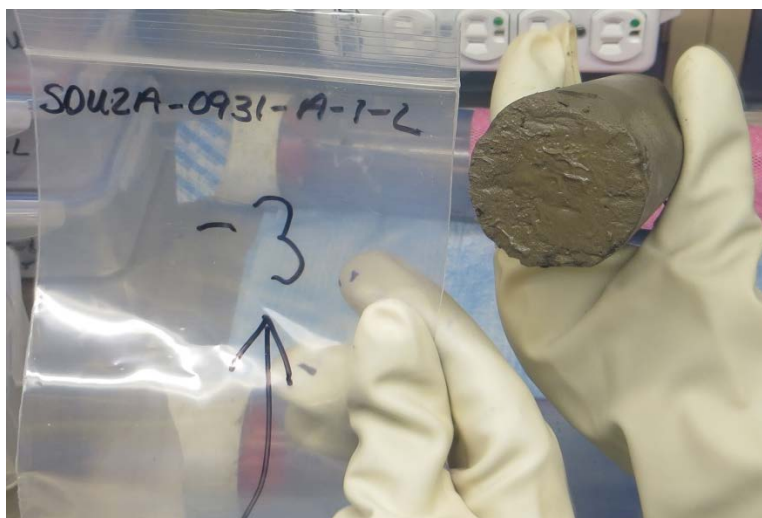


Figure 9 SDU2A-0931-A-1-L-3 top

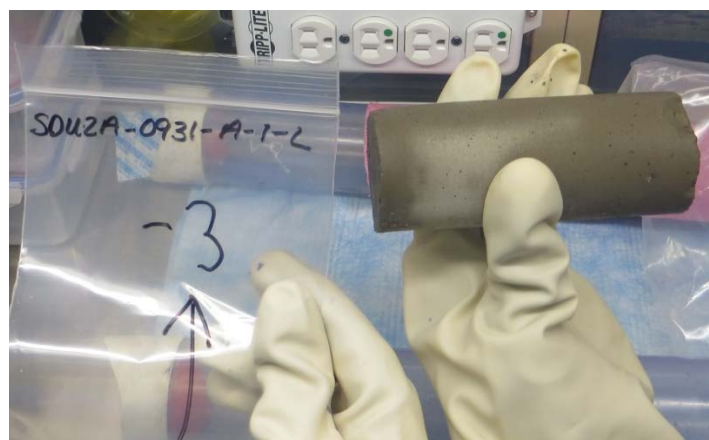


Figure 10 SDU2A-0931-A-1-L-3 side

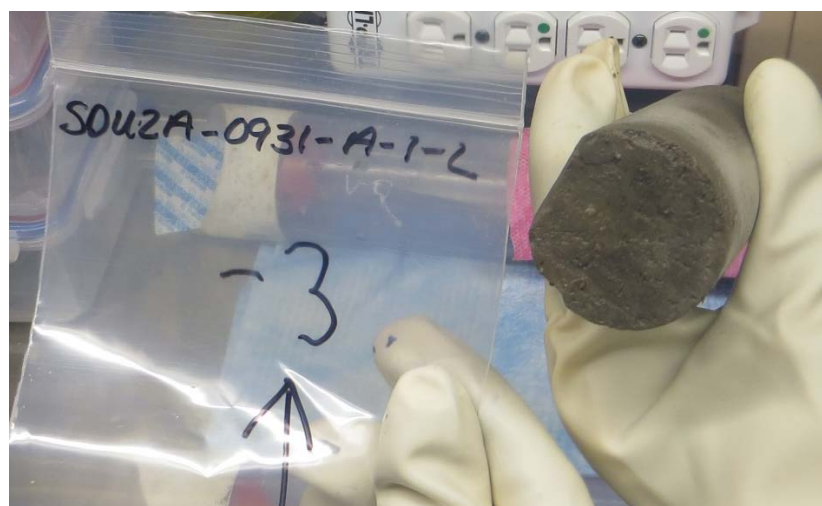


Figure 11 SDU2A-0931-A-1-L-3 bottom

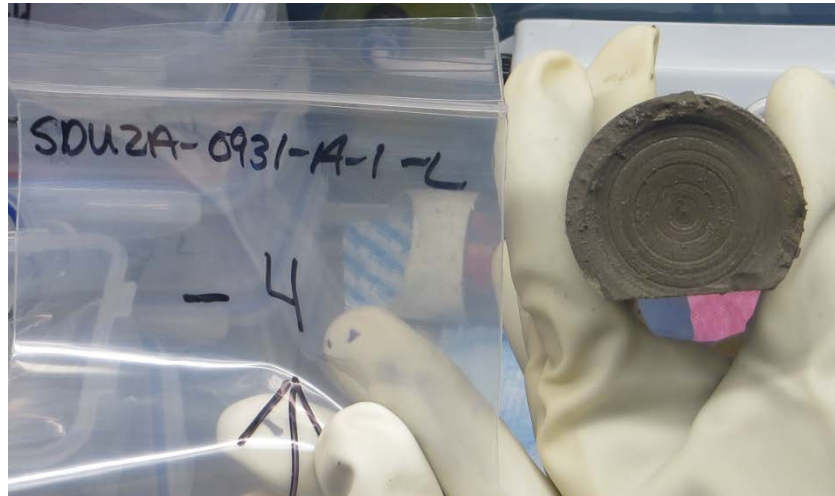


Figure 12 SDU2A-0931-A-1-L-4 top

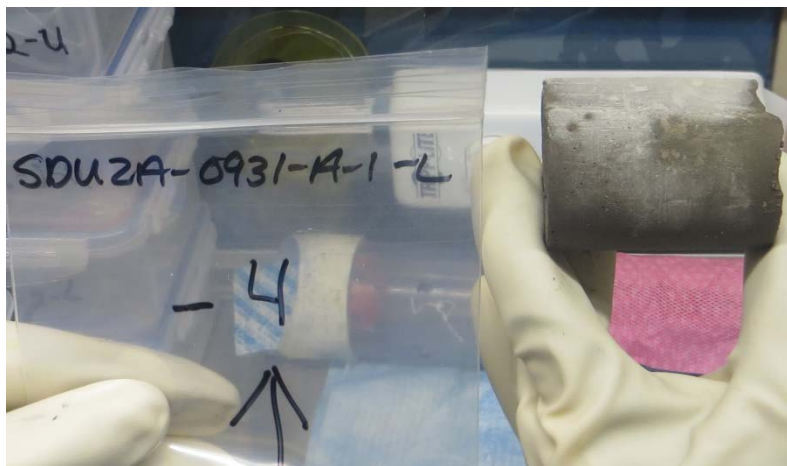


Figure 13 SDU2A-0931-A-1-L-4 side



Figure 14 SDU2A-0931-A-1-L-4 bottom

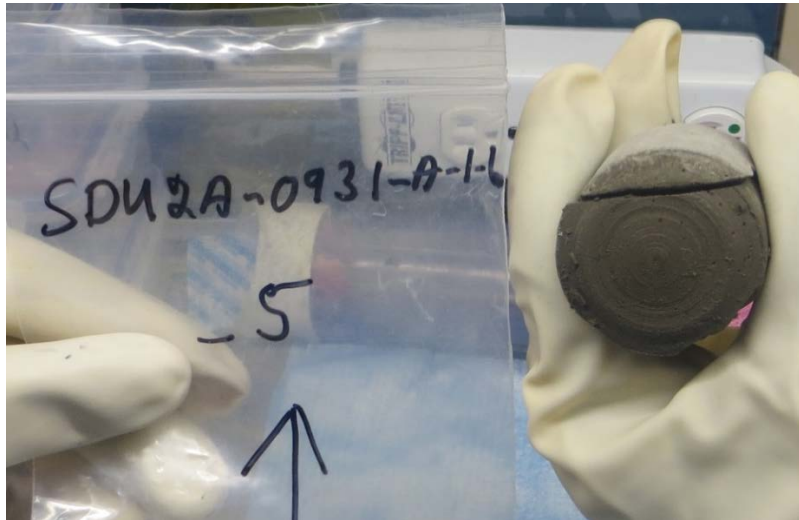


Figure 15 SDU2A-0931-A-1-L-5 top

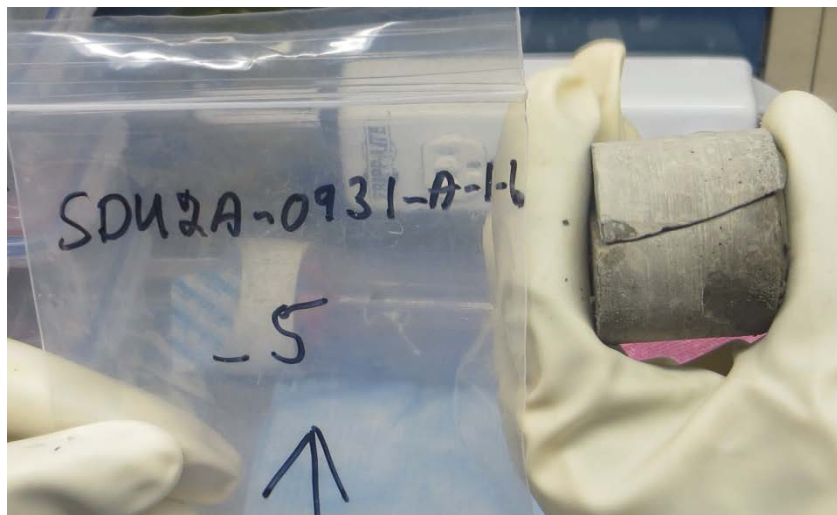


Figure 16 SDU2A-0931-A-1-L-5 side

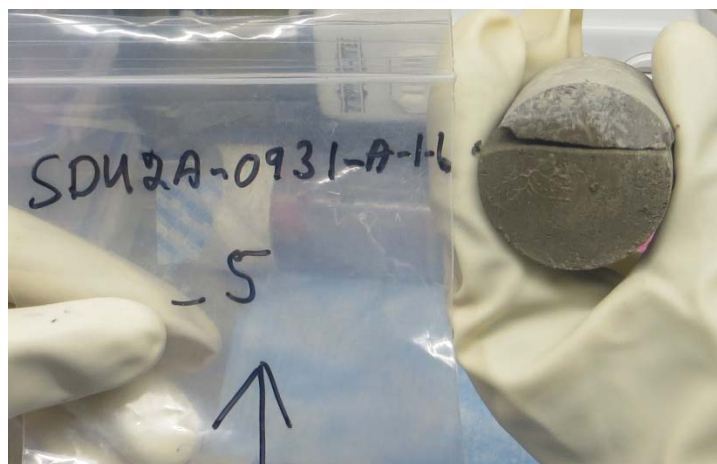


Figure 17 SDU2A-0931-A-1-L-5 bottom

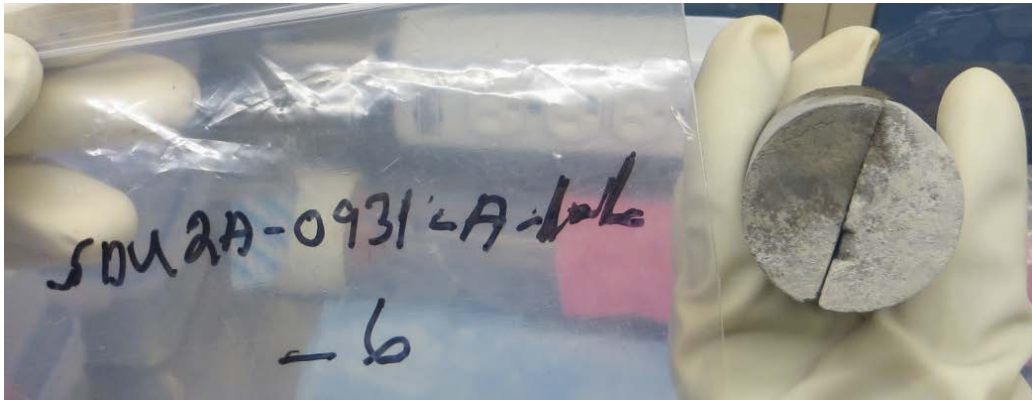


Figure 18 SDU2A-0931-A-1-L-6 top

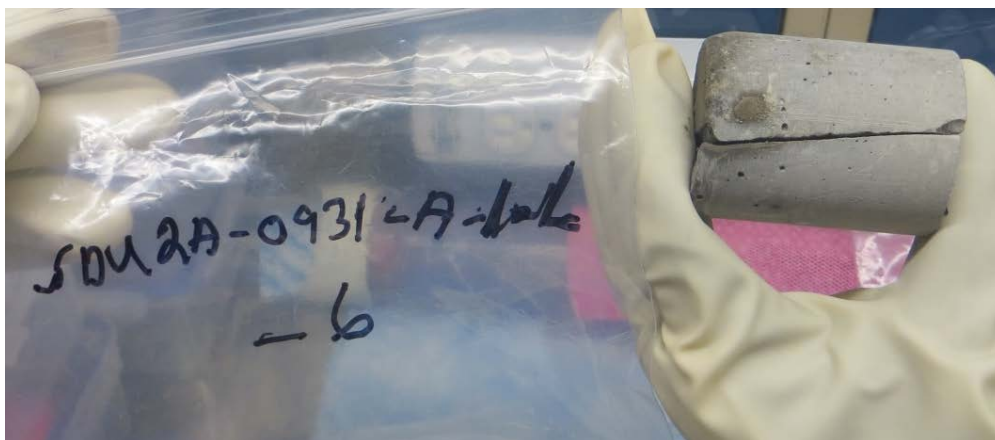


Figure 19 SDU2A-0931-A-1-L-6 side

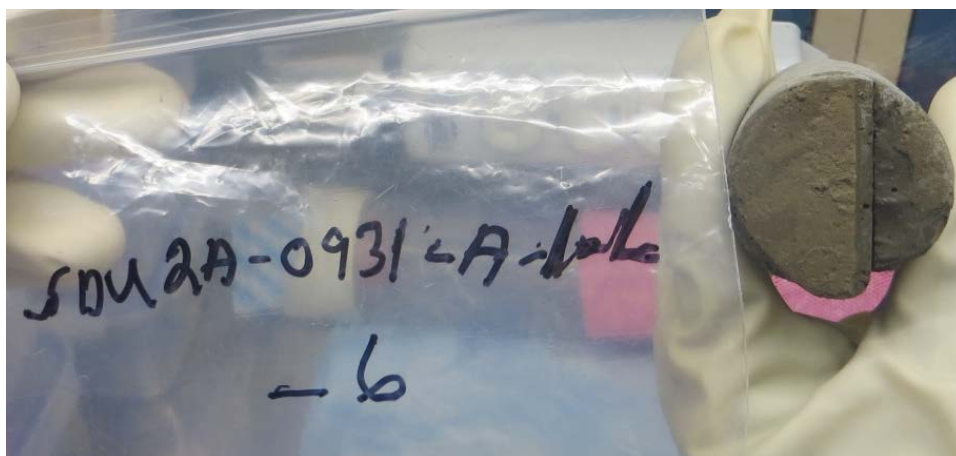


Figure 20 SDU2A-0931-A-1-L-6 bottom

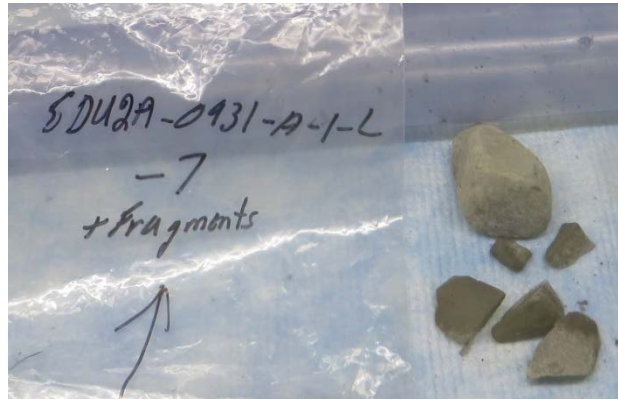


Figure 21 SDU2A-0931-A-1-L-7



Figure 22 SDU2A-0931-A-1-U

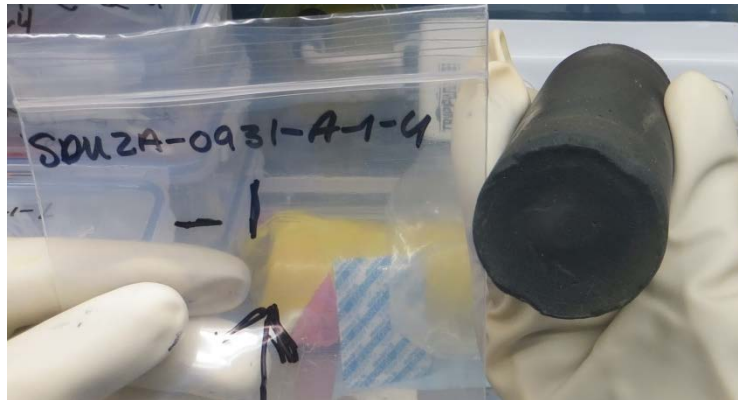


Figure 23 SDU2A-0931-A-1-U-1 top

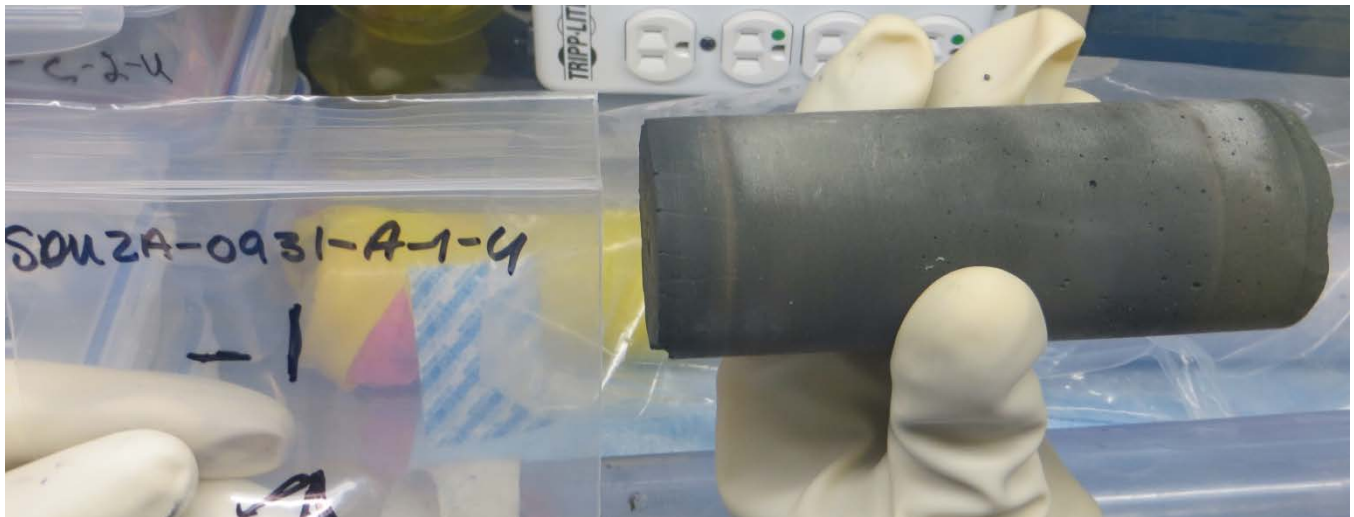


Figure 24 SDU2A-0931-A-1-U-1 side

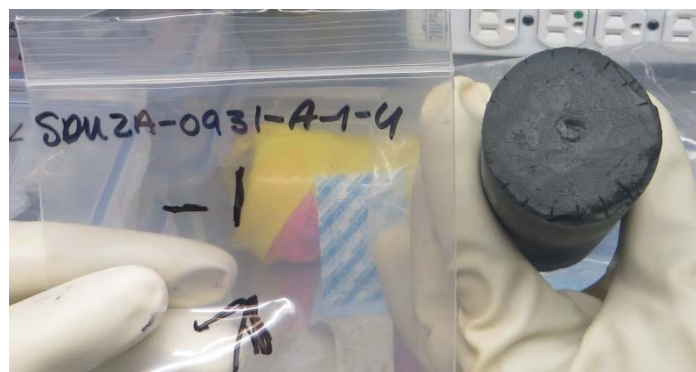


Figure 25 SDU2A-0931-A-1-U-1 bottom

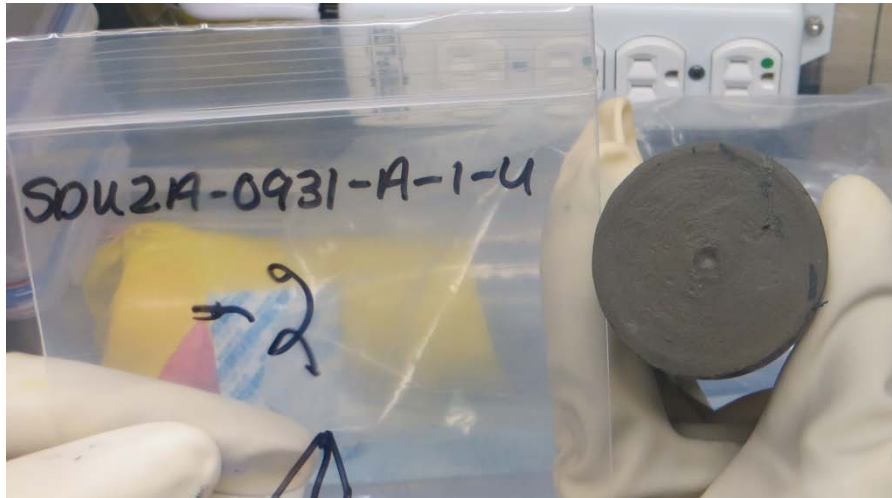


Figure 26 SDU2A-0931-A-1-U-2 top

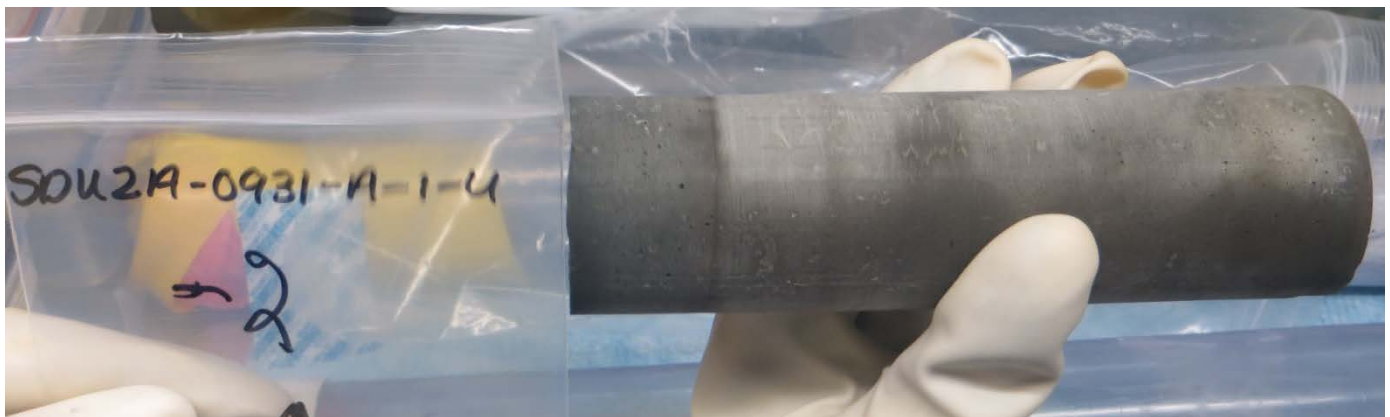


Figure 27 SDU2A-0931-A-1-U-2 side

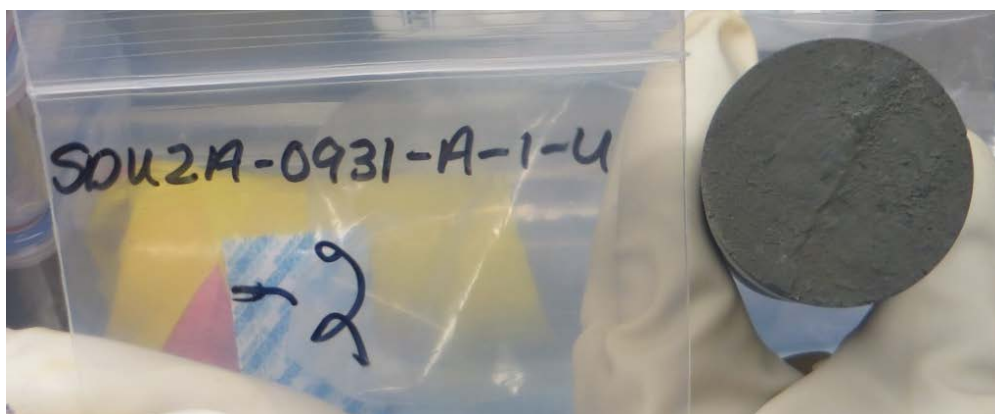


Figure 28 SDU2A-0931-A-1-U-2 bottom

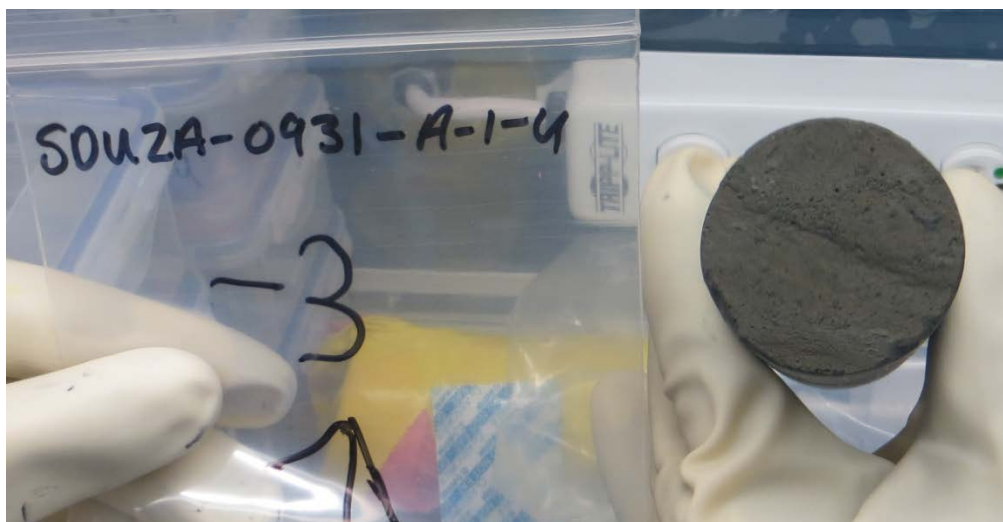


Figure 29 SDU2A-0931-A-1-U-3 top

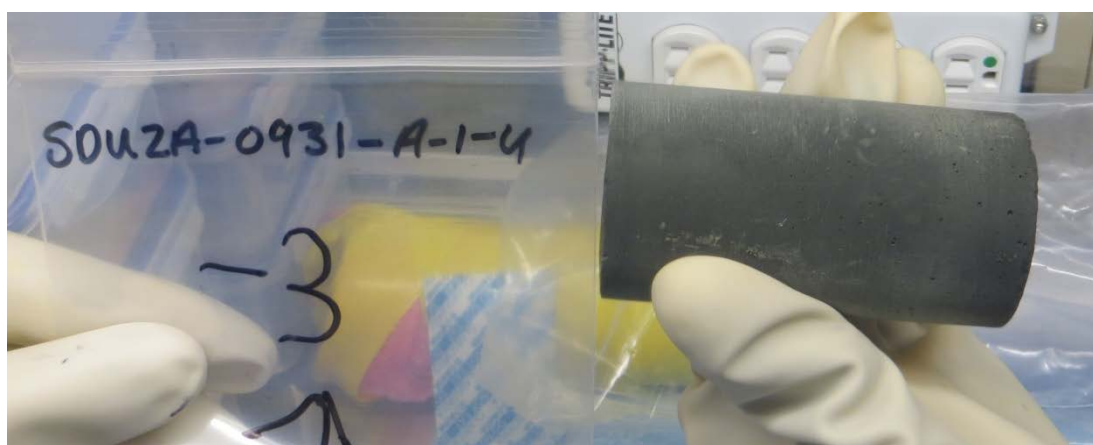


Figure 30 SDU2A-0931-A-1-U-3 side

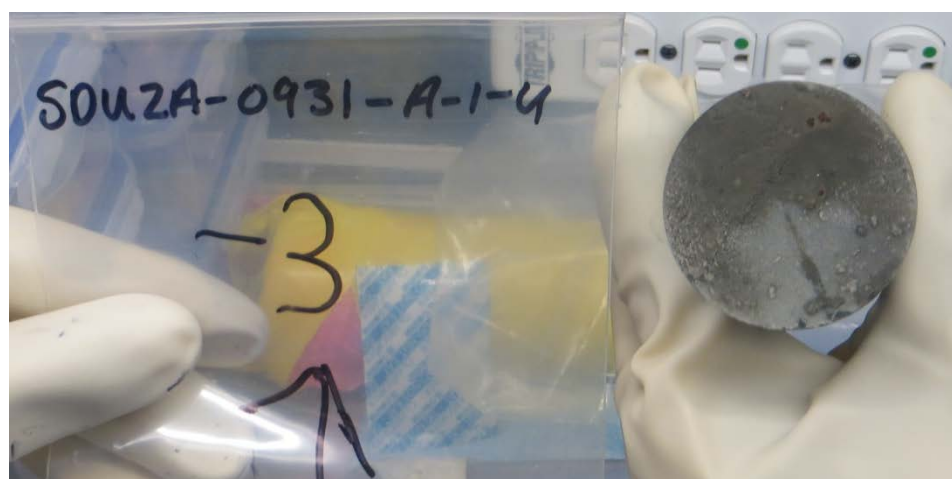


Figure 31 SDU2A-0931-A-1-U-3 bottom

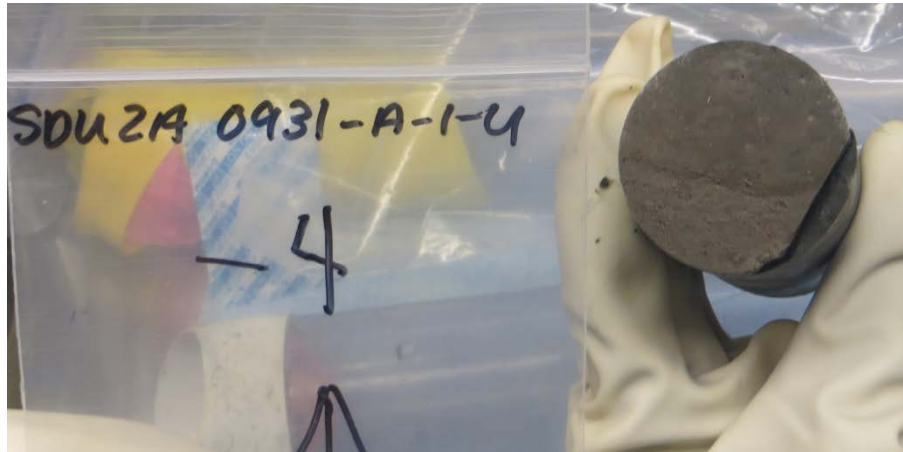


Figure 32 SDU2A-0931-A-1-U-4 top

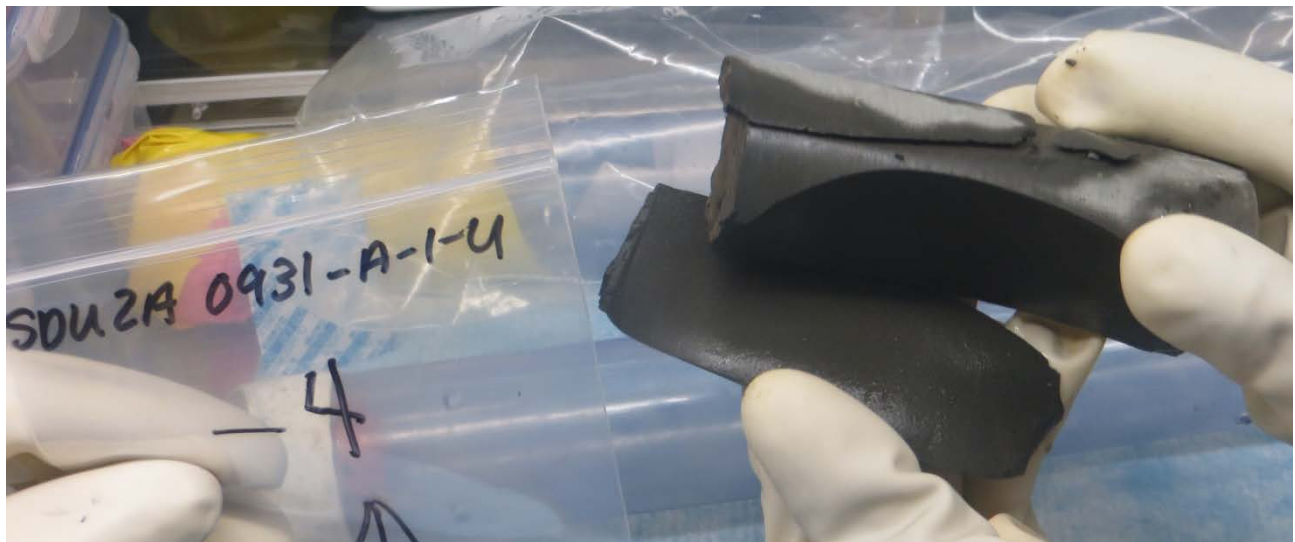


Figure 33 SDU2A-0931-A-1-U-4 side

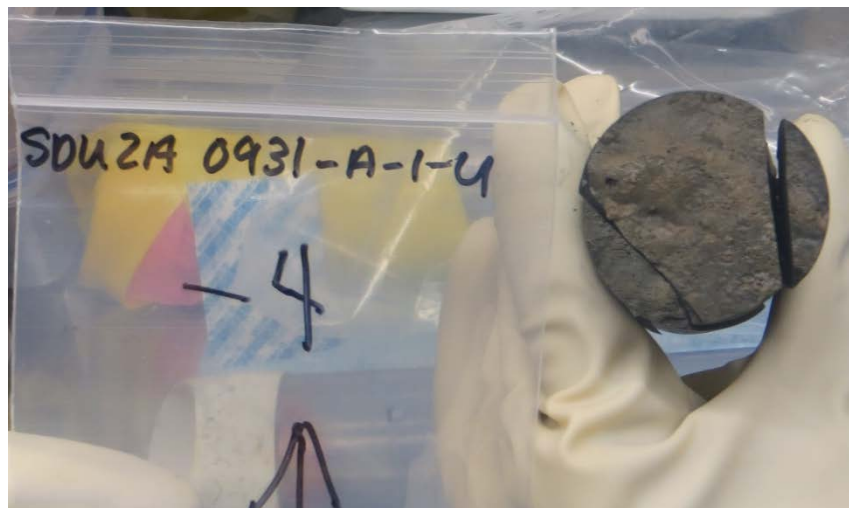


Figure 34 SDU2A-0931-A-1-U-4 bottom

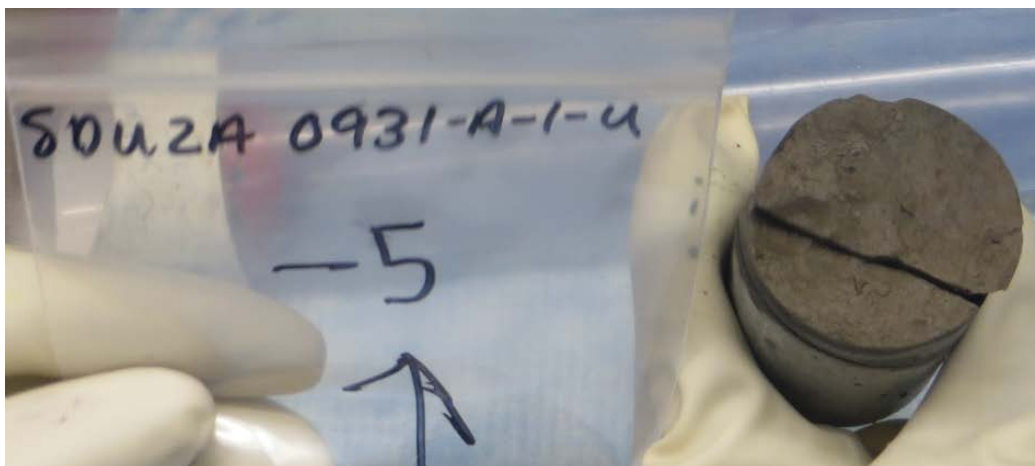


Figure 35 SDU2A-0931-A-1-U-5 top

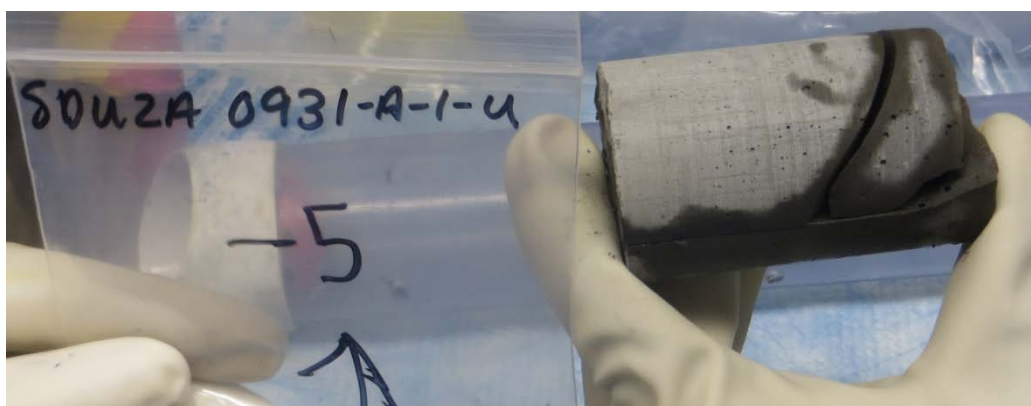


Figure 36 SDU2A-0931-A-1-U-5 side

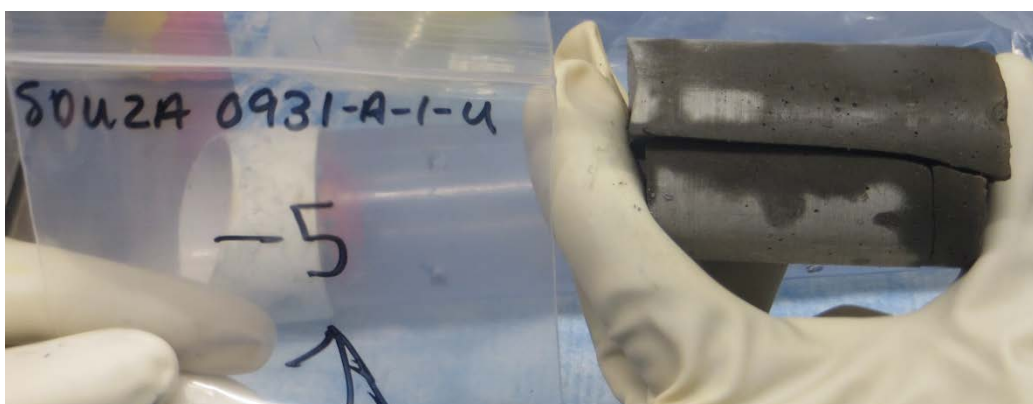


Figure 37 SDU2A-0931-A-1-U-5 side (2)

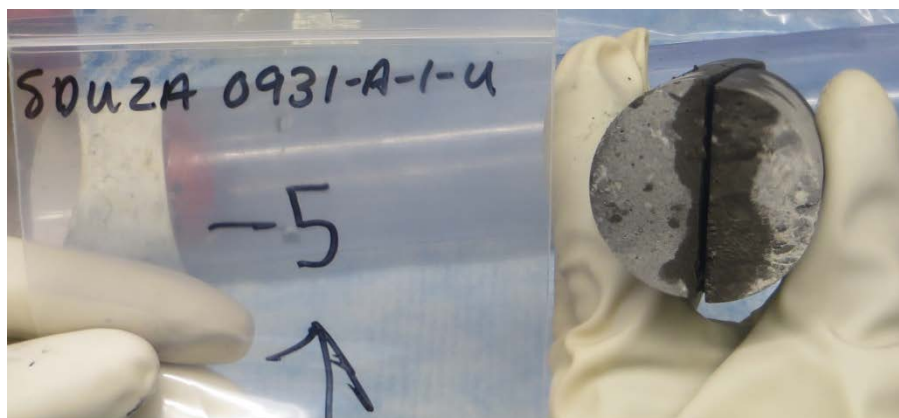


Figure 38 SDU2A-0931-A-1-U-5 bottom



Figure 39 SDU2A-0931-A-2-L

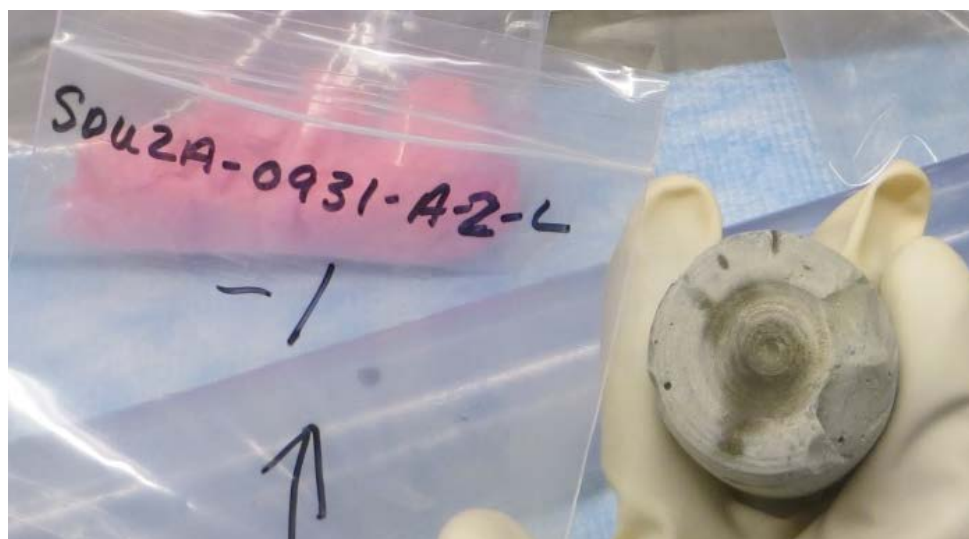


Figure 40 SDU2A-0931-A-2-L-1 top

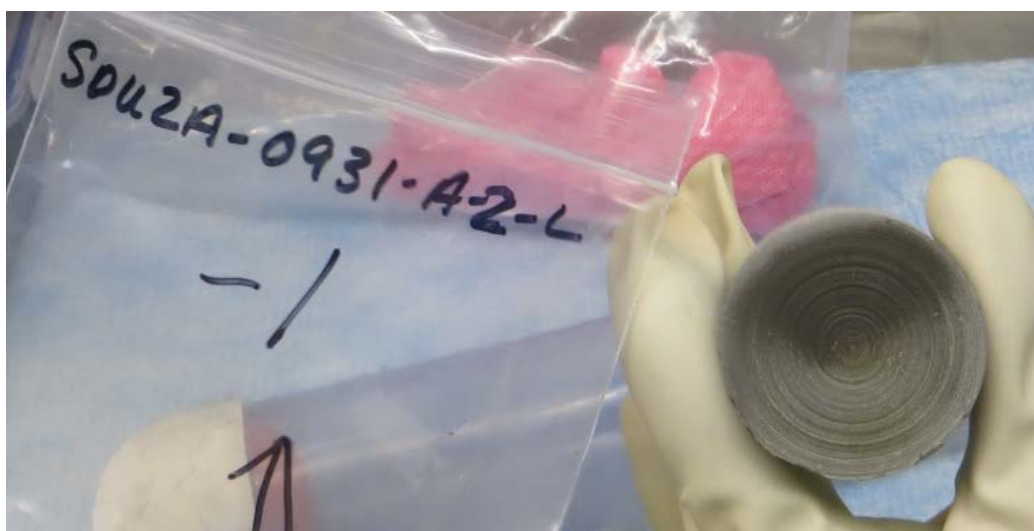


Figure 41 SDU2A-0931-A-2-L-1 bottom

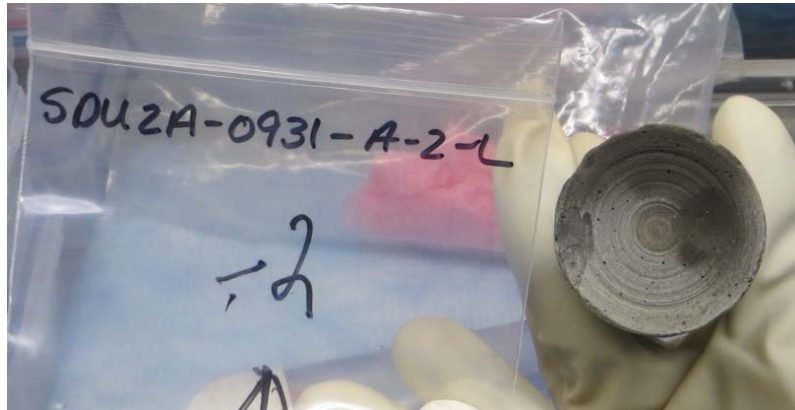


Figure 42 SDU2A-0931-A-2-L-2 top

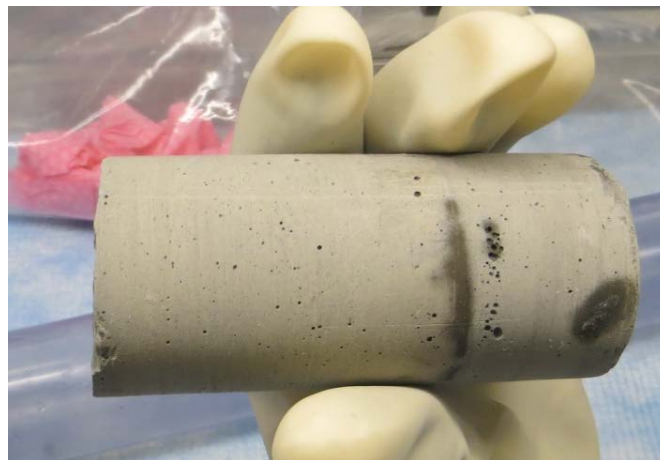


Figure 43 SDU2A-0931-A-2-L-2 side

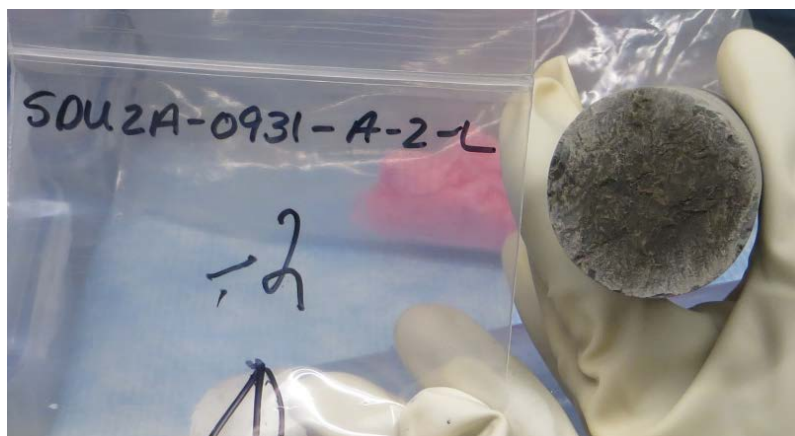


Figure 44 SDU2A-0931-A-2-L-2 bottom



Figure 45 SDU2A-0931-A-2-L-3 top

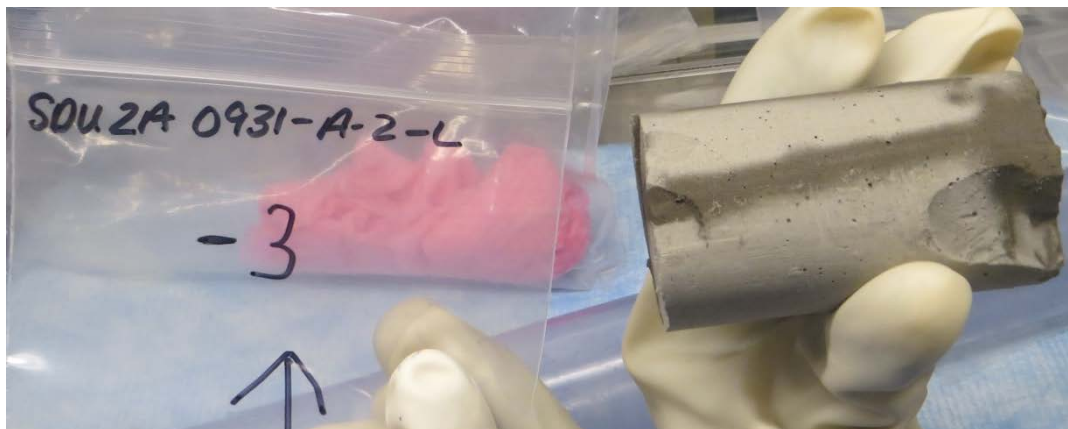


Figure 46 SDU2A-0931-A-2-L-3 side

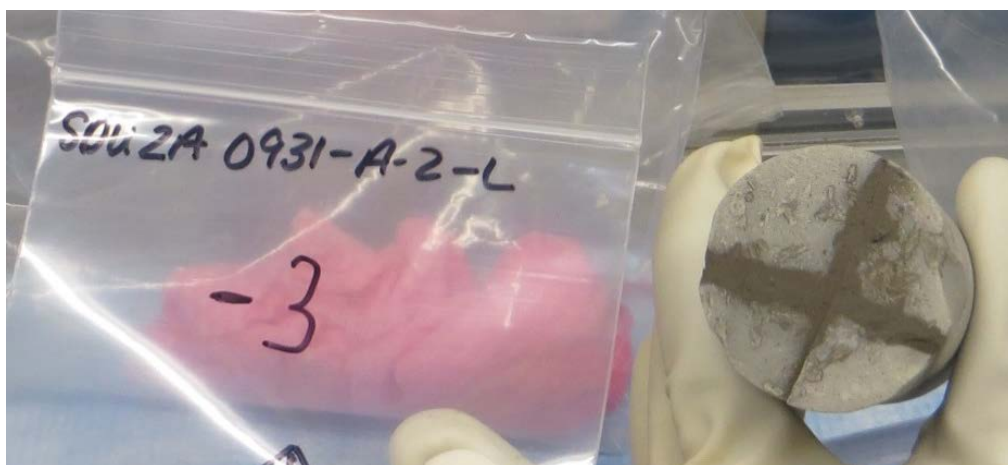


Figure 47 SDU2A-0931-A-2-L-3 bottom

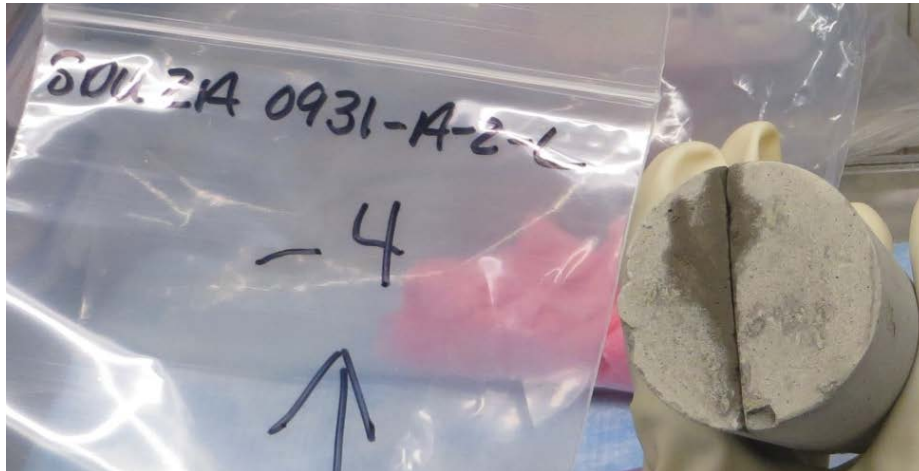


Figure 48 SDU2A-0931-A-2-L-4 top

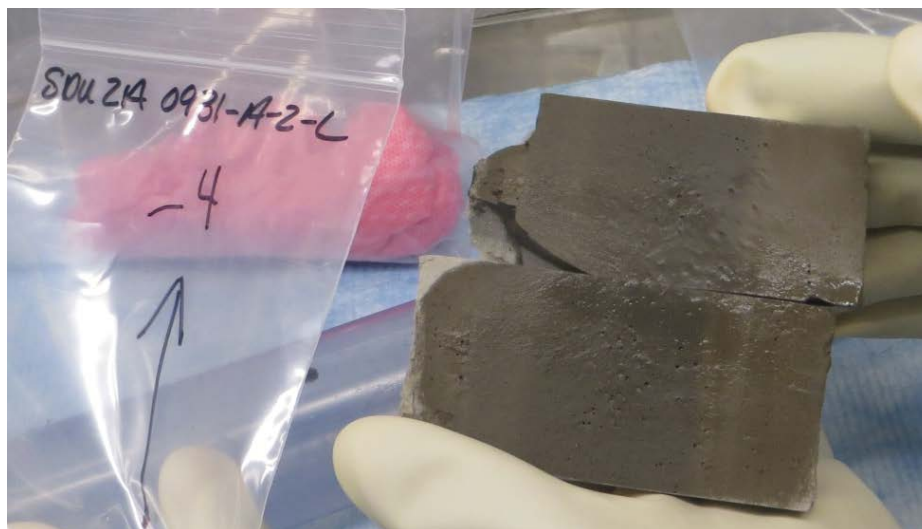


Figure 49 SDU2A-0931-A-2-L-4 side

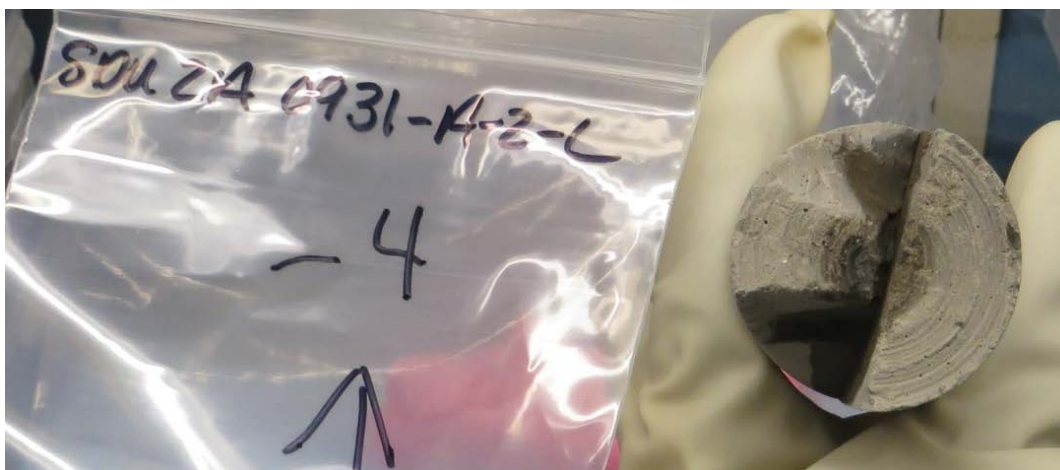


Figure 50 SDU2A-0931-A-2-L-4 bottom

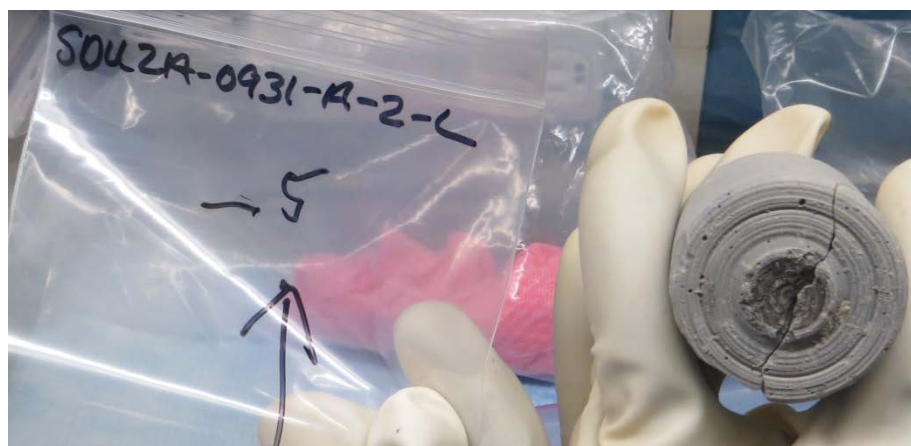


Figure 51 SDU2A-0931-A-2-L-5 top

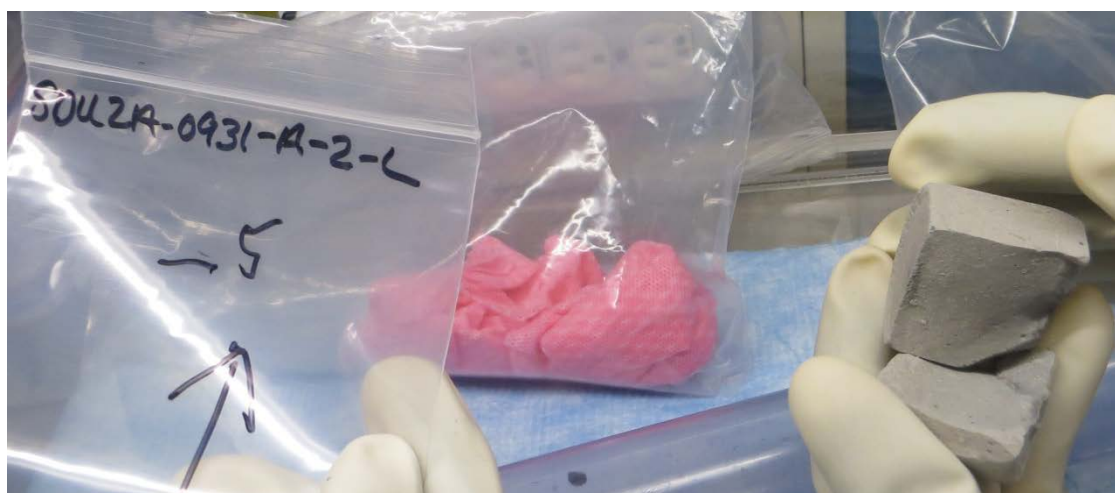


Figure 52 SDU2A-0931-A-2-L-5 side

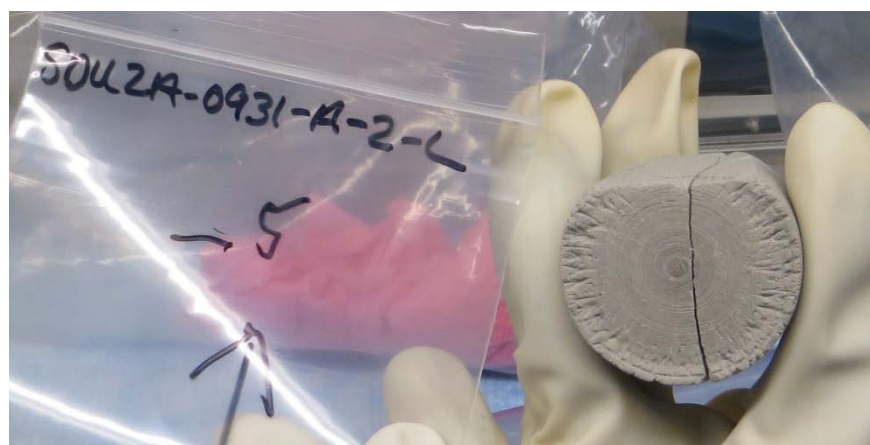


Figure 53 SDU2A-0931-A-2-L-5 bottom

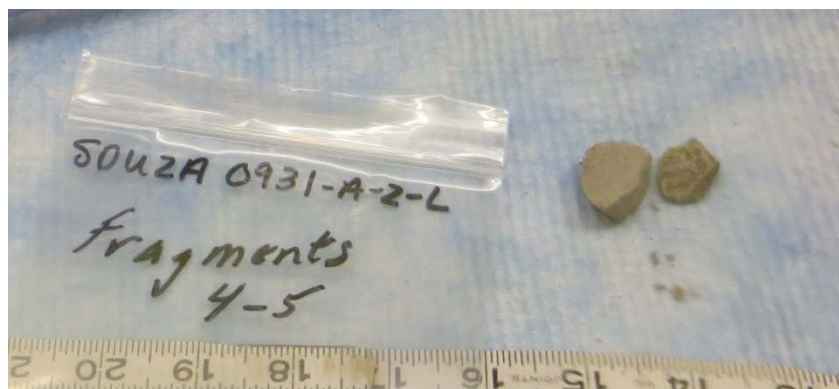


Figure 54 SDU2A-0931-A-2-L fragments (4-5)



Figure 55 SDU2A-0931-A-2-U

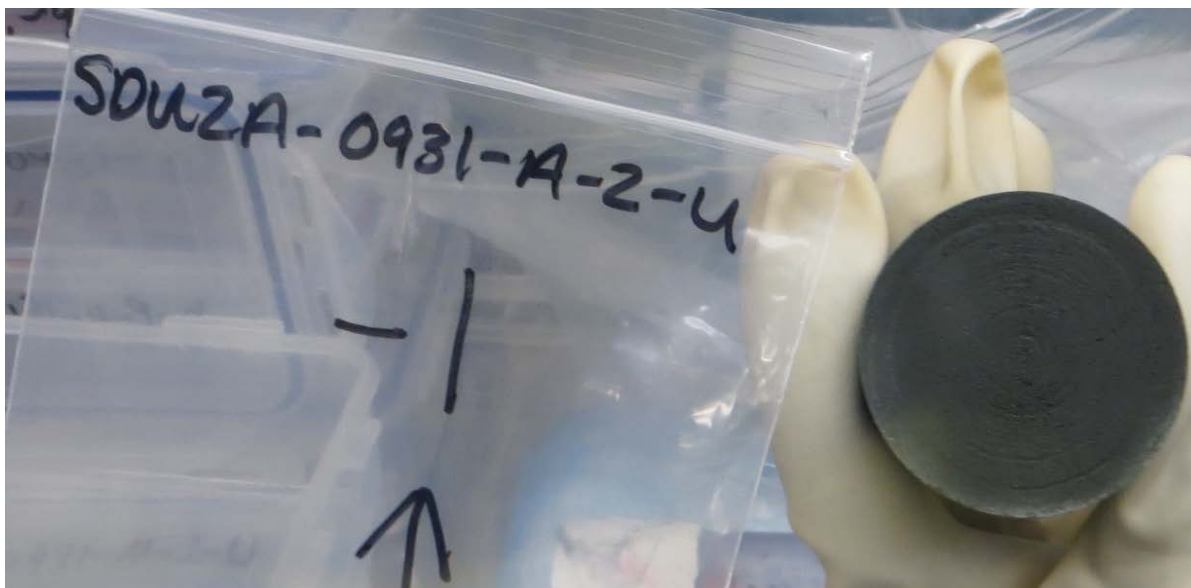


Figure 56 SDU2A-0931-A-2-U-1 top

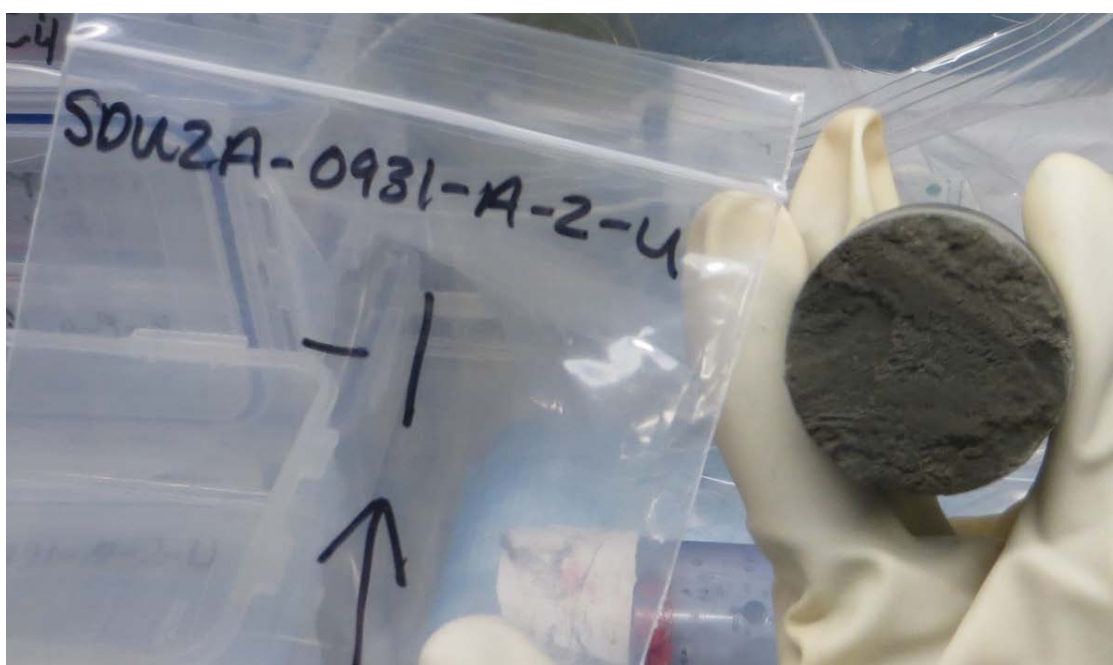


Figure 57 SDU2A-0931-A-2-U-1 bottom

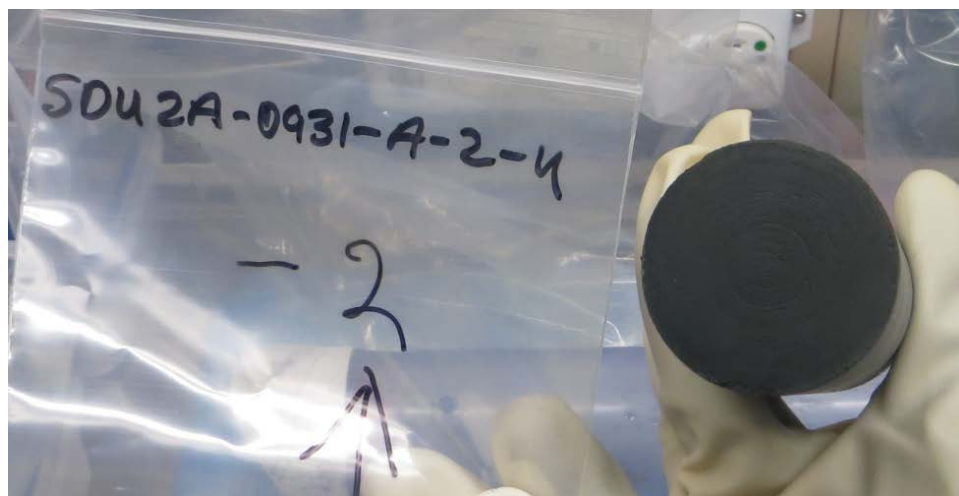


Figure 58 SDU2A-0931-A-2-U-2 top

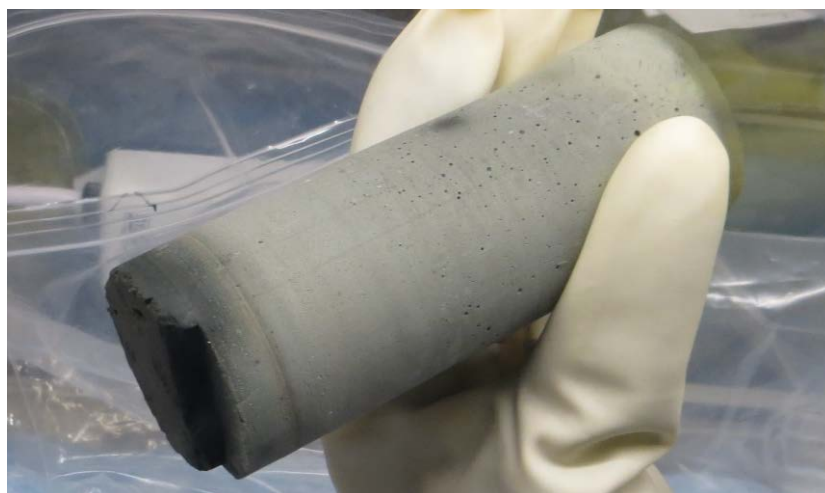


Figure 59 SDU2A-0931-A-2-U-2 side

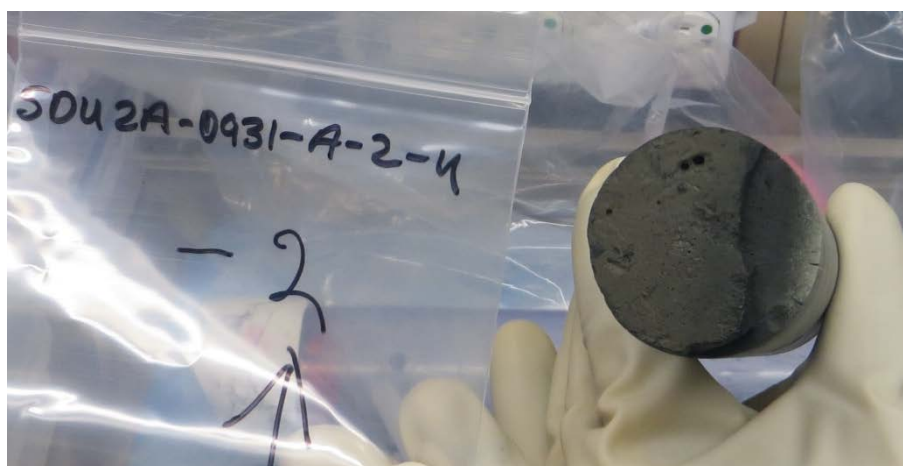


Figure 60 SDU2A-0931-A-2-U-2 bottom

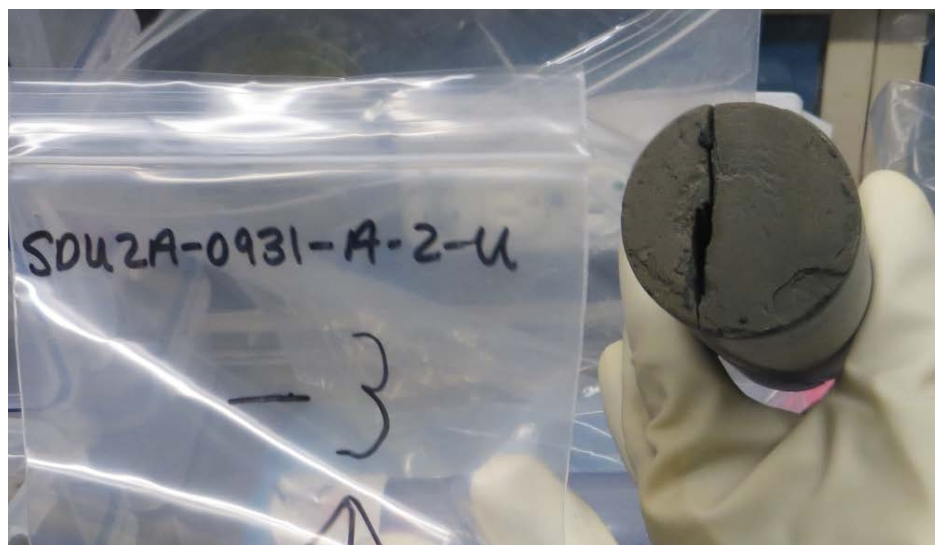


Figure 61 SDU2A-0931-A-2-U-3 top

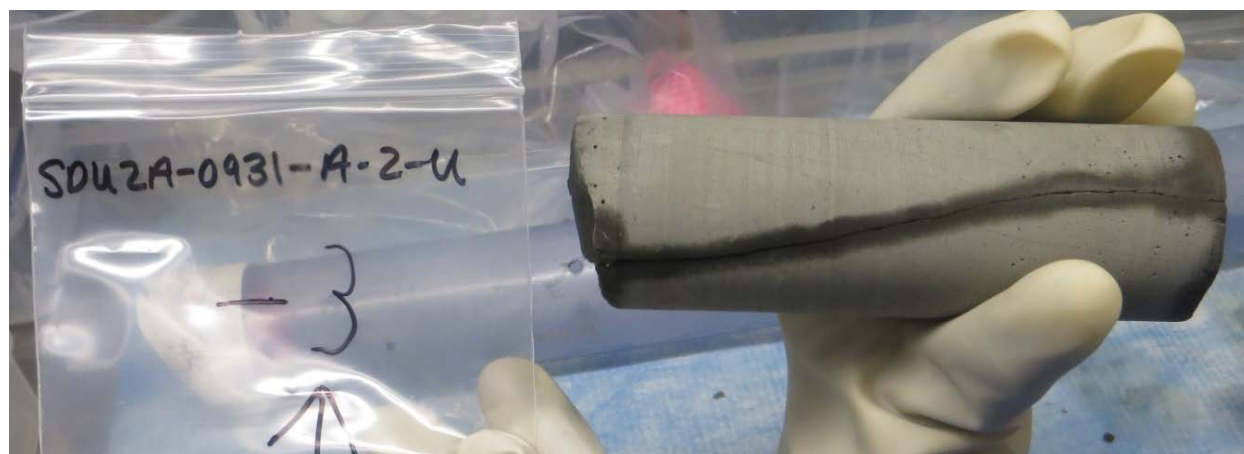


Figure 62 SDU2A-0931-A-2-U-3 side

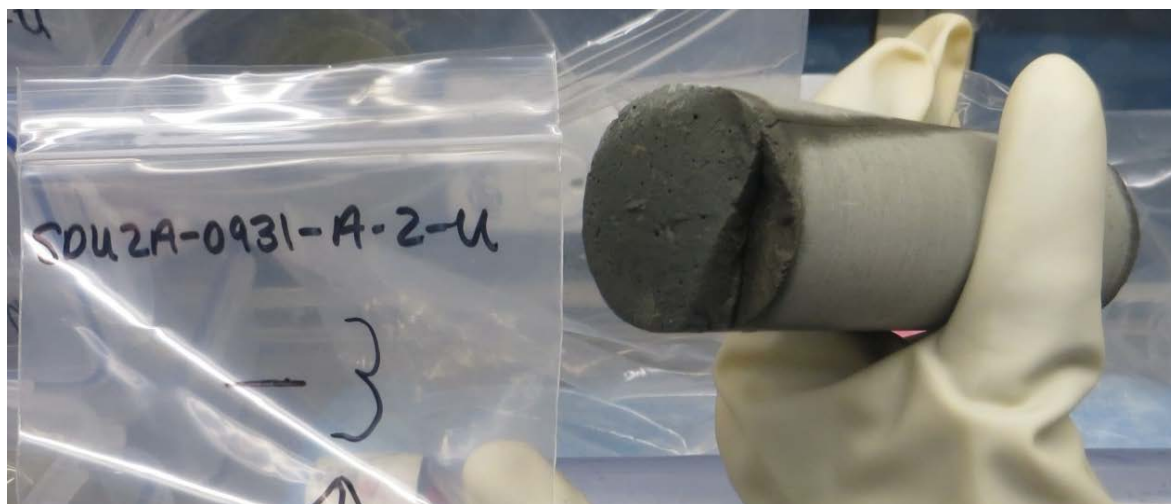


Figure 63 SDU2A-0931-A-2-U-3 bottom

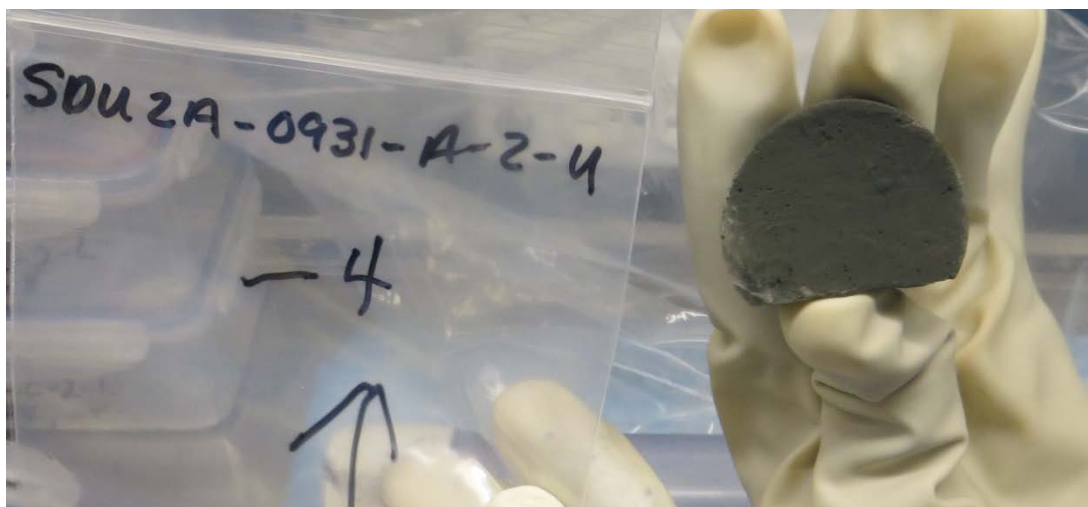


Figure 64 SDU2A-0931-A-2-U-4 top

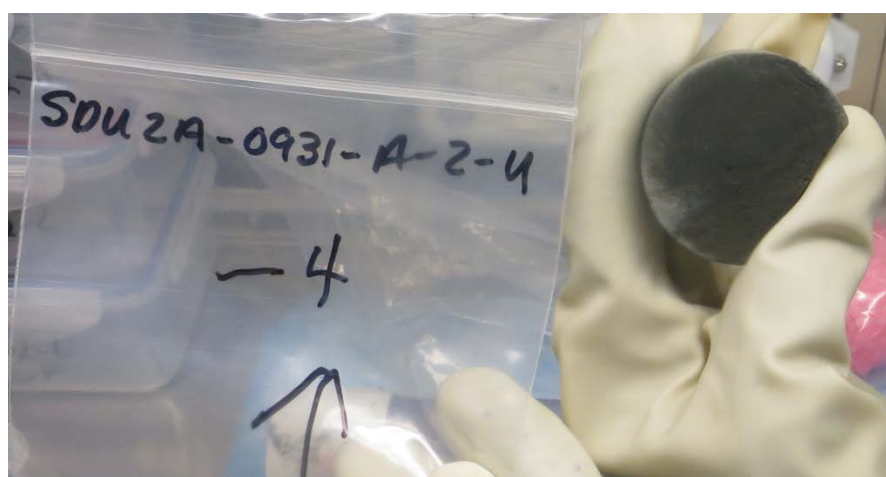


Figure 65 SDU2A-0931-A-2-U-4 bottom

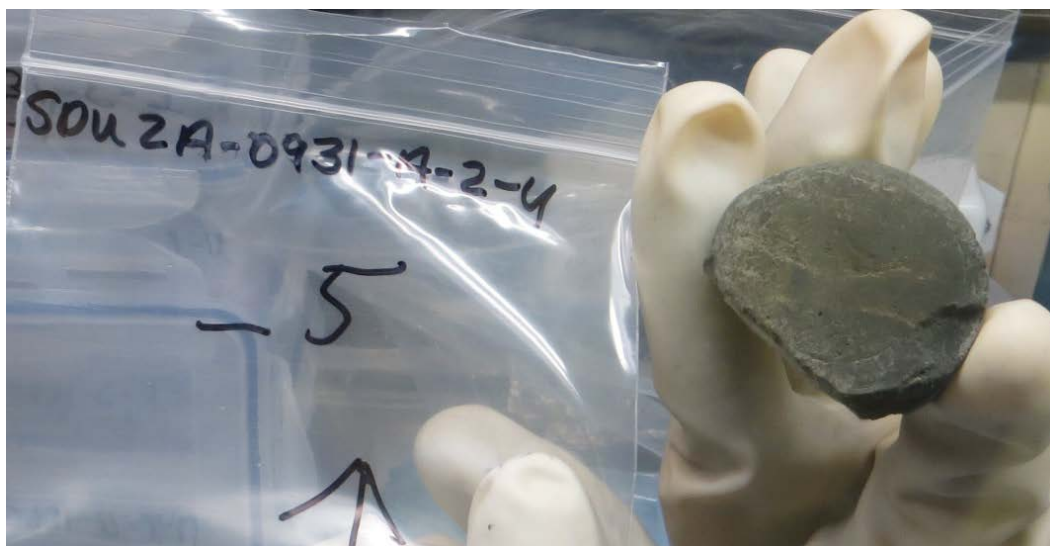


Figure 66 SDU2A-0931-A-2-U-5 top

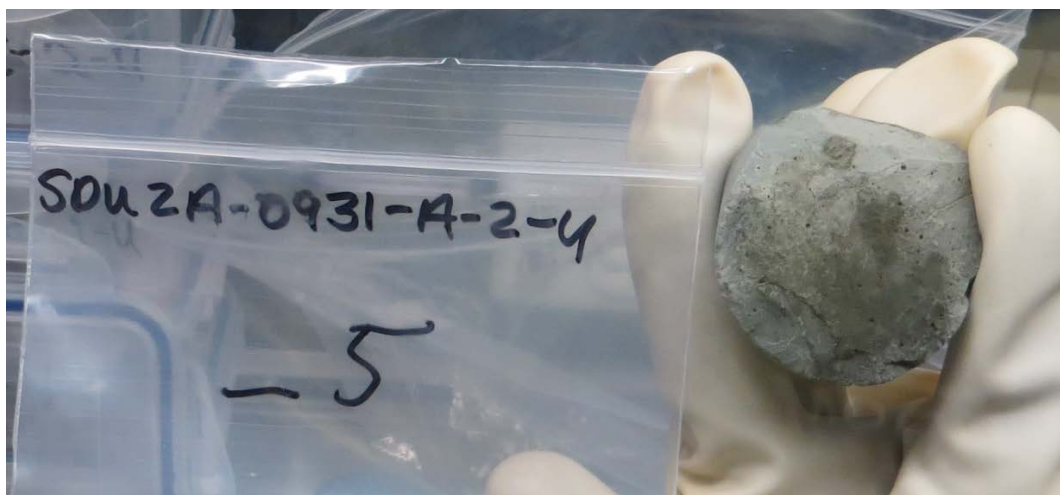


Figure 67 SDU2A-0931-A-2-U-5 bottom

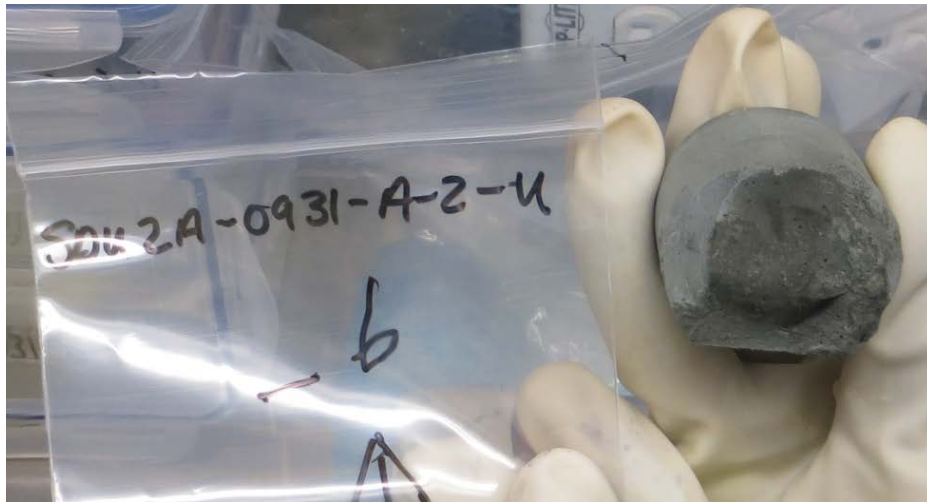


Figure 68 SDU2A-0931-A-2-U-6 top

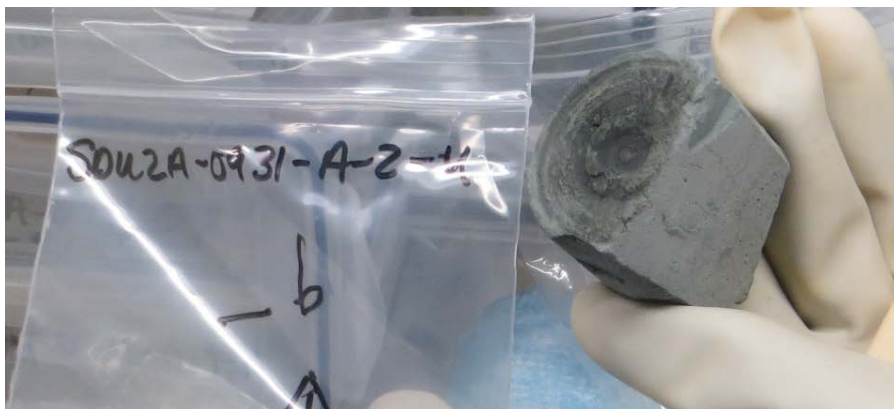


Figure 69 SDU2A-0931-A-2-U-6 bottom/side

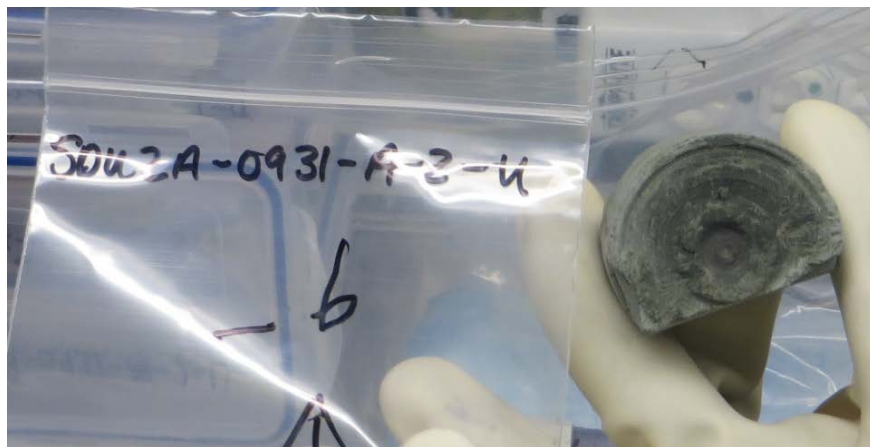


Figure 70 SDU2A-0931-A-2-U-6 bottom

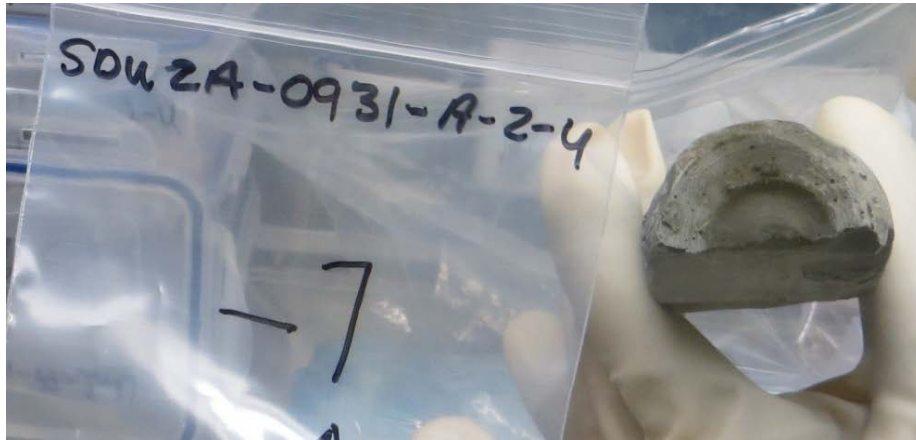


Figure 71 SDU2A-0931-A-2-U-7 top

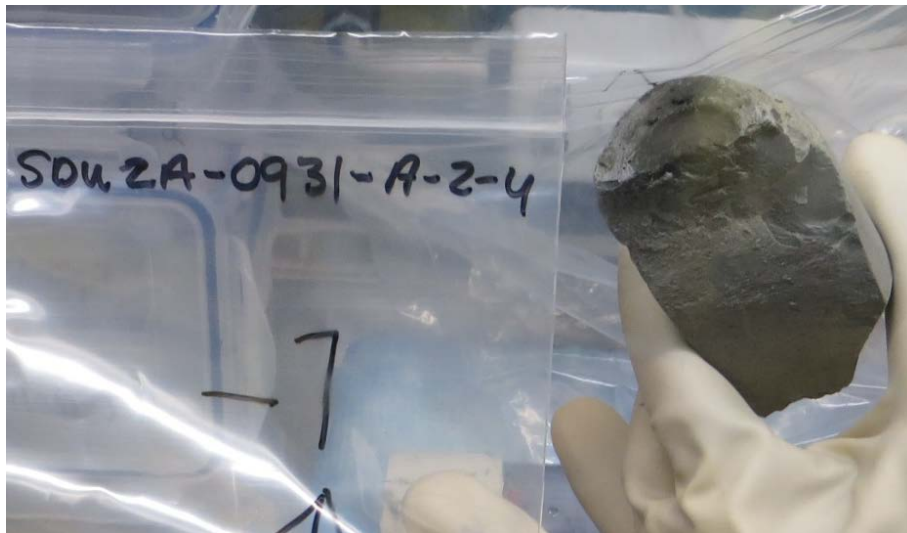


Figure 72SDU2A-0931-A-2-U-7 side

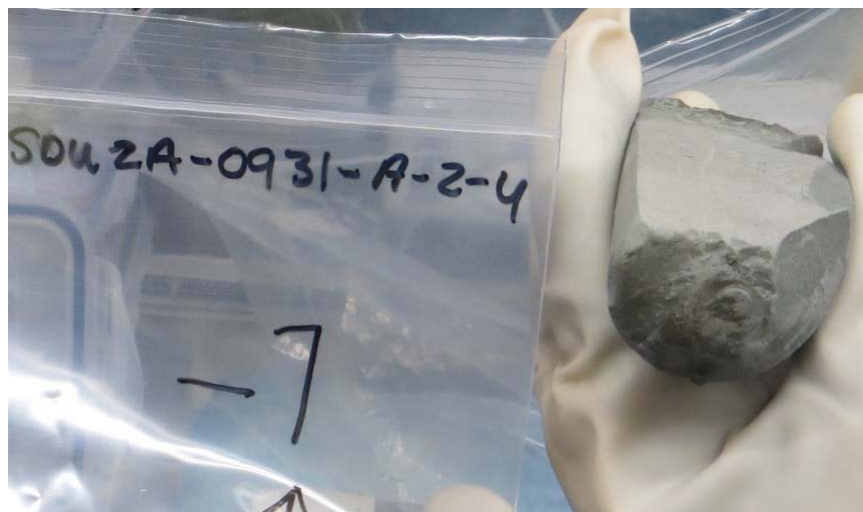


Figure 73 SDU2A-0931-A-2-U-7 bottom

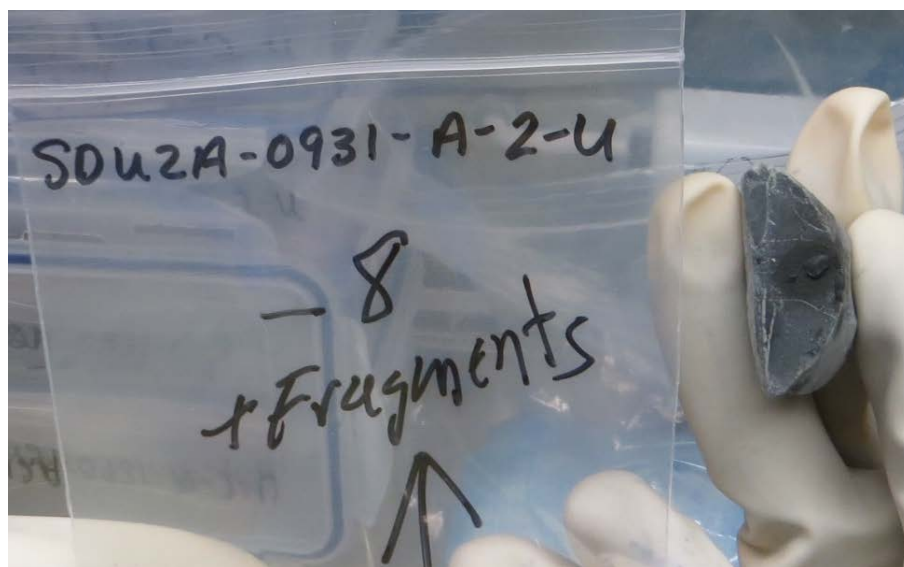


Figure 74 SDU2A-0931-A-2-U-8 top

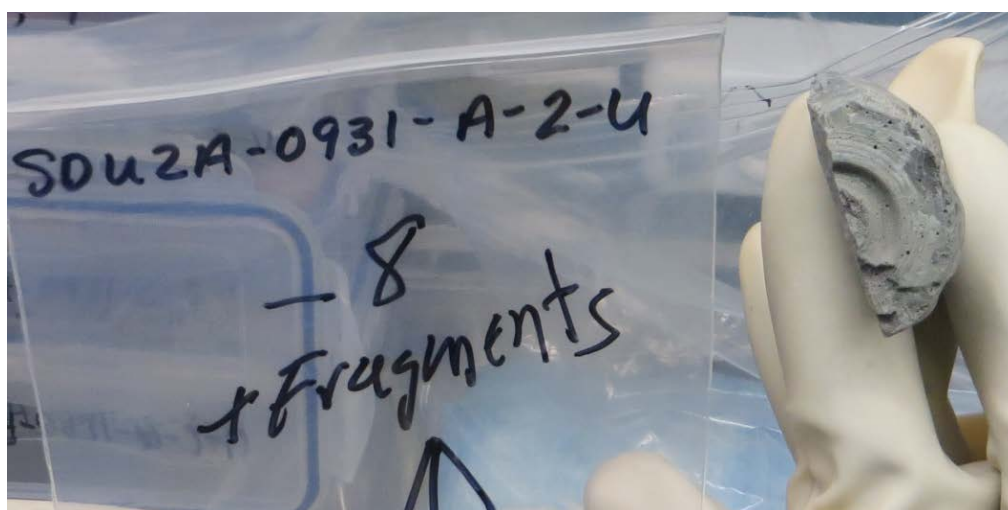


Figure 75 SDU2A-0931-A-2-U-8 bottom



Figure 76 SDU2A-0931-B-1

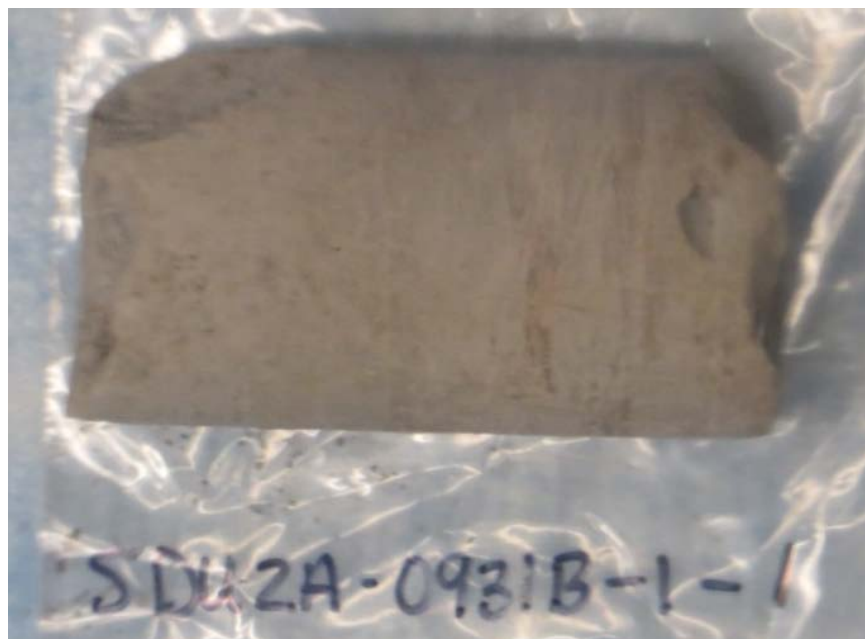


Figure 77 SDU2A-0931-B-1-1

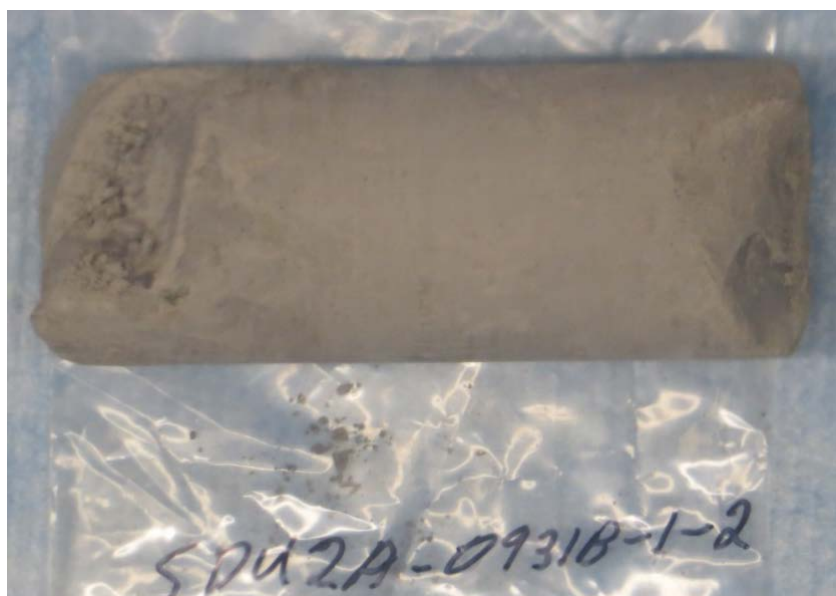


Figure 78 SDU2A-0931-B-1-2



Figure 79 SDU21-0931-C-1-L



Figure 80 SDU21-0931-C-1-L-1 top

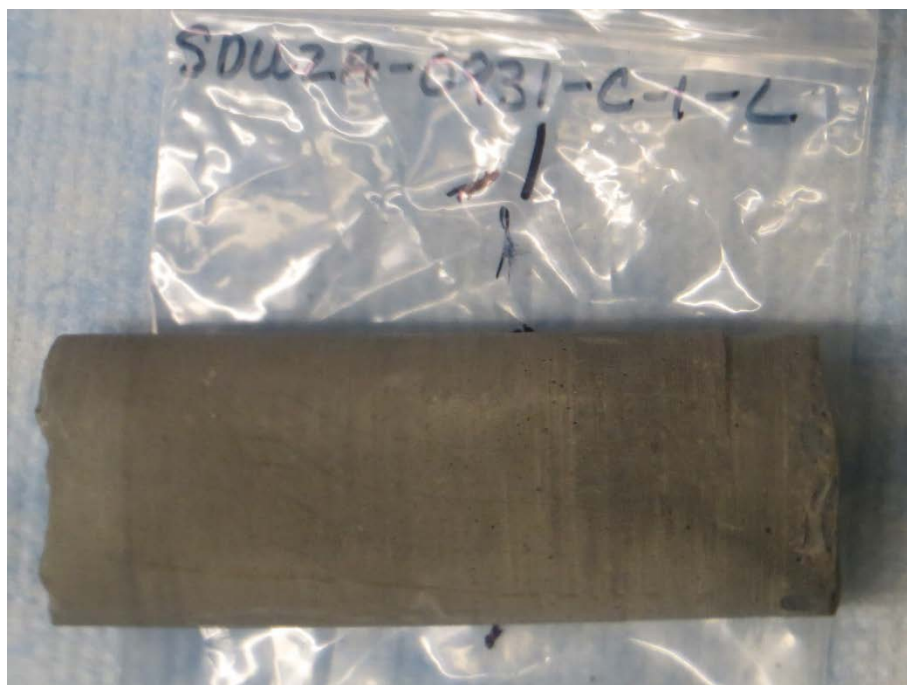


Figure 81 SDU2A-0931-C-1-L-1 side



Figure 82 SDU21-0931-C-1-L-2 top

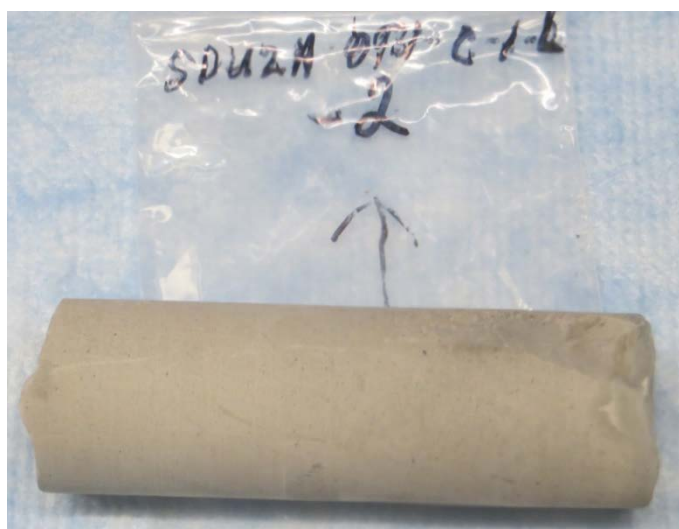


Figure 83 SDU21-0931-C-1-L-2 side



Figure 84 SDU21-0931-C-1-L-2 bottom

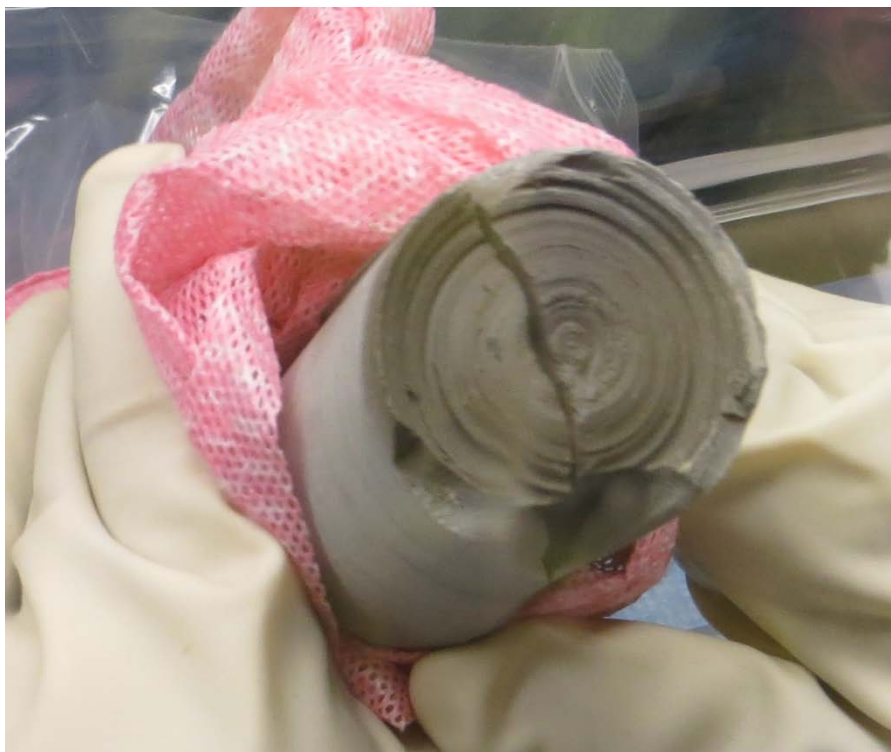


Figure 85 SDU2A-0931-C-1-L-3 top



Figure 86 SDU2A-C-1-L-3 side

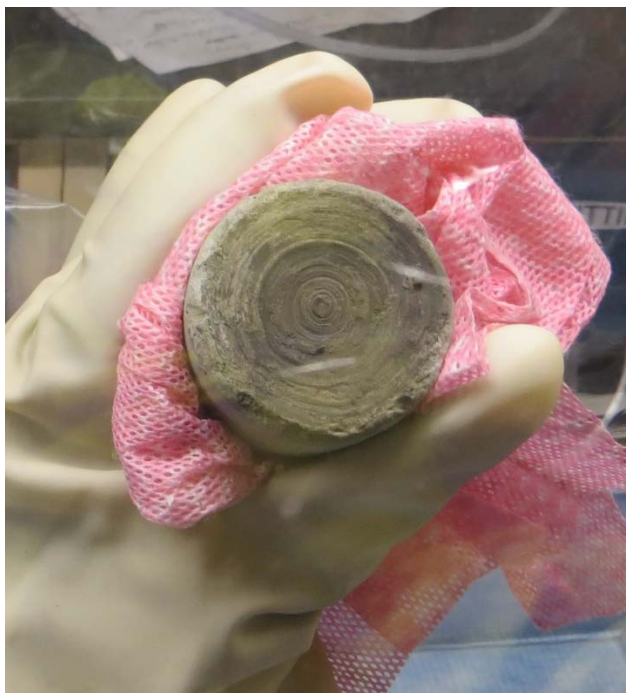


Figure 87 SDU2A-0931-C-1-L-4 top

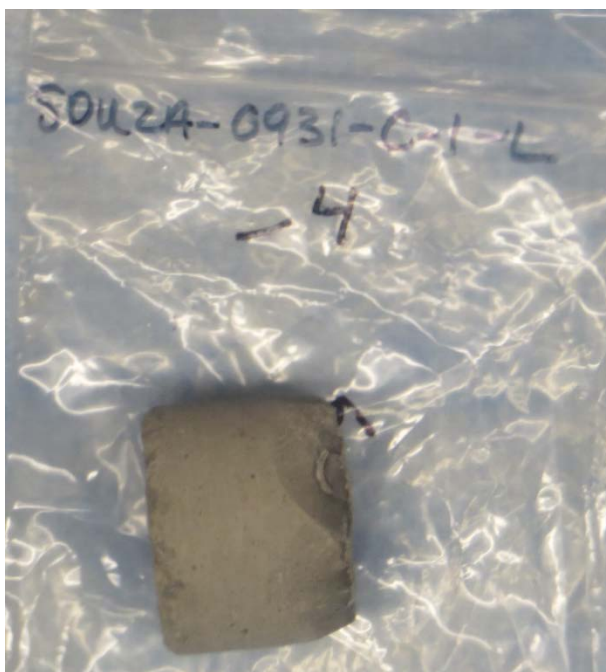


Figure 88 SDU2A-0931-C-1-L-4 side



Figure 89 SDU2A-0931-C-1-L-5 side

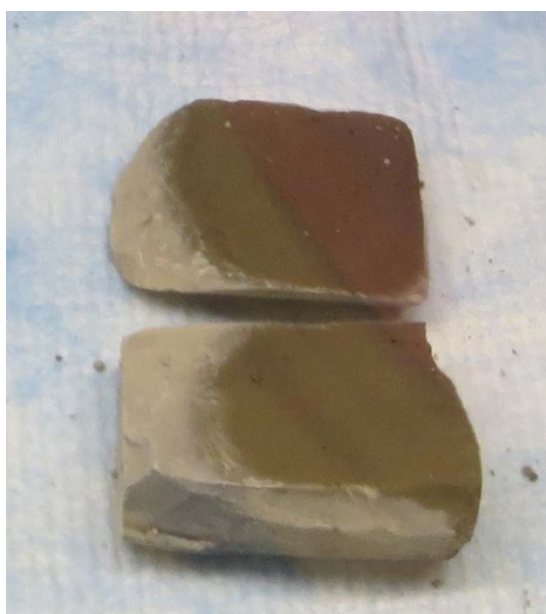


Figure 90 SDU2A-0931-C-1-L-5 side 2 pieces

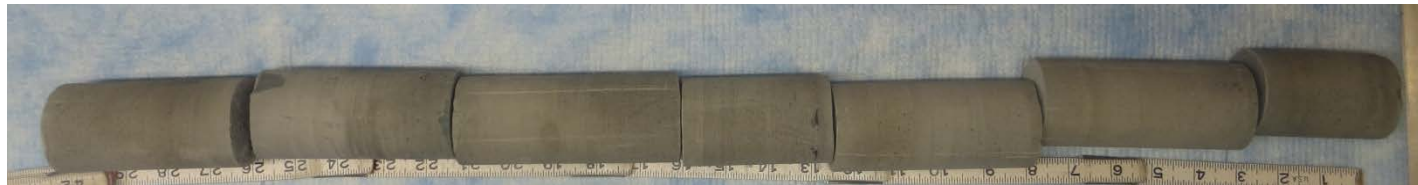


Figure 91 SDU2A-0931-C-1-U

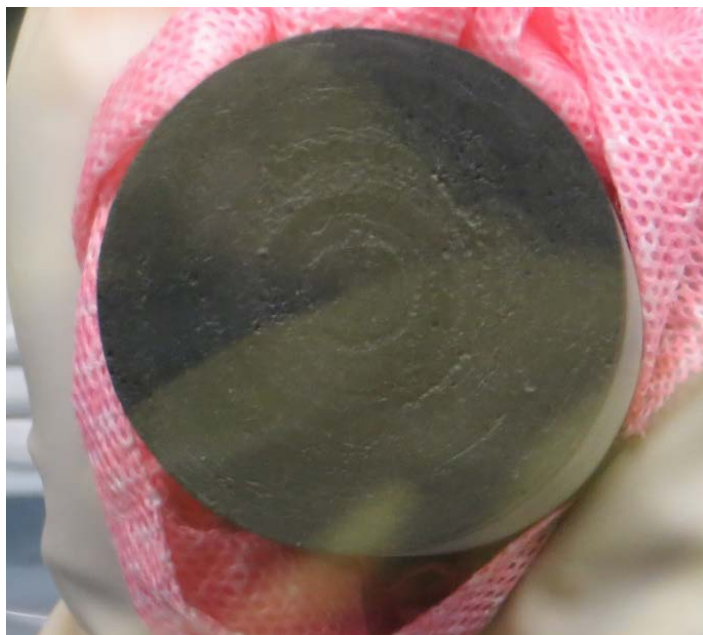


Figure 92 SDU2A-0931-C-1-U-1 top

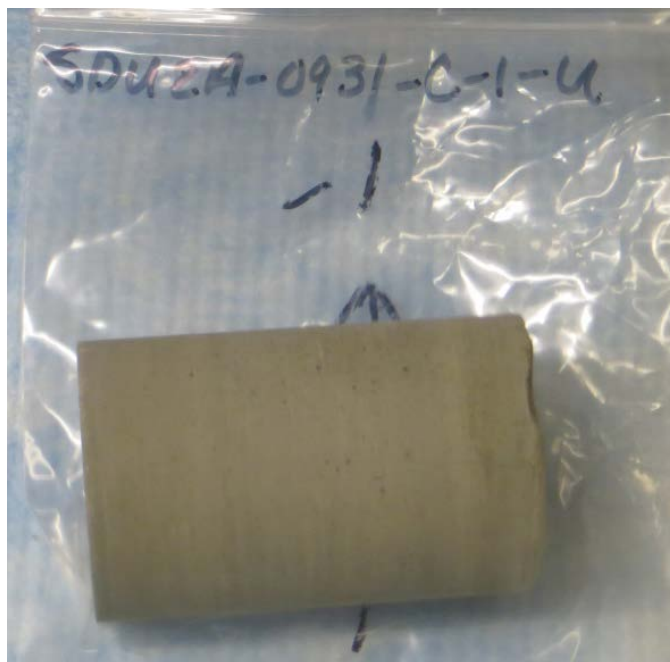


Figure 93 SDU2A-0931-C-1-U-1 side

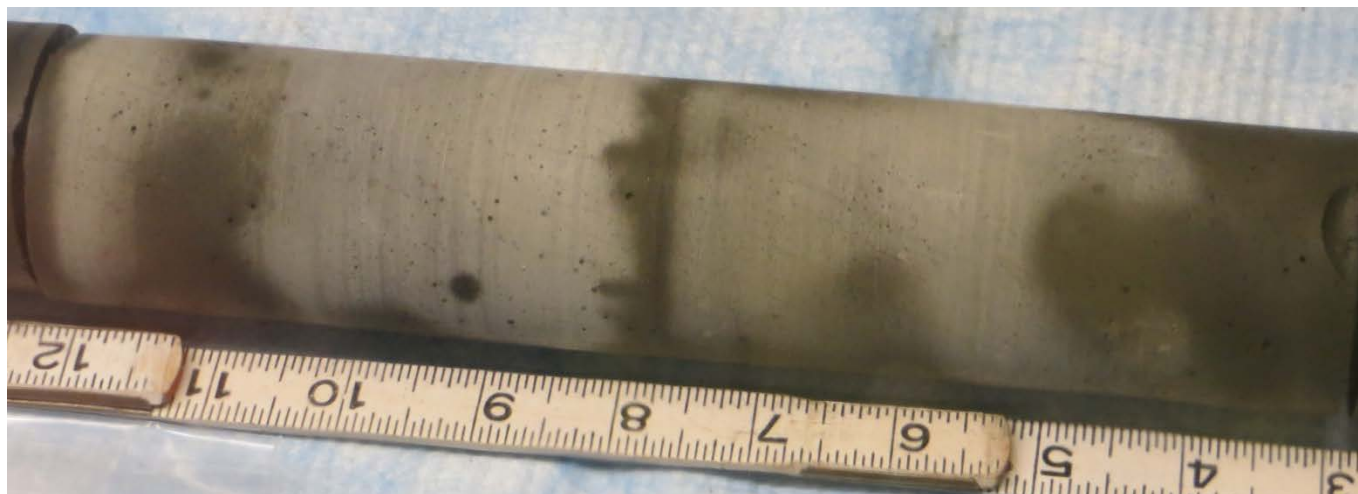


Figure 94 SDU2A-0931-C-1-U-2 and -3 (before split)



Figure 95 SDU2A-0931-C-U-2 bottom (right); -3 top (left)

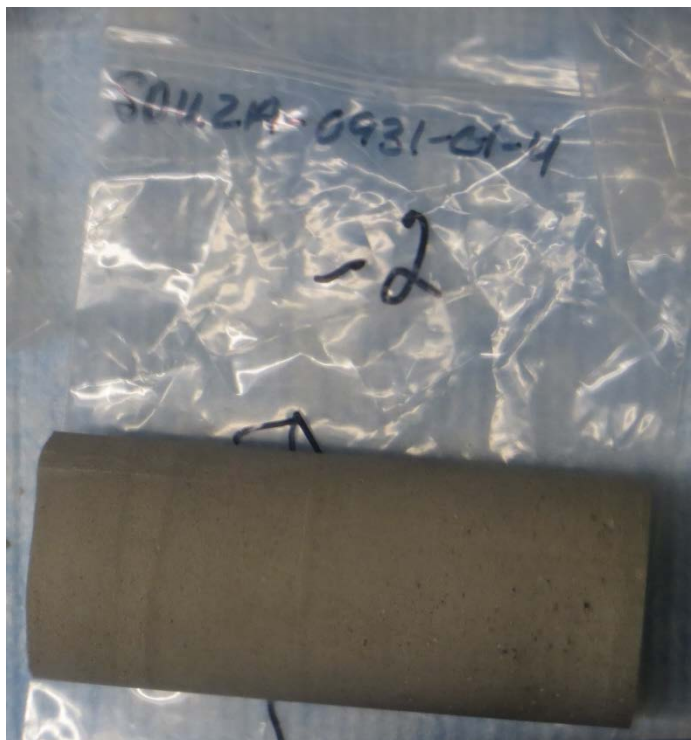


Figure 96 SDU2A-0931-C-1-U-2 side

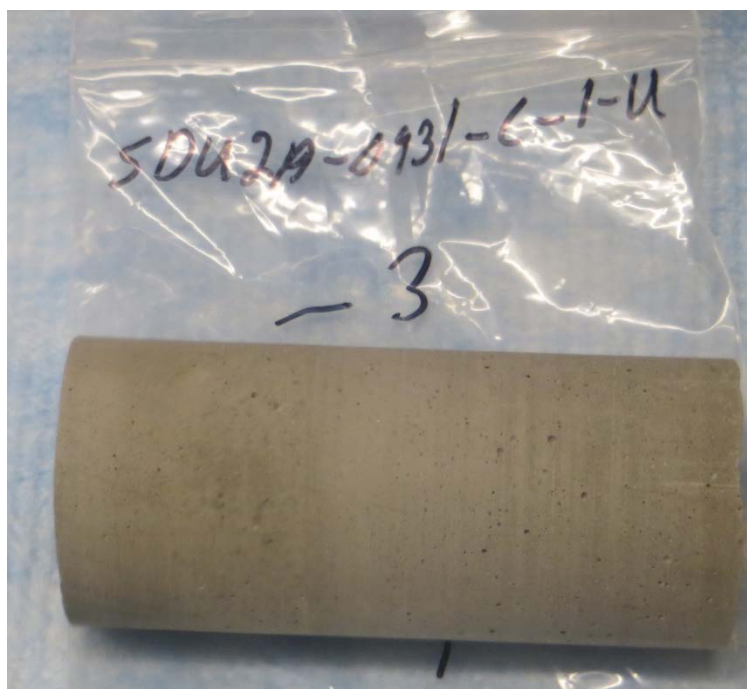


Figure 97 SDU2A-0931-C-1-U-3 side



Figure 98 SDU2A-0931-C-1-U-4 top

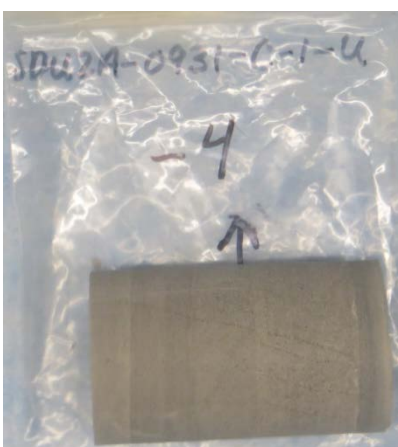


Figure 99 SDU2A-0931-C-1-U-4 side



Figure 100 SDU2A-0931-C-1-U-4 bottom



Figure 101 SDU2A-0931-C-1-U-5 top

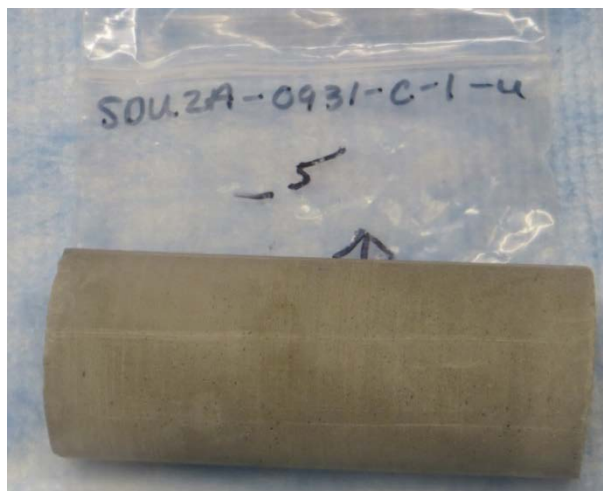


Figure 102 SDU2A-0931-C-1-U-5 side



Figure 103 SDU2A-0931-C-1-U-5 bottom

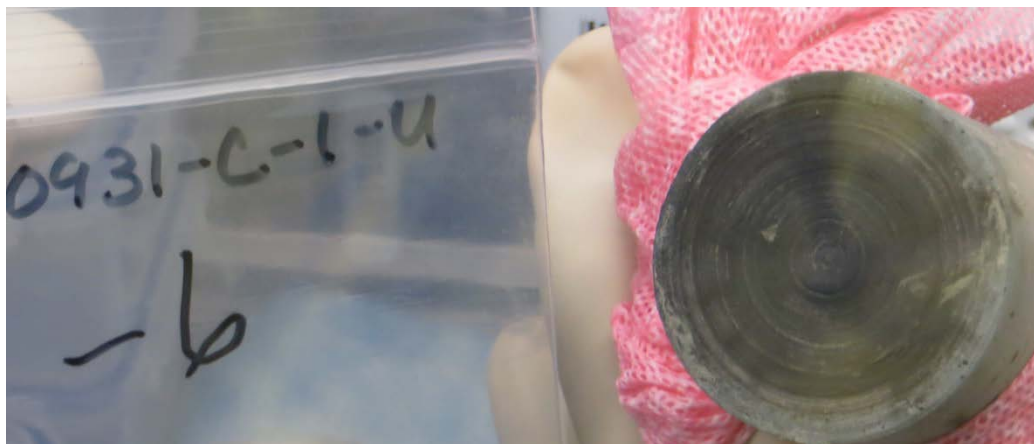


Figure 104 SDU2A-0931-C-1-U-6 top

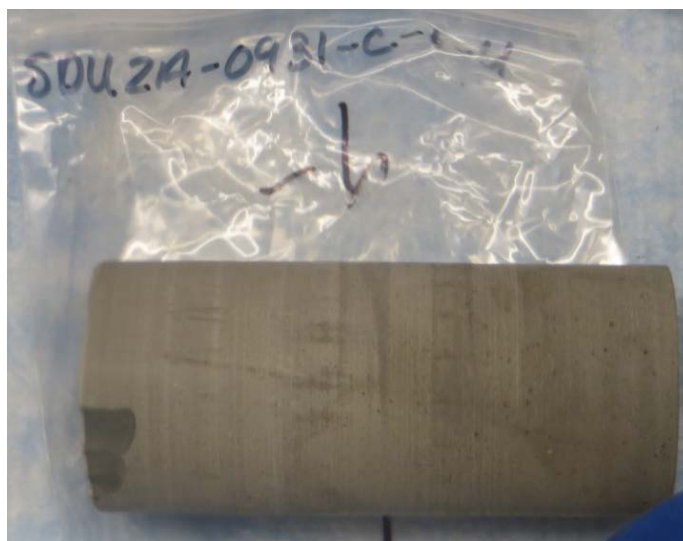


Figure 105 SDU2A-0931-C-1-U-6 side

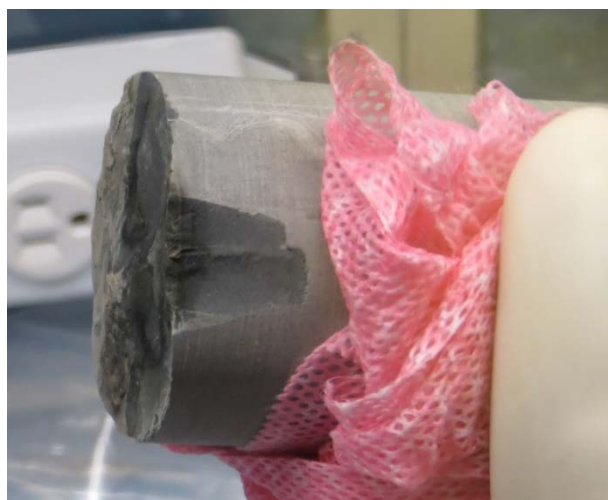


Figure 106 SDU2A-0931-C-1-U-6 side/bottom

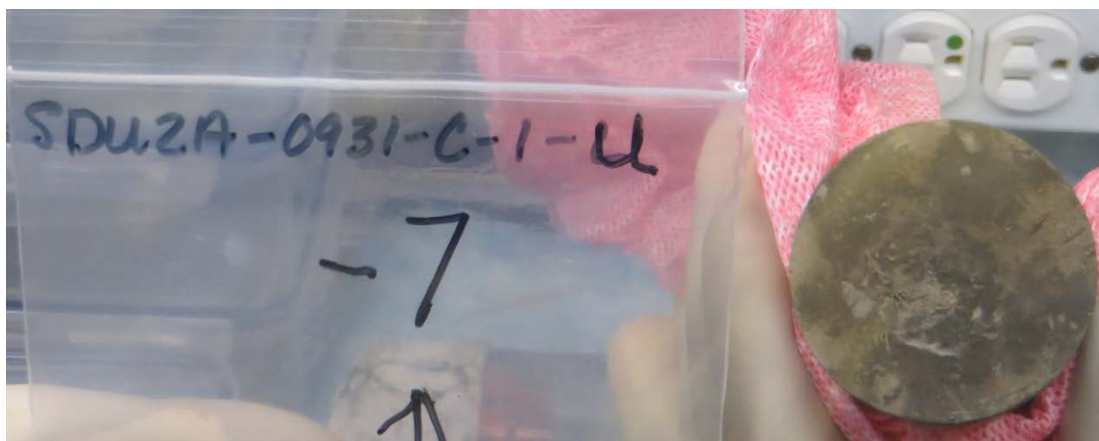


Figure 107 SDU2A-0931-C-1-U-7 top

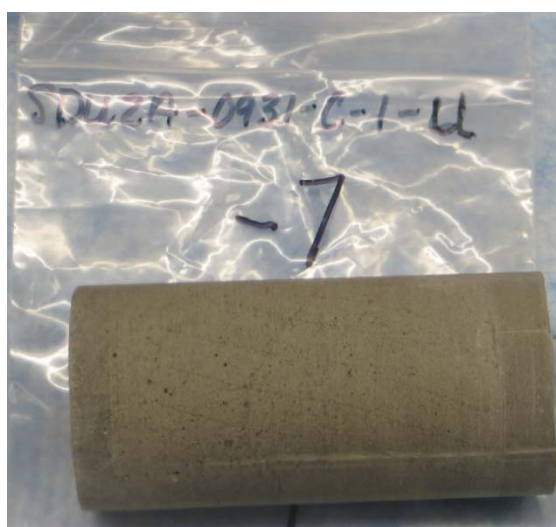


Figure 108 SDU2A-0931-C-1-U-7 side



Figure 109 SDU2A-0931-C-1-U-7 bottom



Figure 110 SDU2A-0931-C-2-L

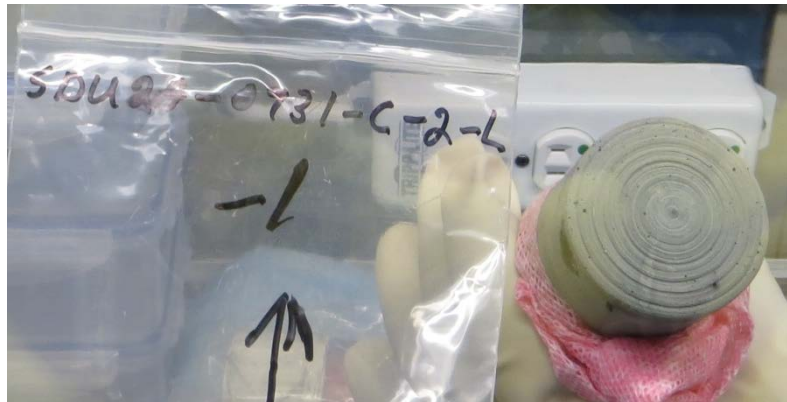


Figure 111 SDU2A-0931-C-2-L-1 top

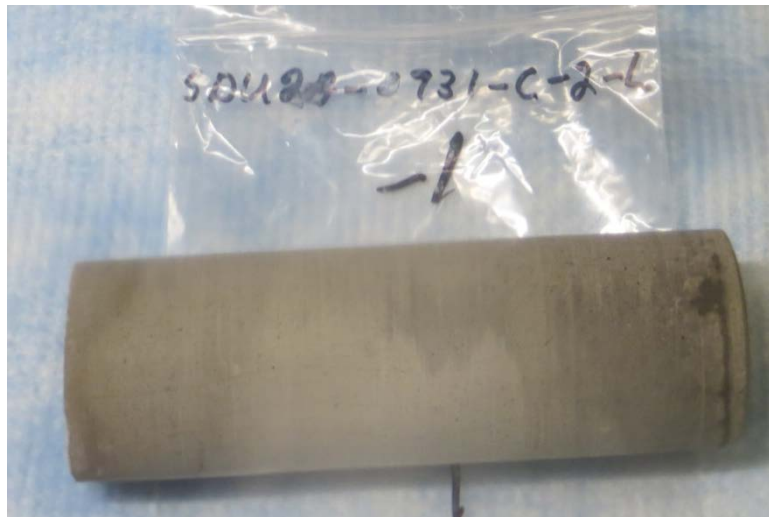


Figure 112 SDU2A-0931-C-2-L-1 side

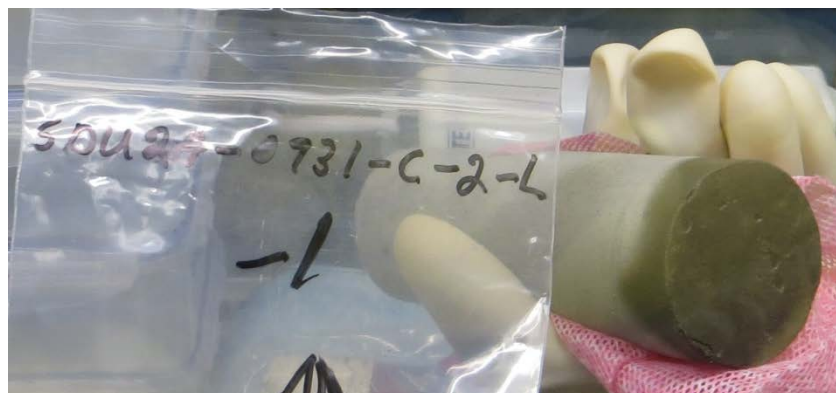


Figure 113 SDU2A-0931-C-2-L-1 bottom

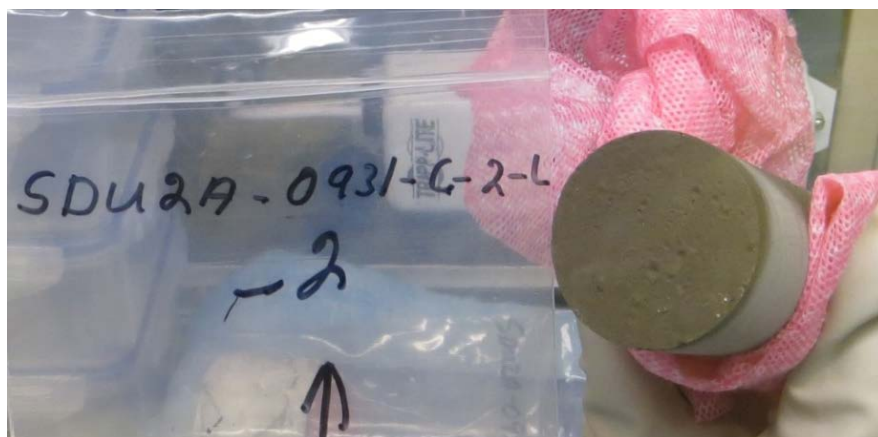


Figure 114 SDU2A-0931-C-2-L-2 top

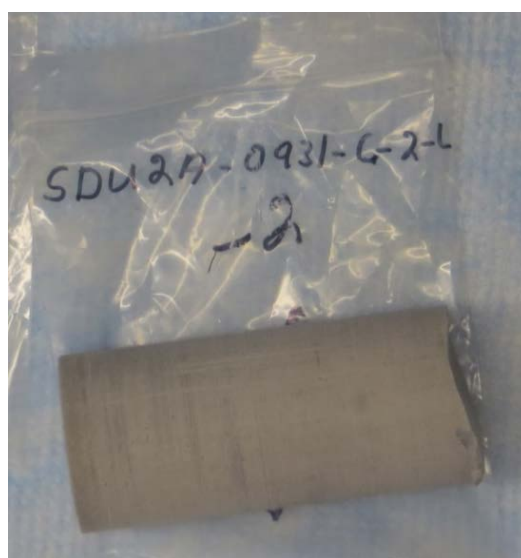


Figure 115 SDU2A-0931-C-2-L-2 side

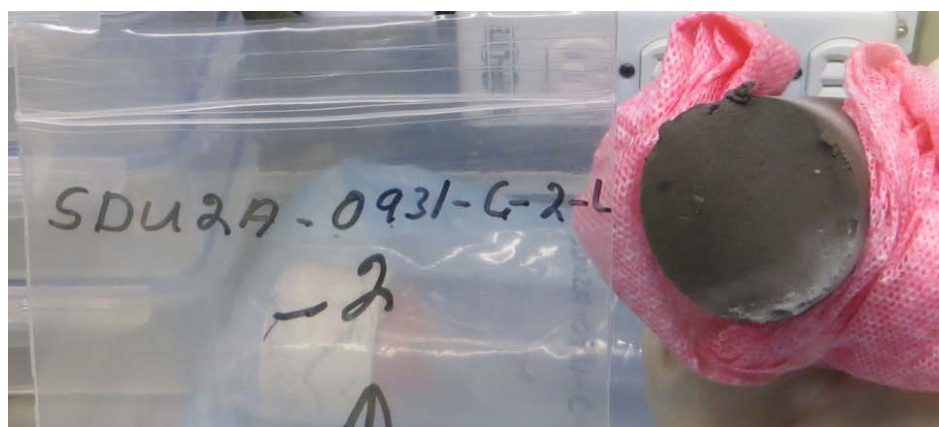


Figure 116 SDU2A-0931-C-2-L-2 bottom

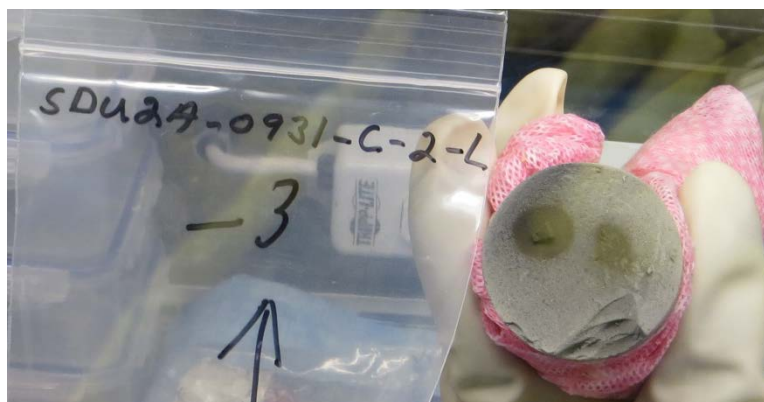


Figure 117 SDU2A-0931-C-2-L-3 top

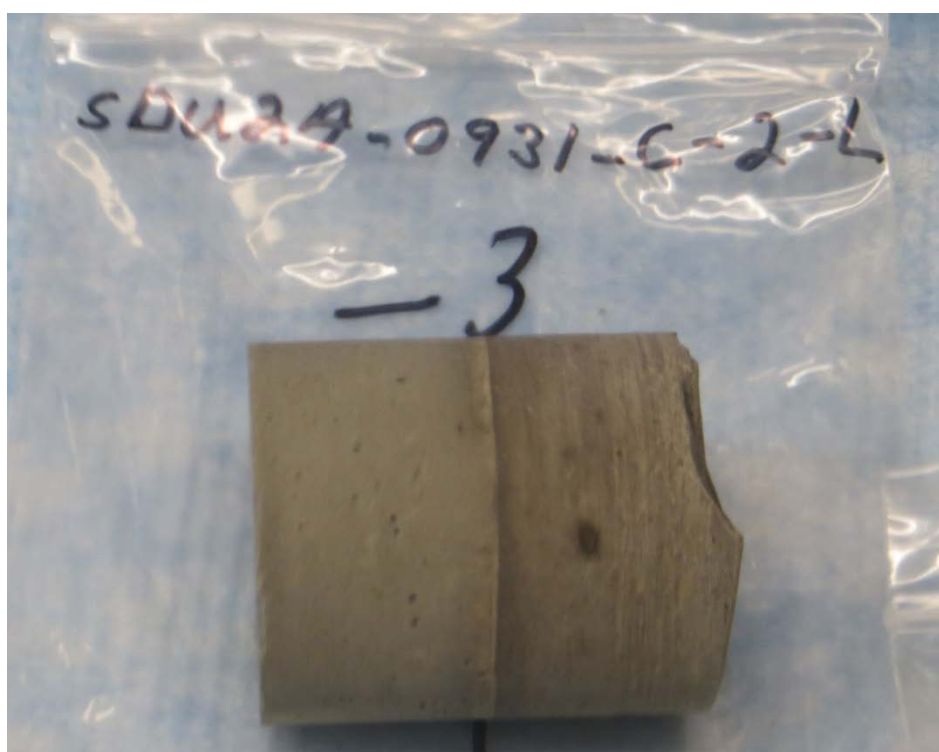


Figure 118 SDU2A-0931-C-2-L-3 side

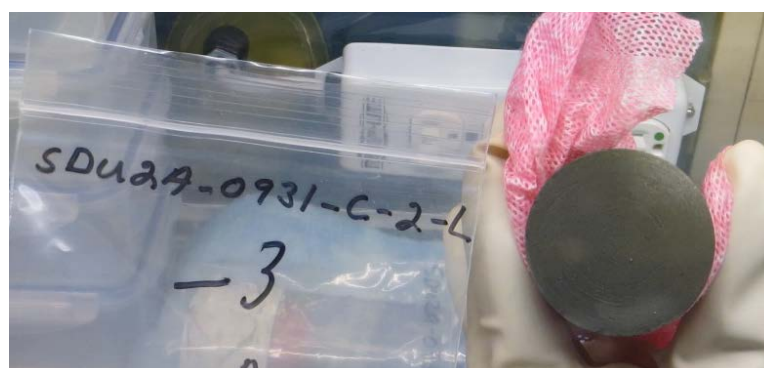


Figure 119 SDU2A-0931-C-2-L-3 bottom

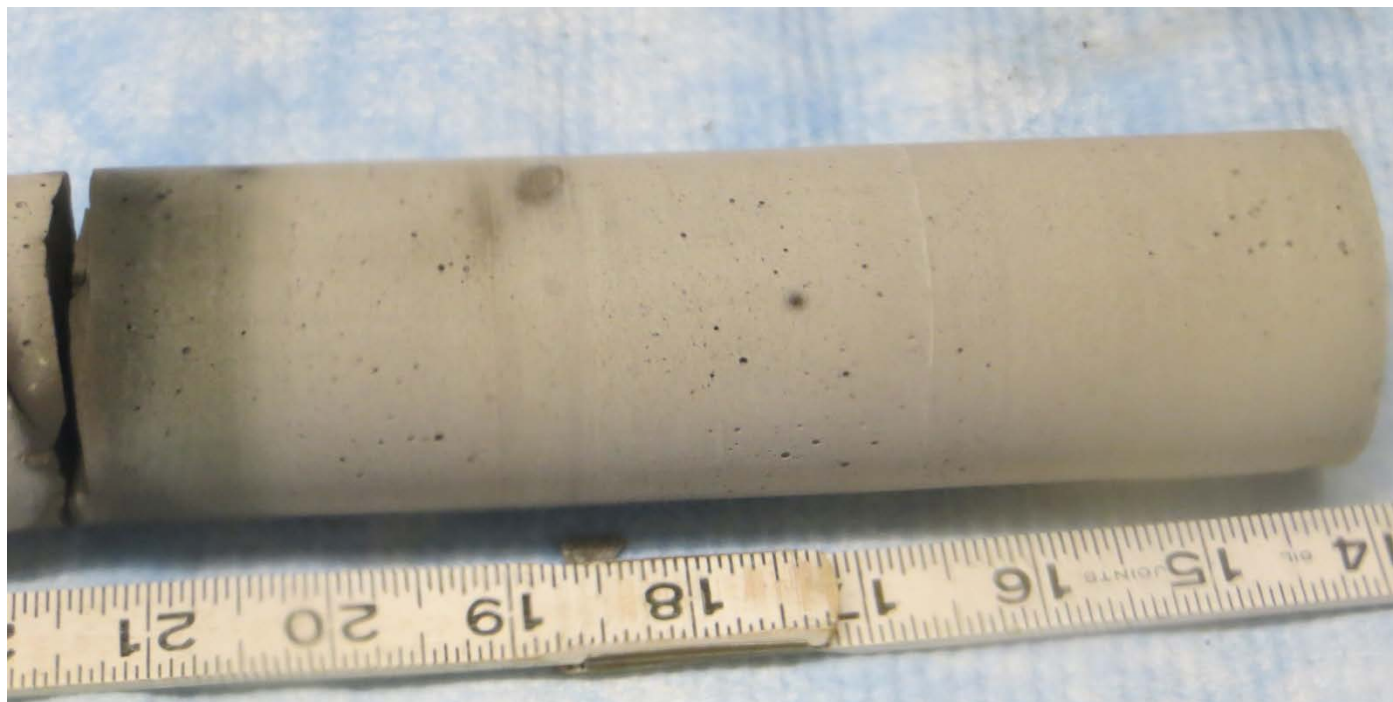


Figure 120 SDU2A-0931-C-2-L-4 and -5 before break

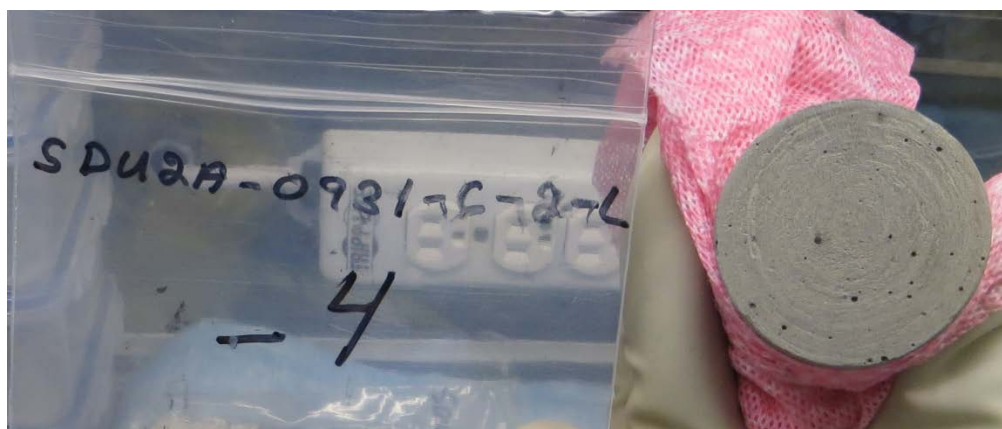


Figure 121 SDU2A-0931-C-2-L-4 top

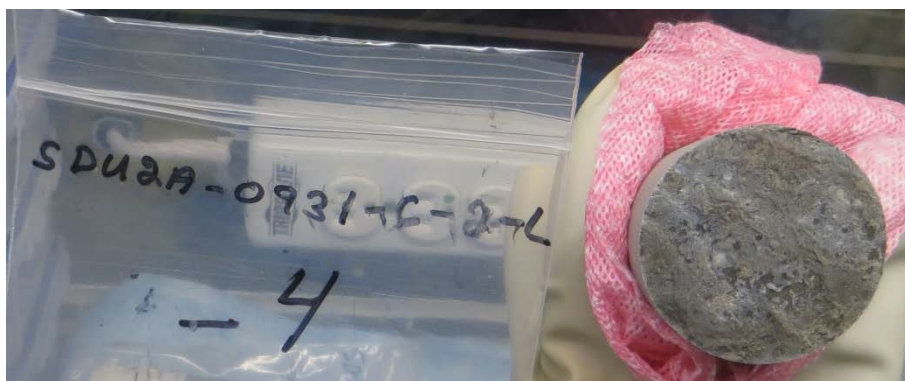


Figure 122 SDU2A-0931-C-2-L-4 bottom

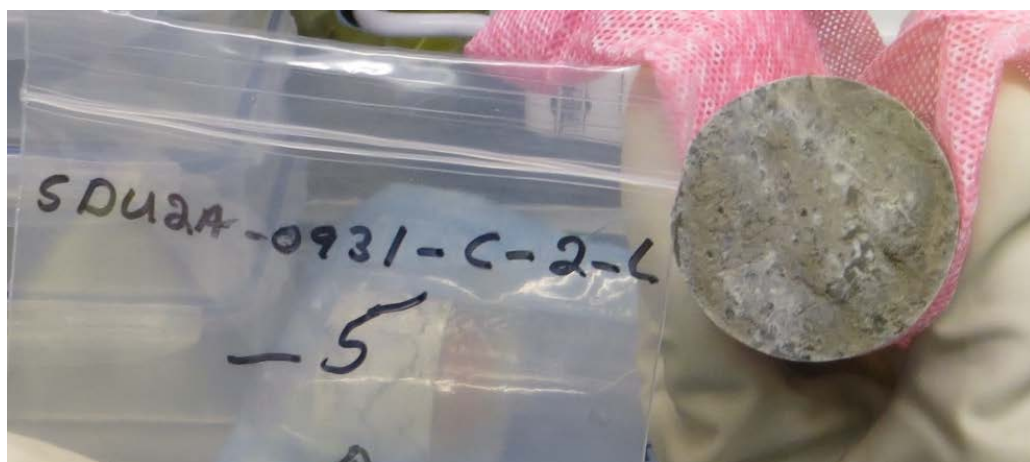


Figure 123 SDU2A-0931-C-2-L-5 top

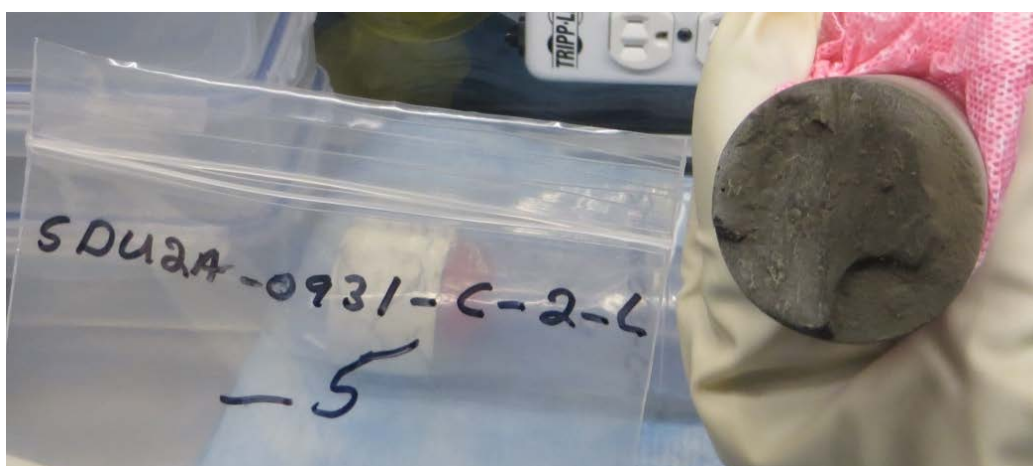


Figure 124 SDU2A-0931-C-2-L-5 bottom

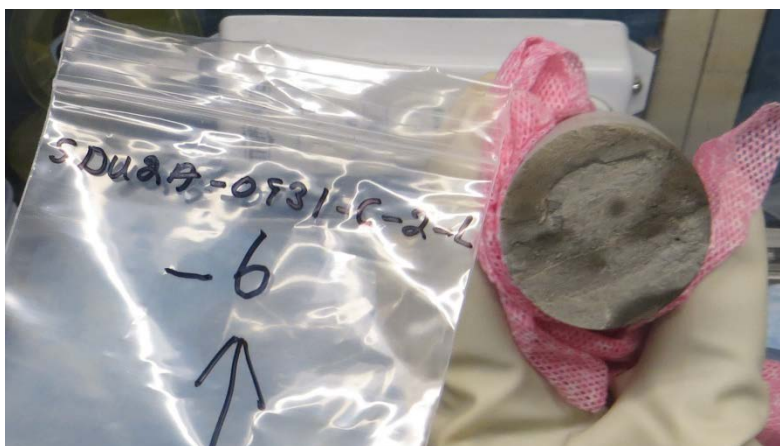


Figure 125 SDU2A-0931-C-2-L-6 top

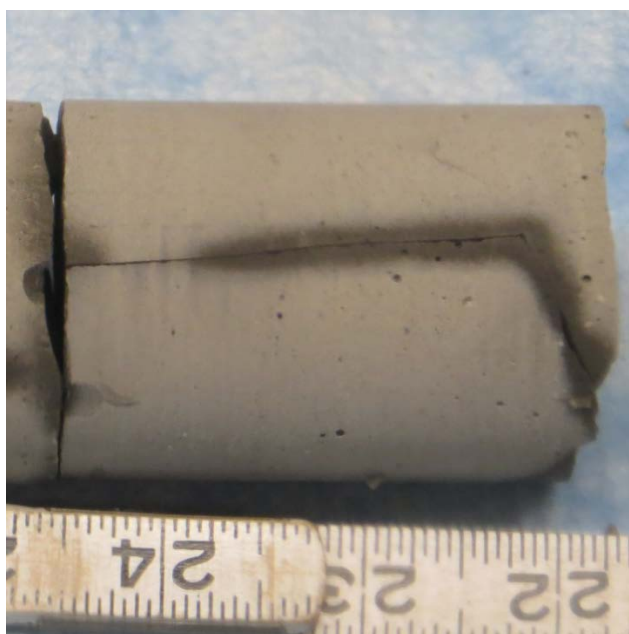


Figure 126 SDU2A-0931-C-2-L-6 side

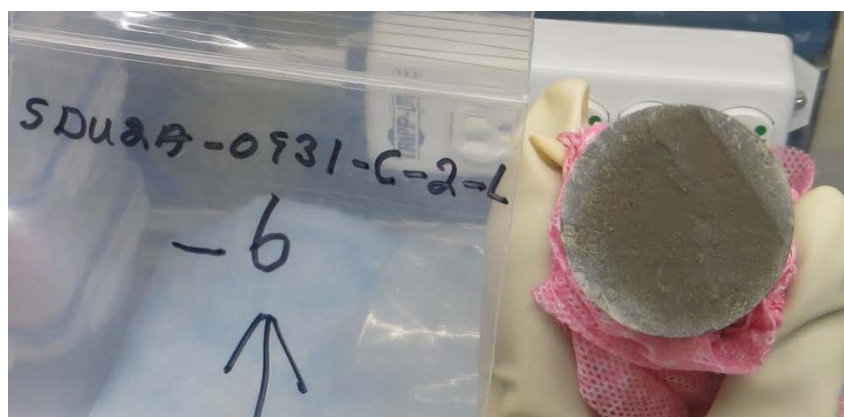


Figure 127 SDU2A-0931-C-2-L-6 bottom

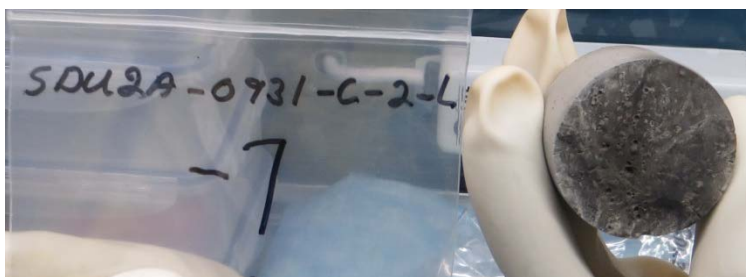


Figure 128 SDU2A-0931-C-2-L-7 top

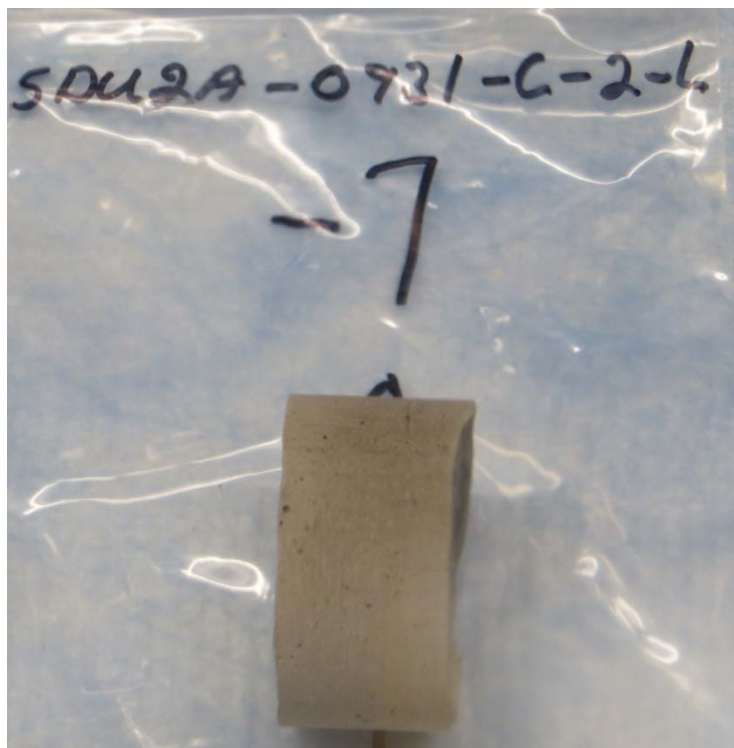


Figure 129 SDU2A-0931-C-2-L-7 side

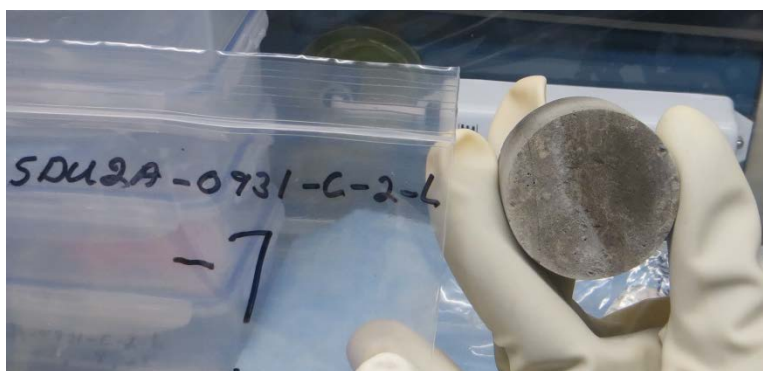


Figure 130 SDU2A-0931-C-2-L-7 bottom

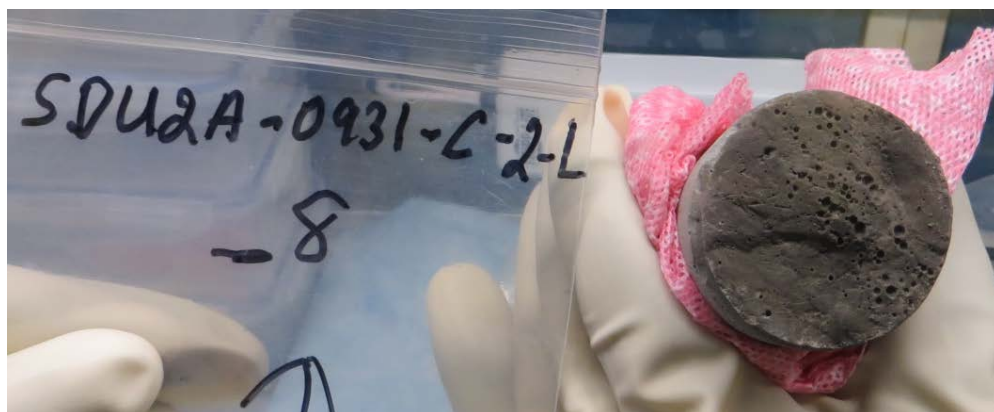


Figure 131 SDU2A-0931-C-2-L-8 top

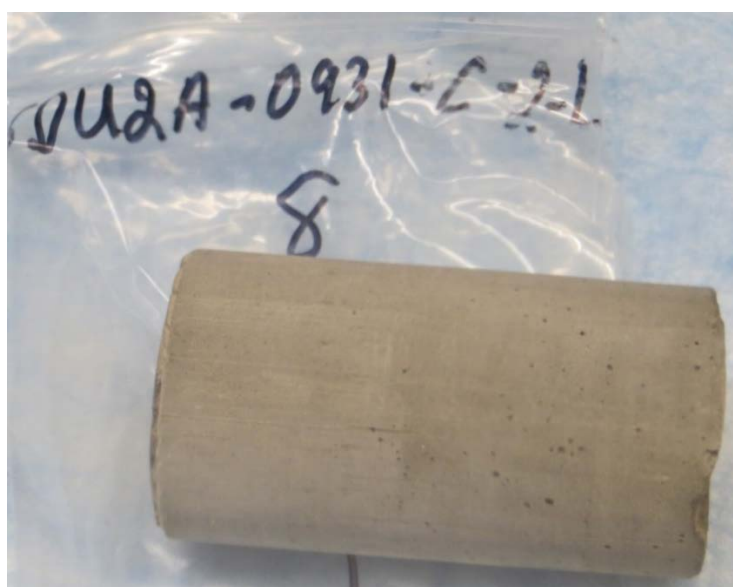


Figure 132 SDU2A-0931-C-2-L-8 side

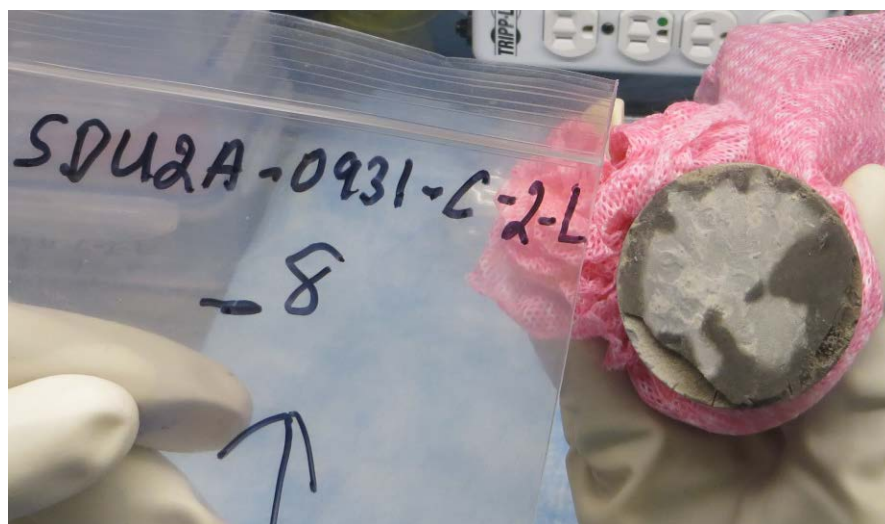


Figure 133 SDU2A-0931-C-2-L-8 bottom



Figure 134 SDU2A-0931-C-2-U

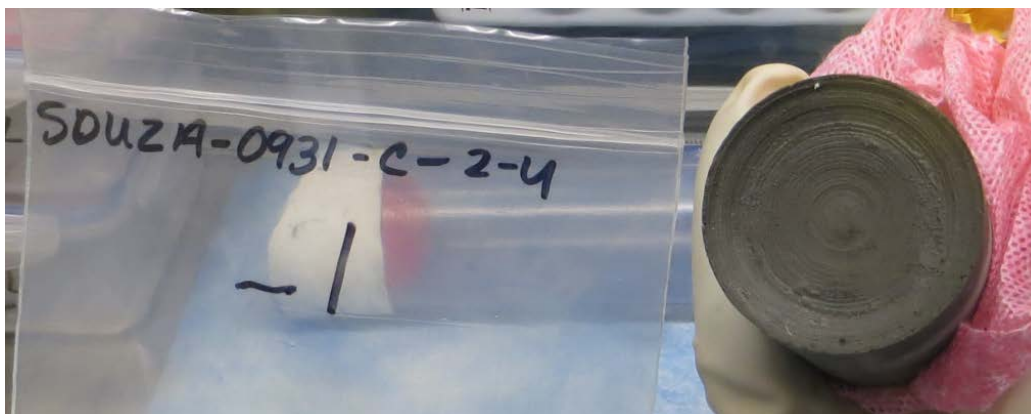


Figure 135 SDUZA-0931-C-2-U-1 top

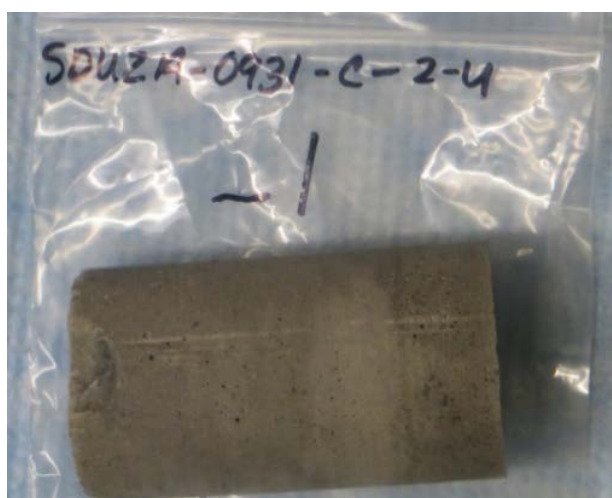


Figure 136 SDUZA-0931-C-2-U-1 side

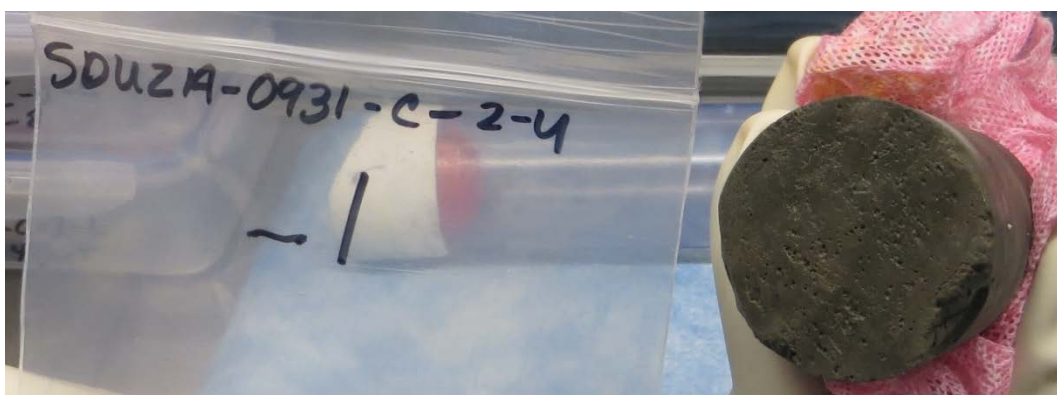


Figure 137 SDUZA-0931-C-2-U-1 bottom

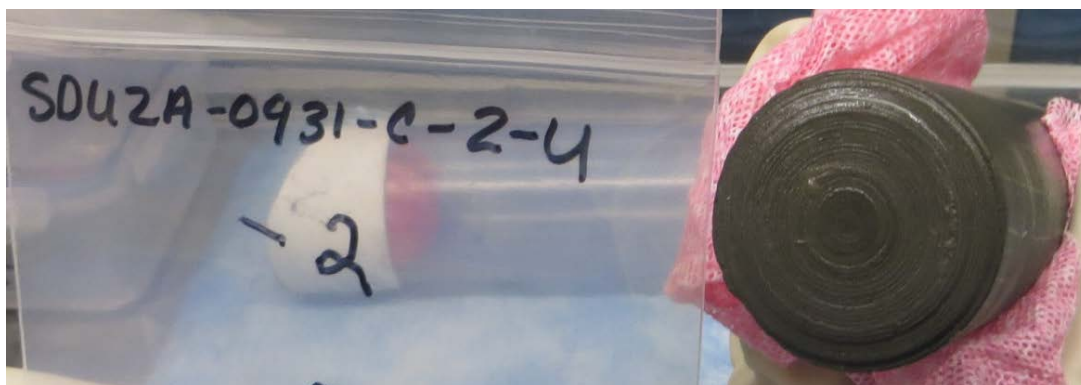


Figure 138 SDU2A-0931-C-2-U-2 top

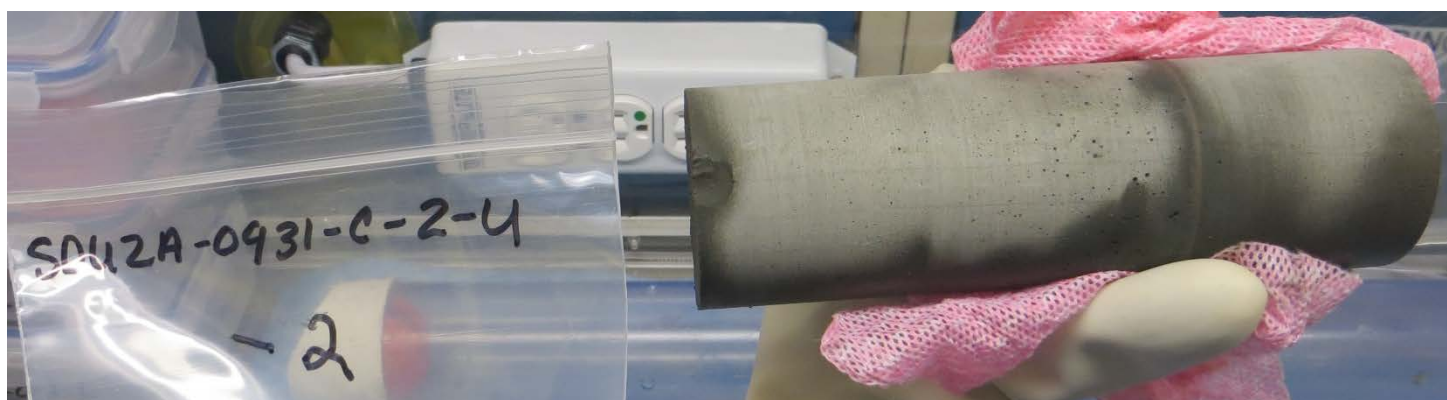


Figure 139 SDU2A-0931-C-2-U-2 side

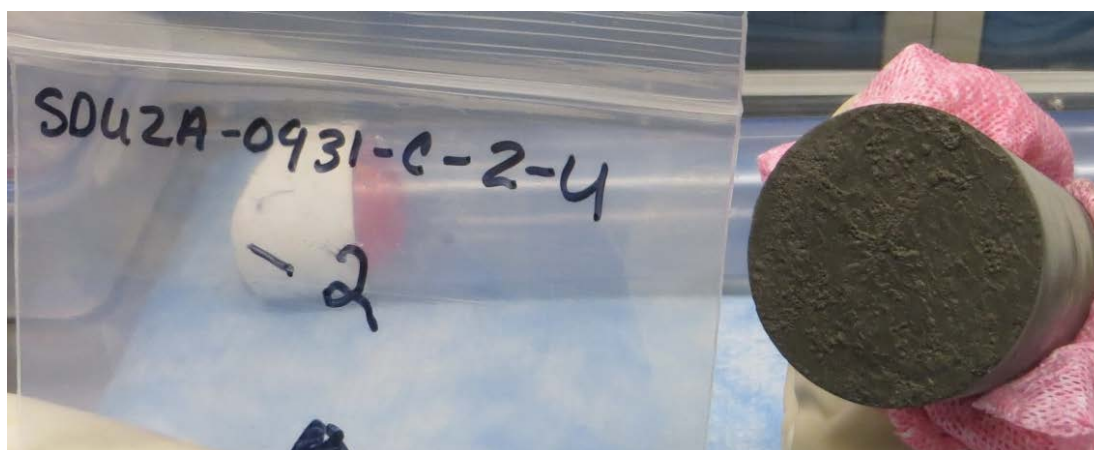


Figure 140 SDU2A-0931-C-2-U-2 bottom

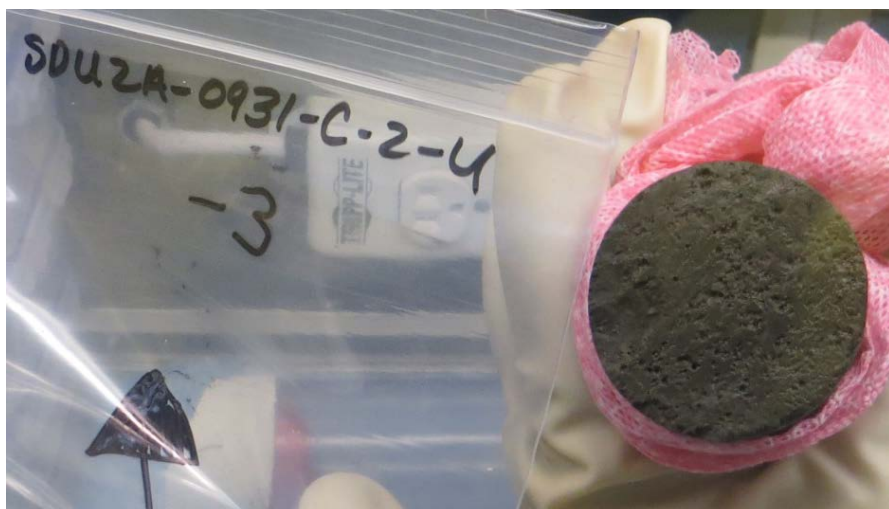


Figure 141 SDU2A-0931-C-2-U-3 top

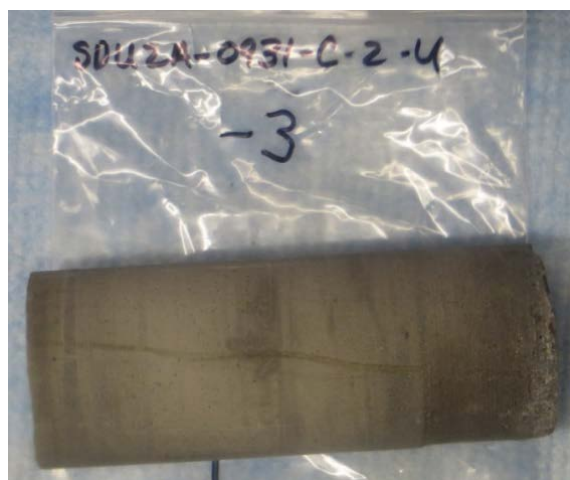


Figure 142 SDU2A-0931-C-2-U-3 side

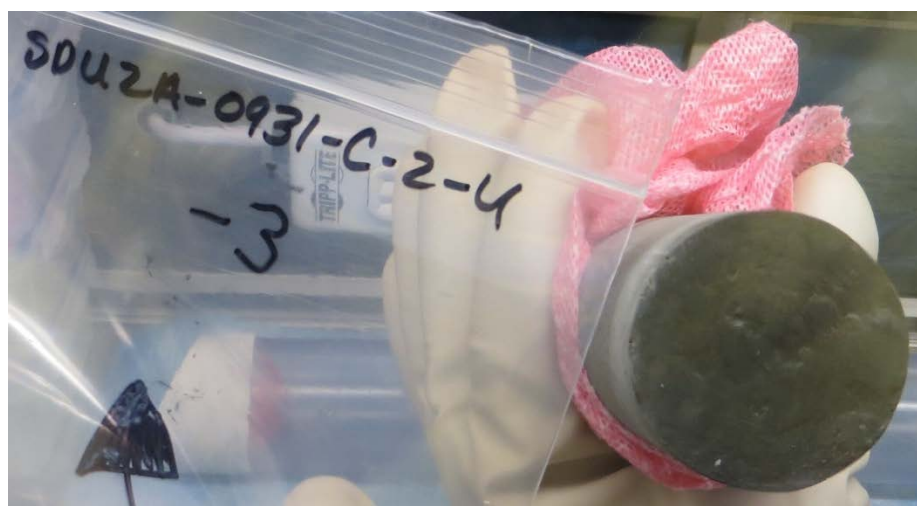


Figure 143 SDU2A-0931-C-2-U-3 bottom

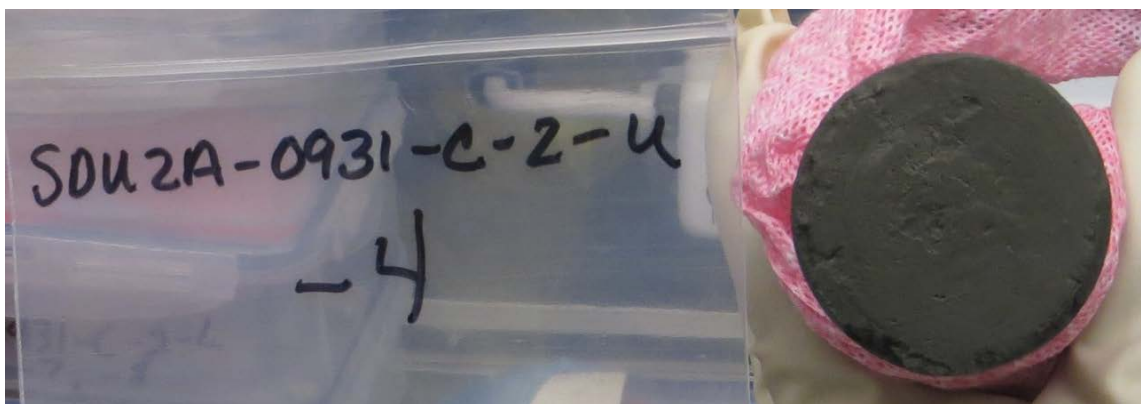


Figure 144 SDU2A-0931-C-2-U-4 top

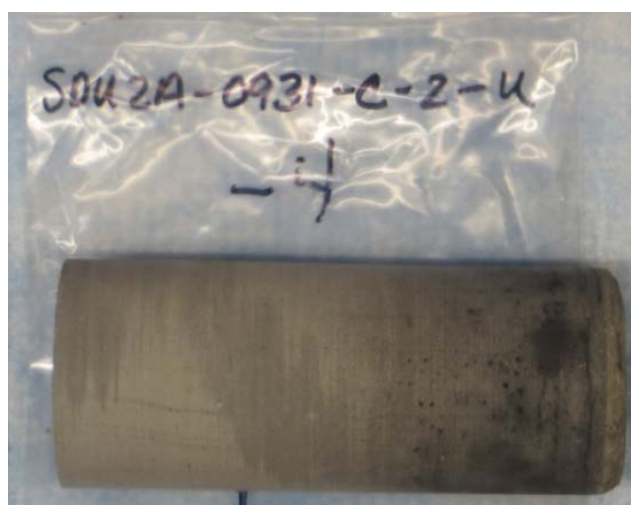


Figure 145 SDU2A-0931-C-2-U-4 side

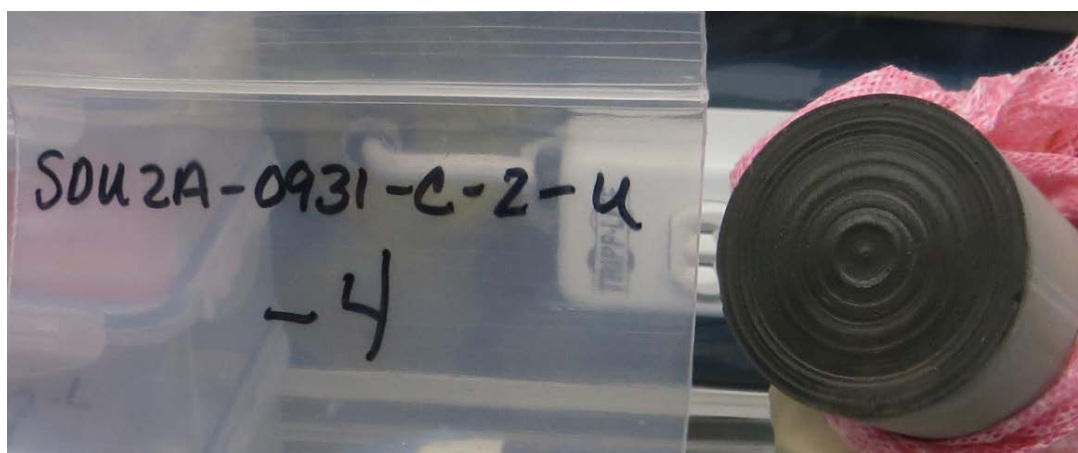


Figure 146 SDU2A-0931-C-2-U-4 bottom

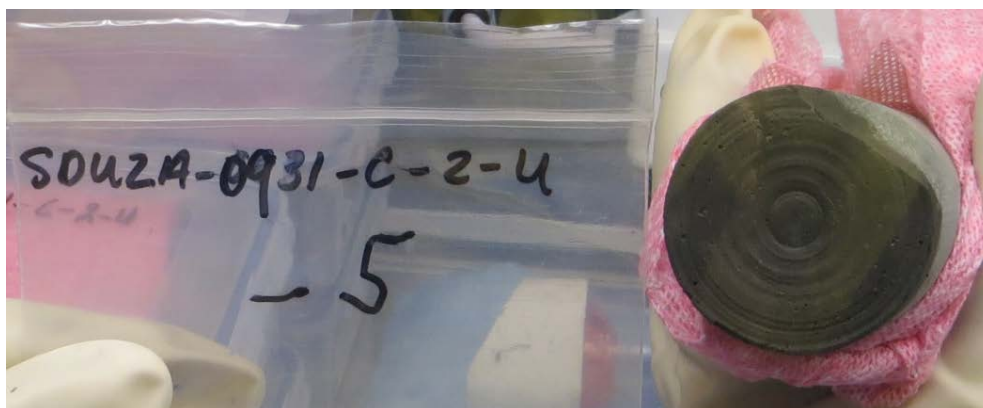


Figure 147 SDU2A-0931-C-2-U-5 top

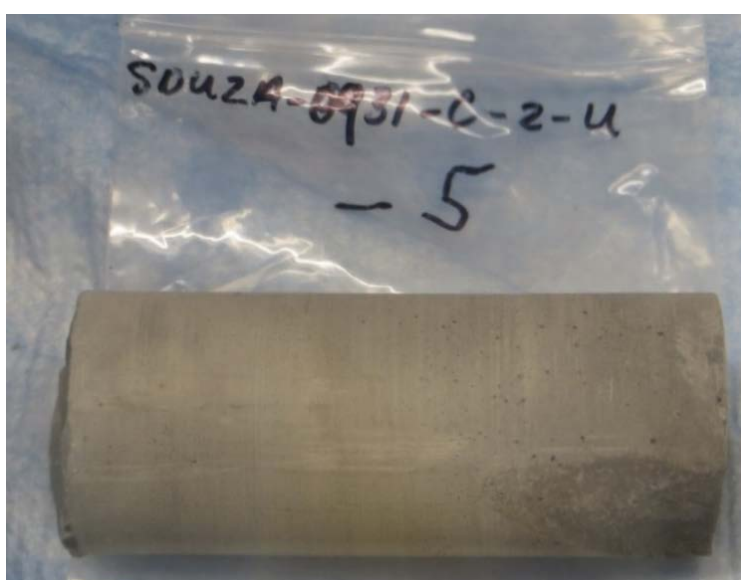


Figure 148 SDU2A-0931-C-2-U-5 side

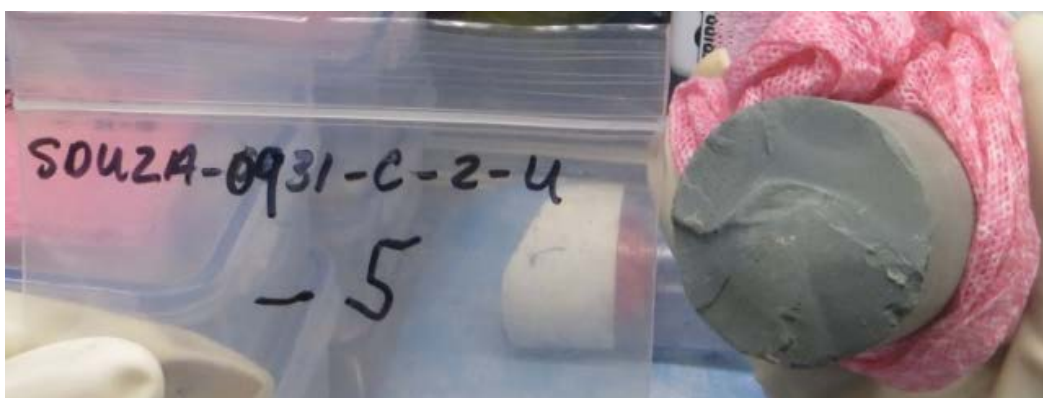


Figure 149 SDU2A-0931-C-2-U-5 bottom