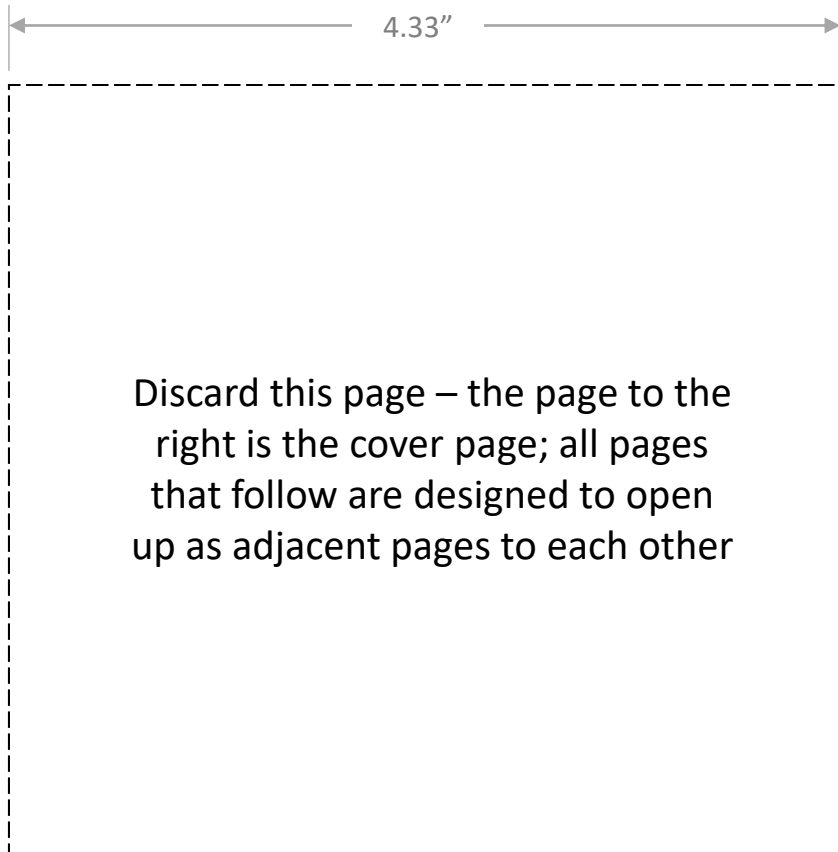




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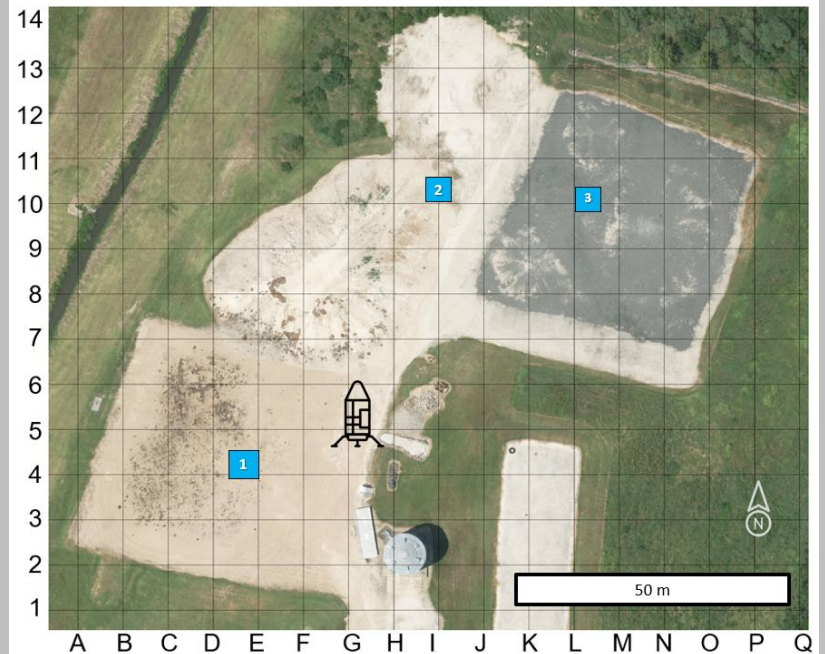
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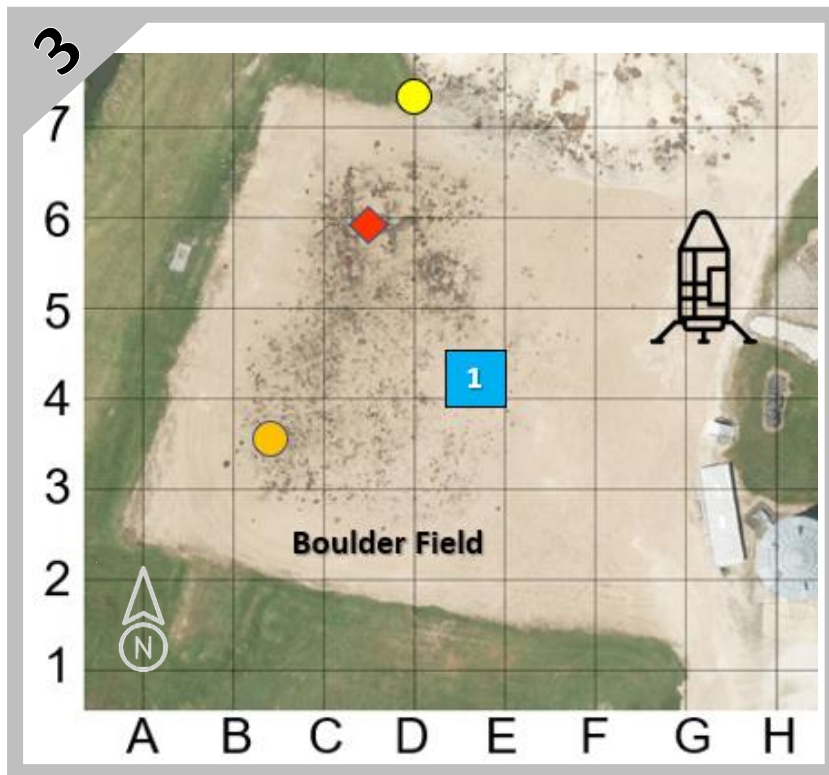
Legend

- # Station Identifier
- ◇ Sample Location: ✓ **MCC**
Place sample markers, consult MCC for sample location.
- Sample Location: Crew Preference

Overview Map



2



Station 1 (Boulder Field)

(EV1) Site description, Panoramic photos

(EV2) Describe, photo contact between light and dark material

(EV1) **Dark, blocky material**

- Describe, photo
- Photograph, stereo pair: boulder field
- Chip of blocky material

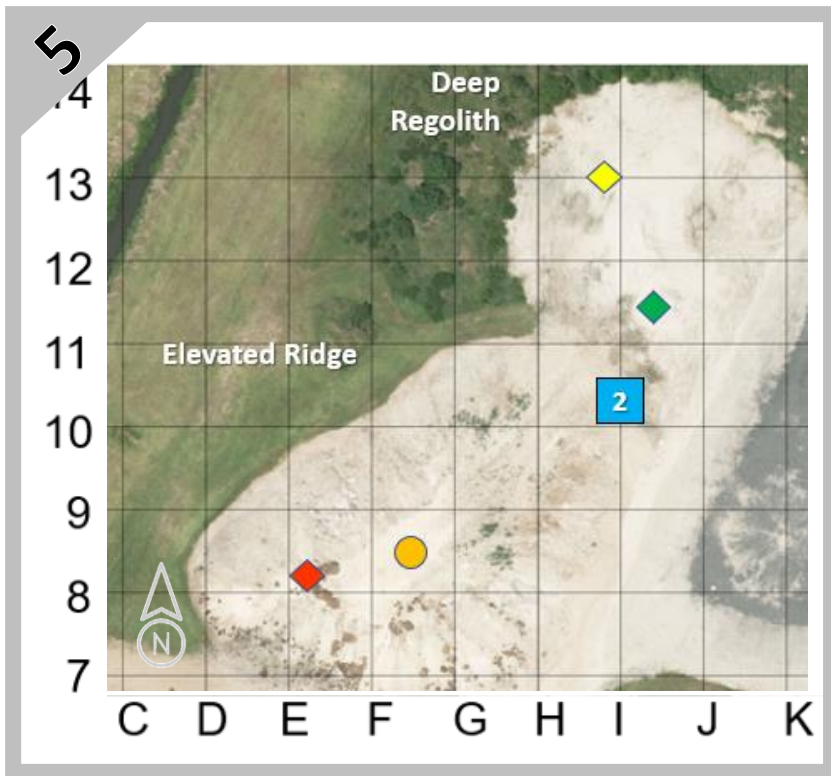
(EV2) **Light albedo material**

- Describe, assess deposition history
- Photograph, stereo pair: clast survey

• Rake or Scoop sample

Slope/Boulder Field Contact

- Describe, photo contact b/w elevated ridge & Boulder Field
- Describe, photo erosional features on slope



6

Station 2 (Elevated Ridge)

(EV1) Site description, pano

(EV2) Blocky Unit

- Characterize possible contact: dark & bright materials
- Describe, photo stratigraphic relationships
- Chip sample: Dark, blocky unit at contact

(EV1) Slope

- Describe & photograph erosional features on slope

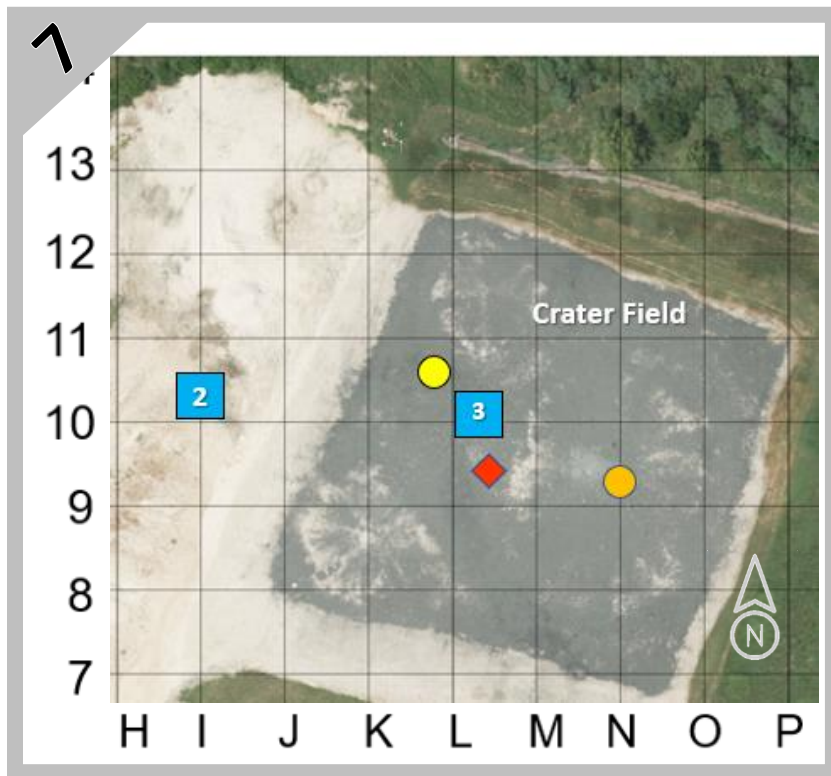
- Scoop sample, bright material

(EV2) Light Albedo Unit

- Describe, photo
- Trench with 2 sealed scoop samples:
high albedo unit next to trench, bottom of trench

(Both) Regolith Contact

- Describe, photo contact b/w light, dark regolith
- Single drive tube, at contact



Station 3 (Crater Field)

8

(EV1) Site description & pano

(EV2) Crater Rim

- Describe & photo rim, ejecta
 - size distribution
 - composition/color
 - impact texture

- ◆ • Rake, rim material

(EV1) Crater Floor

- Describe & photograph crater floor
- Describe linear features in rim incl. size & compositional dif. b/w light/dark material

- • Rake, crater floor material

(EV2) Ejecta

- Observe, photograph ejecta
- • Rake or scoop, crater rim variations

9

Tool Inventory

EV (Both Crew)

- L Swingarm
 - Sample Bag Dispenser
 - Sample Bags (10)
 - Sample Collection Pack
 - Sample Marker Holder
 - Sample Markers (3)
- R Swingarm
 - EVA Camera
- Holsters
 - Geology Hammer
 - Chisel

Tool Cart

- Portable Light (1)
- Tongs (1)
- Scoop (1)
- Contact Sampler (2)
- Extension Handle (1)
- PSC – Bulk (2)
- PSC – Drive Tube (1)
- Drive Tube Easel
 - U-DT
 - L-DT
 - Cap Dispenser
 - Ramrod
 - Extension Handle (1)
- Sample Markers (2)
- Transport Pack (1)
 - Liner (1)
- Map Book

Single Drive Tube Sampling & Containment

10

1. Open lid on L-PSC
2. Remove *launch spacer*, dispose
3. Attach Extension Handle to L-DT
4. Extract, remove *launch cap*, dispose
5. Collect Drive Tube sample
6. Install Cap onto the L-DT
7. Remove Pin from L-DT, dispose
8. Insert L-DT into L-PSC - **Report** DT/PSC #s
9. Disconnect Extension Handle, stow
10. Push Rod into L-DT, stow Rod
11. Remove Plug from L-DT, dispose
12. Remove dust covers from PSC (sim)
13. Fully tighten PSC Lid (sim)

11

Double Drive Tube Sampling

1. Open lid on L-PSC
2. Remove *launch spacer*, dispose
3. Remove *pin*, dispose
4. Unscrew L-DT Plug and retain for future
5. Open lid on U-PSC
6. Remove *launch spacer*, dispose
7. Attach Extension Handle to U-DT
8. Extract, remove *launch cap*, dispose
9. Thread U-DT onto L-DT, extract
10. Remove *launch cap* and dispose
11. Collect Double Drive Tube sample

12

Double Drive Tube Containment

12. Install Cap onto L-DT
13. Insert L-DT into L-PSC - **Report** DT/PSC #s
14. Unthread U-DT from L-DT
15. Install Cap onto U-DT
16. Insert U-DT into U-PSC - **Report** DT/PSC #s
17. Remove Pin from U-DT, dispose
18. Disconnect Extension Handle, stow
19. Reinstall L-DT Plug onto L-DT,
20. Push Rod into U-DT and L-DT, stow Rod
21. Remove Plugs from both DT, dispose
22. Remove dust covers, reinstall Lid (sim)
23. Fully tighten Lids (sim)

13

Sampling Cue Cards

1. Arrive at Station

2. Site overview

- Broad observation of key terrain
- Describe broad key features
- Perform panoramic imagery
- Discuss Sampling Plan

3. Complete Presampling

- Identify sampling target
- Place sample marker and report marker # to IV
- Provide description of sampling candidate
- Image/video document – confirm w/ IV that sample and marker are in view

4. Sampling – Collect samples per MCC-H direction

5. Perform post-sample photography w/ Sample Marker

6. Return to cart after sampling is complete; remove samples from Waist Pack; stow in TCP

7. Verify tools, samples, and sample markers stowed

8. Traverse to next Station

1 & 2. Overview

3. Presampling

4. Sample

5. Post Sample

6, 7 & 8. Clean Up

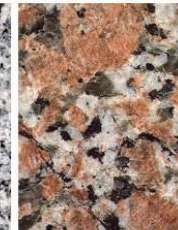
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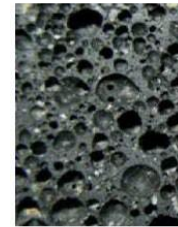
FINE GRAINED



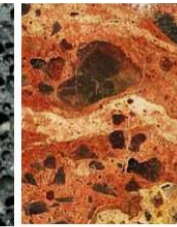
MEDIUM GRAINED



COARSE GRAINED



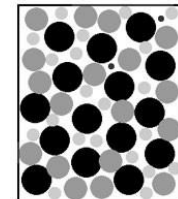
VESICULAR



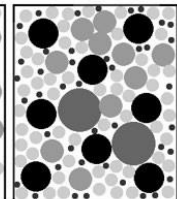
BRECCIA



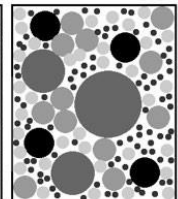
VEINS / FRACTURES



WELL SORTING



MODERATE SORTING



POOR SORTING

15

Sampling Cue Card - ROCKS

1 SIZE / SHAPE

General Size or Shape
(ex: small chip, fist sized, potato shaped) **AND OR** **Approximate Size**
Length x Width x Height

2 COLOR / TONE

General Color or Tone
(ex: grey, red, black, light-toned) **MAYBE** **Other Color Descriptors**
(ex: banded, streaked, flat, shiny)

3 TEXTURE

Grain Size
(ex: fine, medium, or coarse) **MAYBE** **Other Texture Descriptors**
(ex: vesicular, glassy, metallic)

4 MAJOR COMPONENTS

Mineral Description(s)
Size (provide size if possible)
Shape (ex: elongated, square)
Color (ex: white, black, green)
Approximate % (estimated %)

AND OR

Clast Description(s)
Size (provide size if possible)
Shape (ex: rounded to angular)
Color (ex: white, black, green)
Sorting (ex: well to poorly)

5 OTHER CHARACTERISTIC FEATURES

MAYBE **Durability**
(hard to break, crumbles) **MAYBE** **Density** **MAYBE** **Surface features**
(ex: weathering rind, impacts)

6 INITIAL GEOLOGIC INTERPRETATION (OPTIONAL)

16

Sampling Cue Card - REGOLITH

1 COLOR / TONE

General Color or Tone
(ex: grey, red, black, light-toned) **MAYBE** **Other Color Descriptors**
(ex: banded, streaked, flat, shiny)

2 PARTICLE SIZE

Grain Size
(ex: fine, medium, or coarse;
clay, silt, sand, or gravel) **MAYBE** **Other Texture Descriptors**
(ex: sorting)

3 MAJOR COMPONENTS

Mineral Description(s)
Size (provide size if possible)
Shape (ex: elongated, square)
Color (ex: white, black, green)

AND OR

Particle Description(s)
Size (provide size if possible)
Shape (ex: rounded to angular)
Color (ex: white, black, green)

4 OTHER CHARACTERISTIC FEATURES

MAYBE **Cohesion** **MAYBE** **Compaction** **MAYBE** **Particle Levitation**

5 INITIAL GEOLOGIC INTERPRETATION (OPTIONAL)

