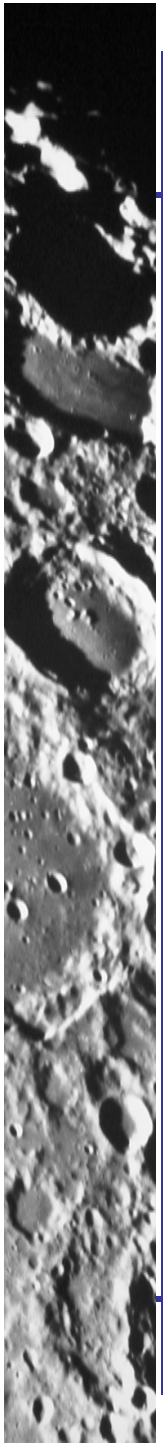
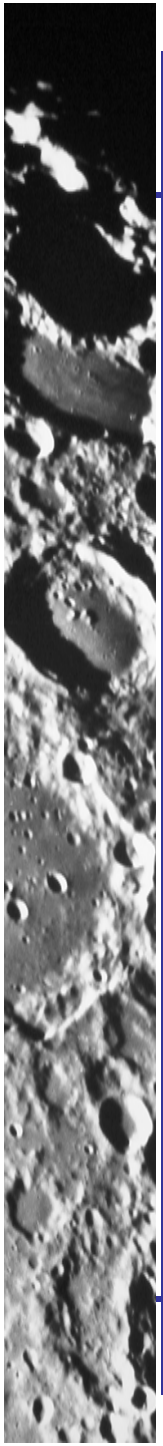


BPLF Lunar Analogue Field Test 2009

Briefing Topic:

LER 14-Day Traverse (Crew A)
Day 5

4 September 2009



Mission Science Objectives

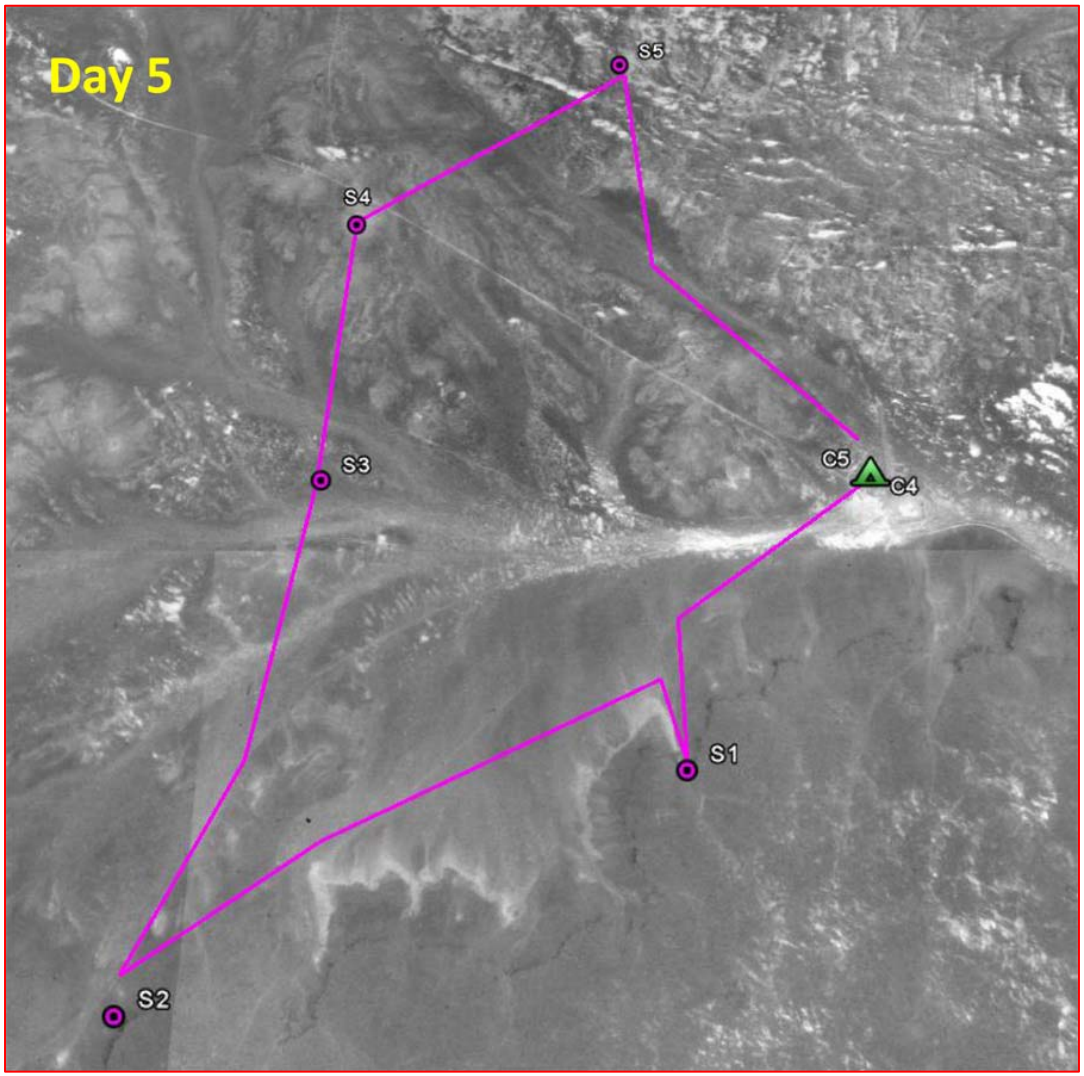
Top-level objectives

- Determine the origin (nature) and relative ages of geologic units to determine the geologic history of the site
- Locate and collect suitable samples that will further elucidate these issues when analyzed in a terrestrial laboratory

Specific test site objectives

- Characterize the Black Point Lava Flow (age, morphology, flow structure, petrology, chemistry, and any spatial or temporal variations)
- Determine the relationship of BPLF with other volcanic features in the area
- Characterize other geologic units in the area
- Characterize the structural evolution of the area

Traverse Science Objectives



Primary objective:

Characterize the lava flow and obtain good samples for age dating

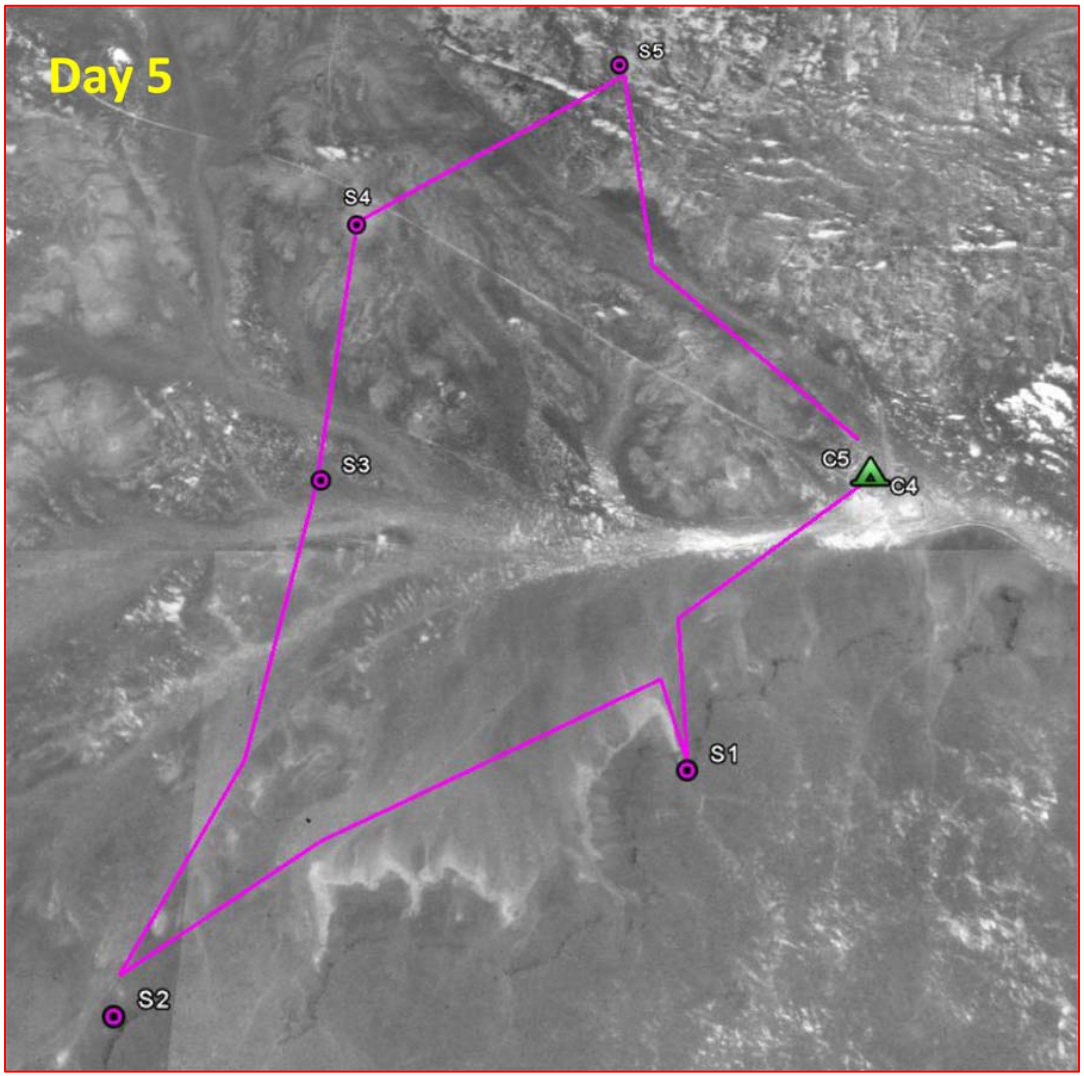
Stations 1(modified) & 2

Secondary objective:

Characterize and sample the layered terrain

Today's activities will focus on this objective; Stations 3, 4, and 5.

Traverse Science Objectives



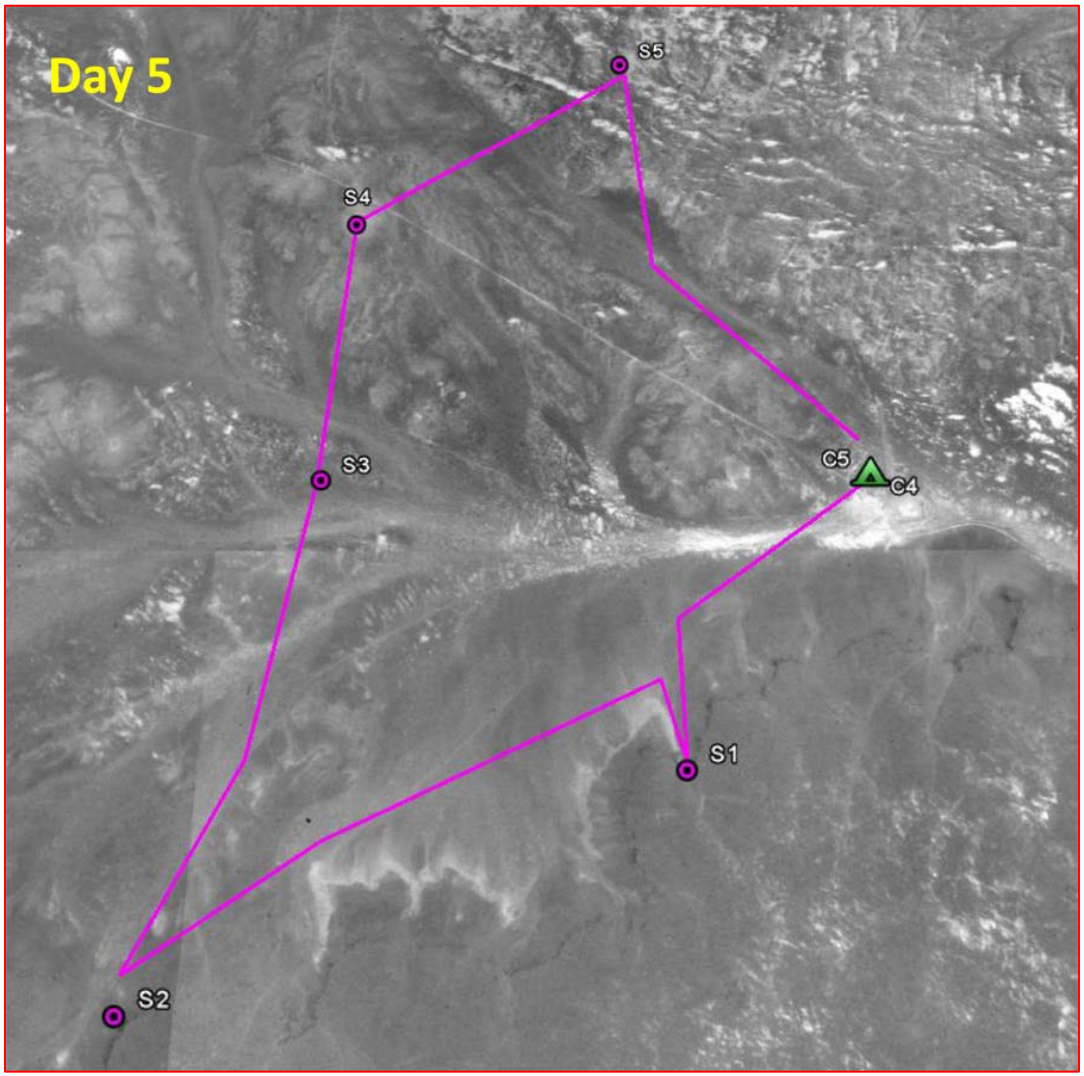
Method:

1) Confirm photogeologic assessment

2) ***But*** focus on those details that can only be deciphered by crew on the surface

* We want to learn new things.

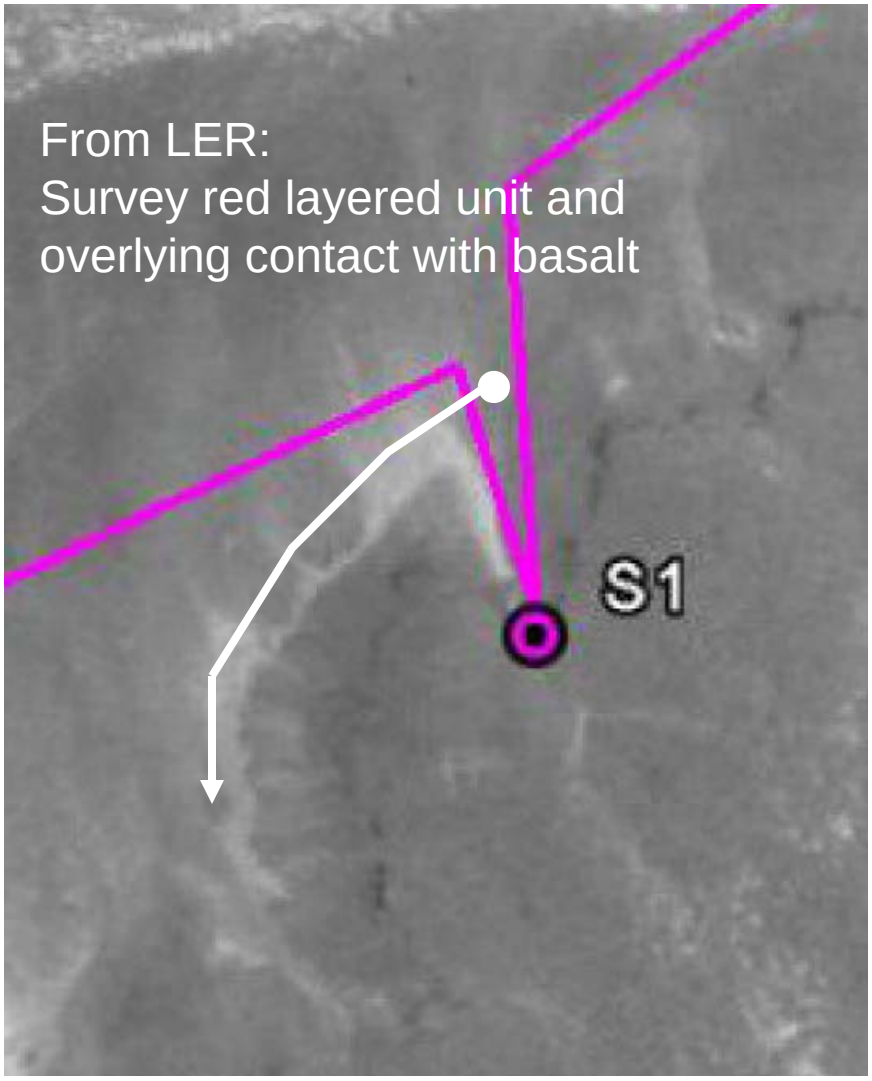
Traverse Science Objectives



Geologic context should be given from within the LER;

During EVA, concentrate on sample collection and descriptions of outcrop details

Station 1 (modified)



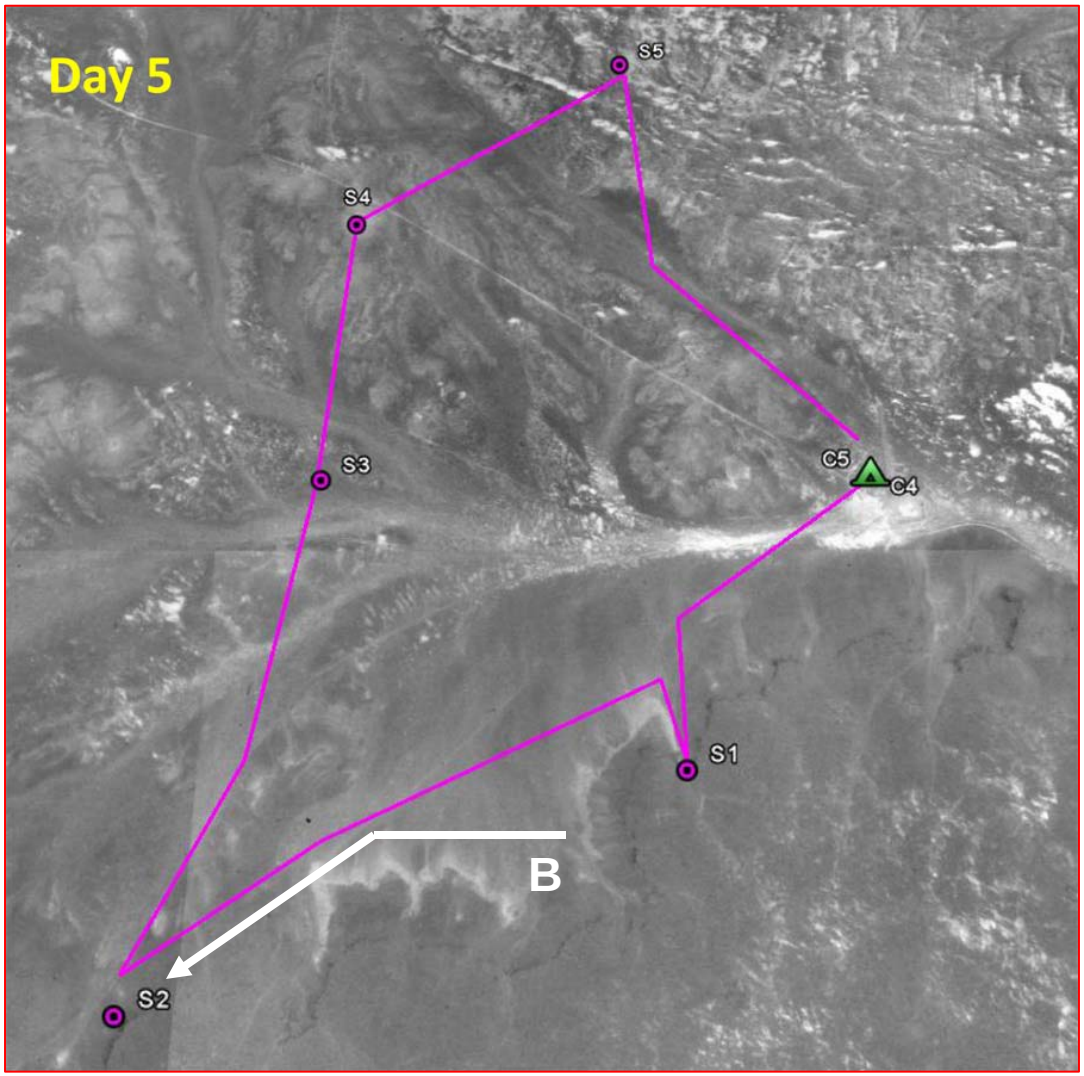
Station 1:

Planned sampling occurred yesterday as part of a modified Station 6.

Thus, today, survey edge of lava flow, underlying red layered unit, and the contact between the two units. Photodocument those units and contacts.

No EVA, unless crew identifies rock that will significantly augment yesterdays' Station 6.

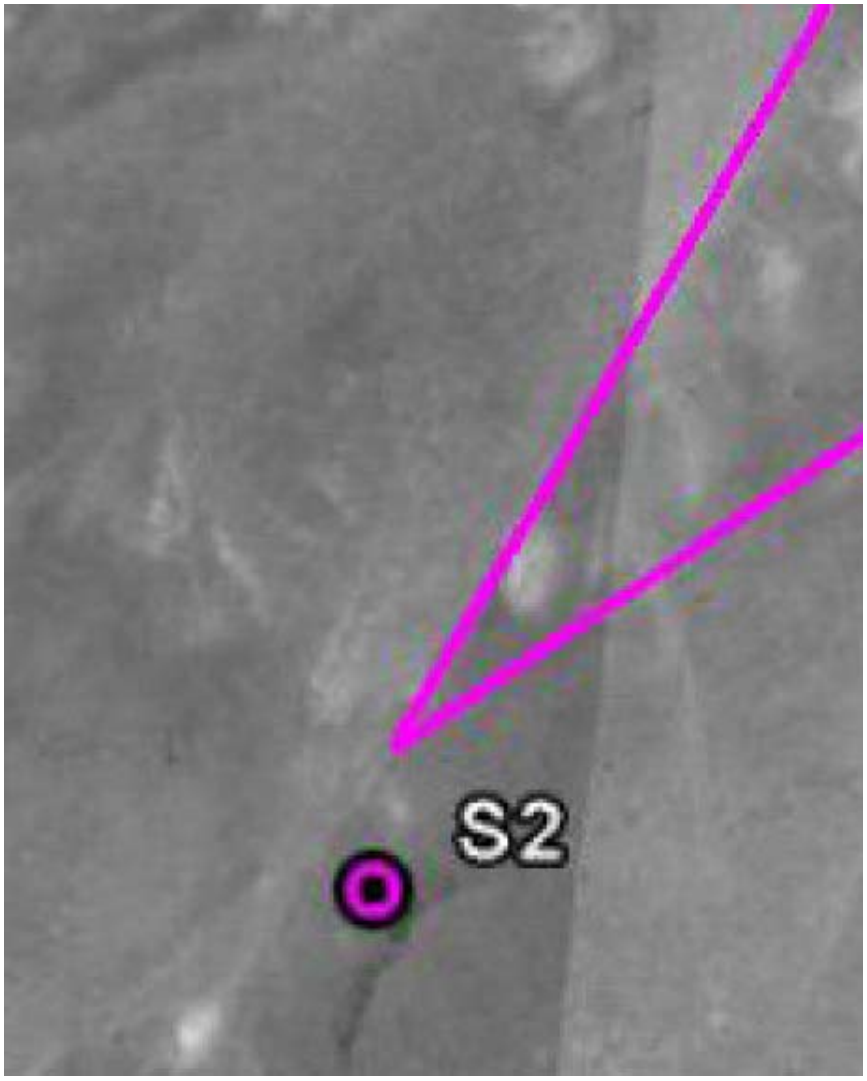
Drive B to Station 2



Drive B:

Drive along northern edge of lava flow.

Station 2

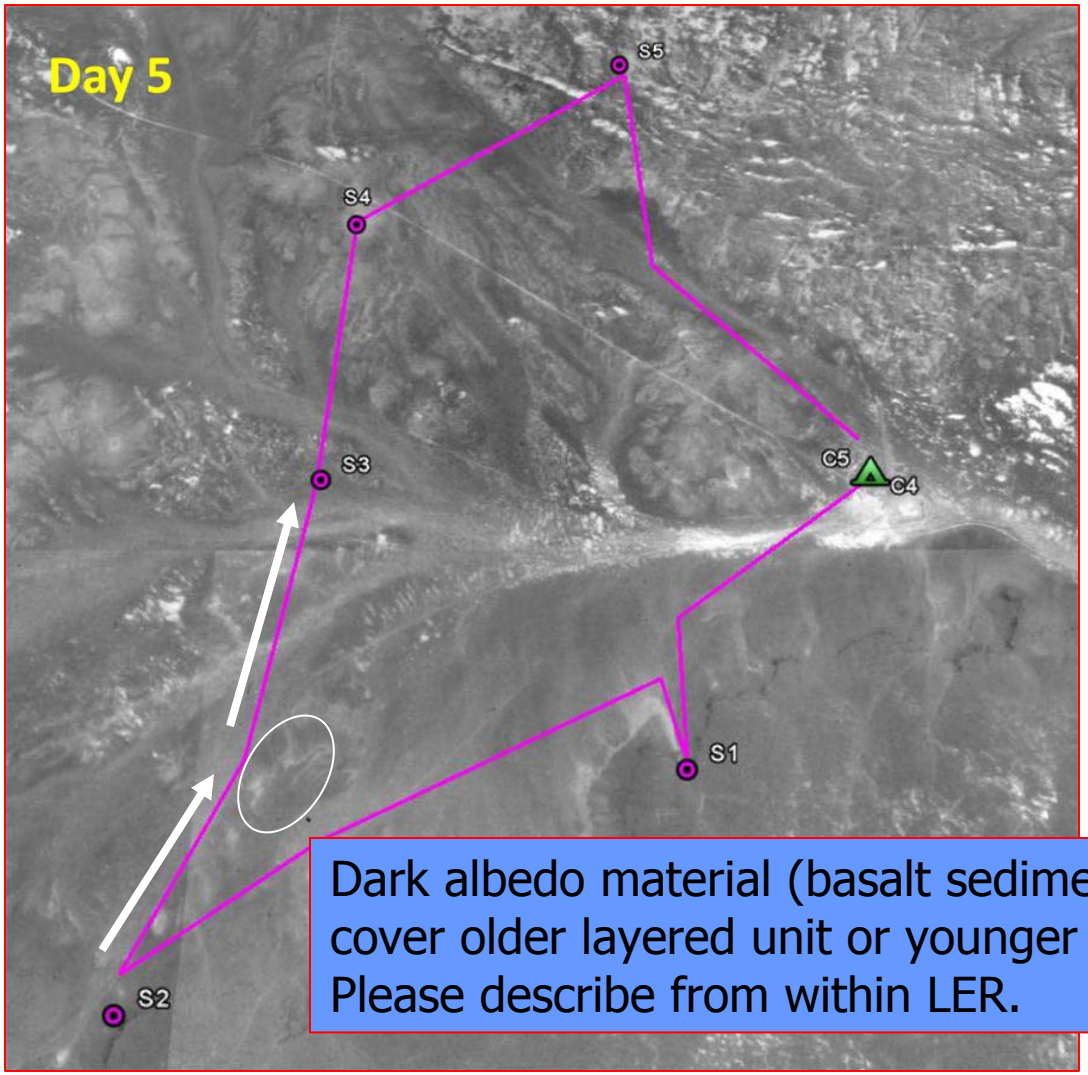


Station 2:

There is a photogeologic hint of a knob of rock with both lava and layered rocks with variable albedo; this station may be a good cross-section through layered units beneath lava flow and the contact zone.

Describe and sample the exposed units.

Drive C



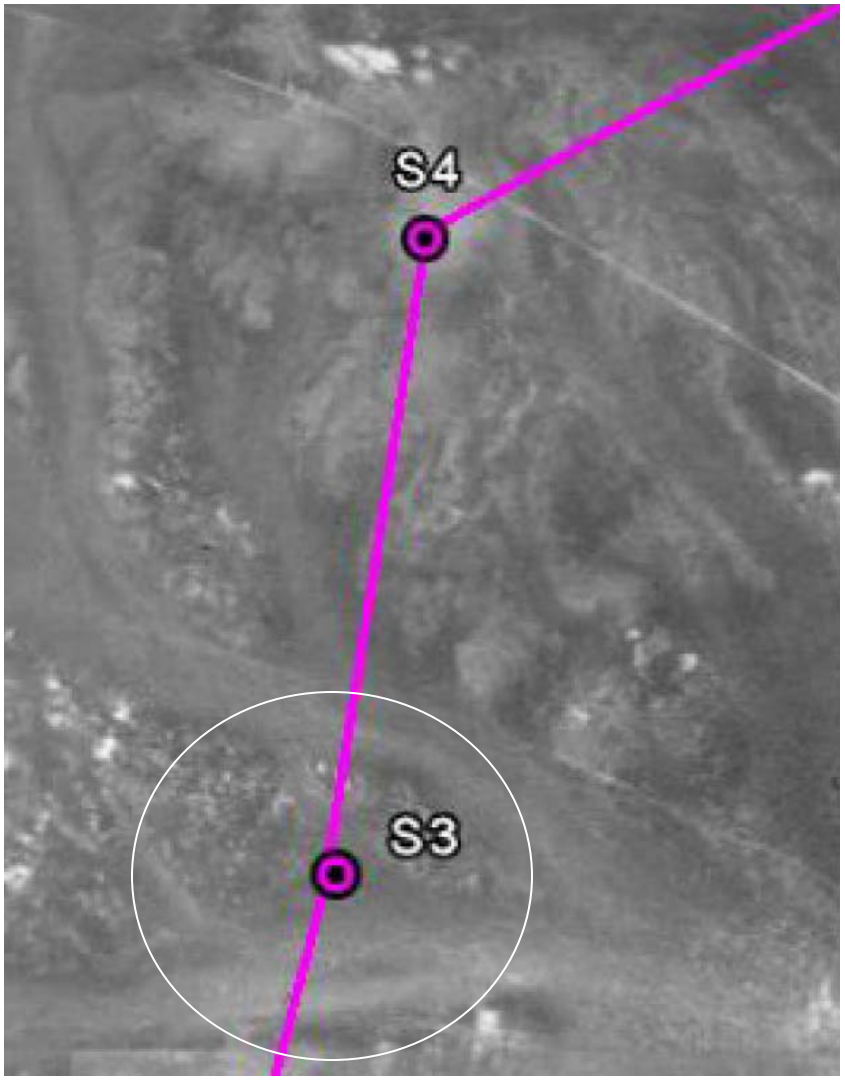
Drive C:

Drive across channels that overprint layered terrain.

Pause at location 600 to 700 m along traverse.

Dark albedo material (basalt sediments?) appears to cover older layered unit or younger sediments; Please describe from within LER.

Station 3 and Drive D



Station 3:

Stop in channel sequence where two channels converge. Describe and sample channel geology and maturity of sediments.

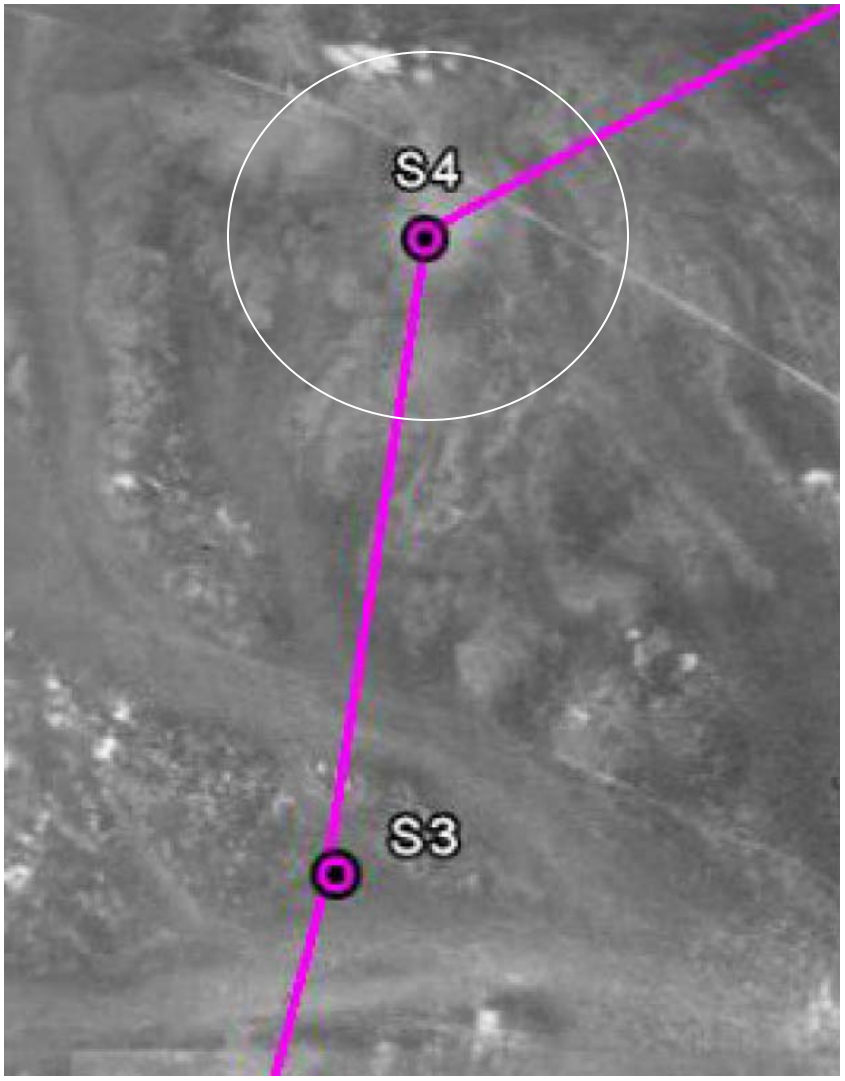
2-3 scoops, plus trench.

Drive D:

Crew use aft steering controls between S3 and S4.

Describe channel geology and any outcrops of red layered bedrock.

Station 4

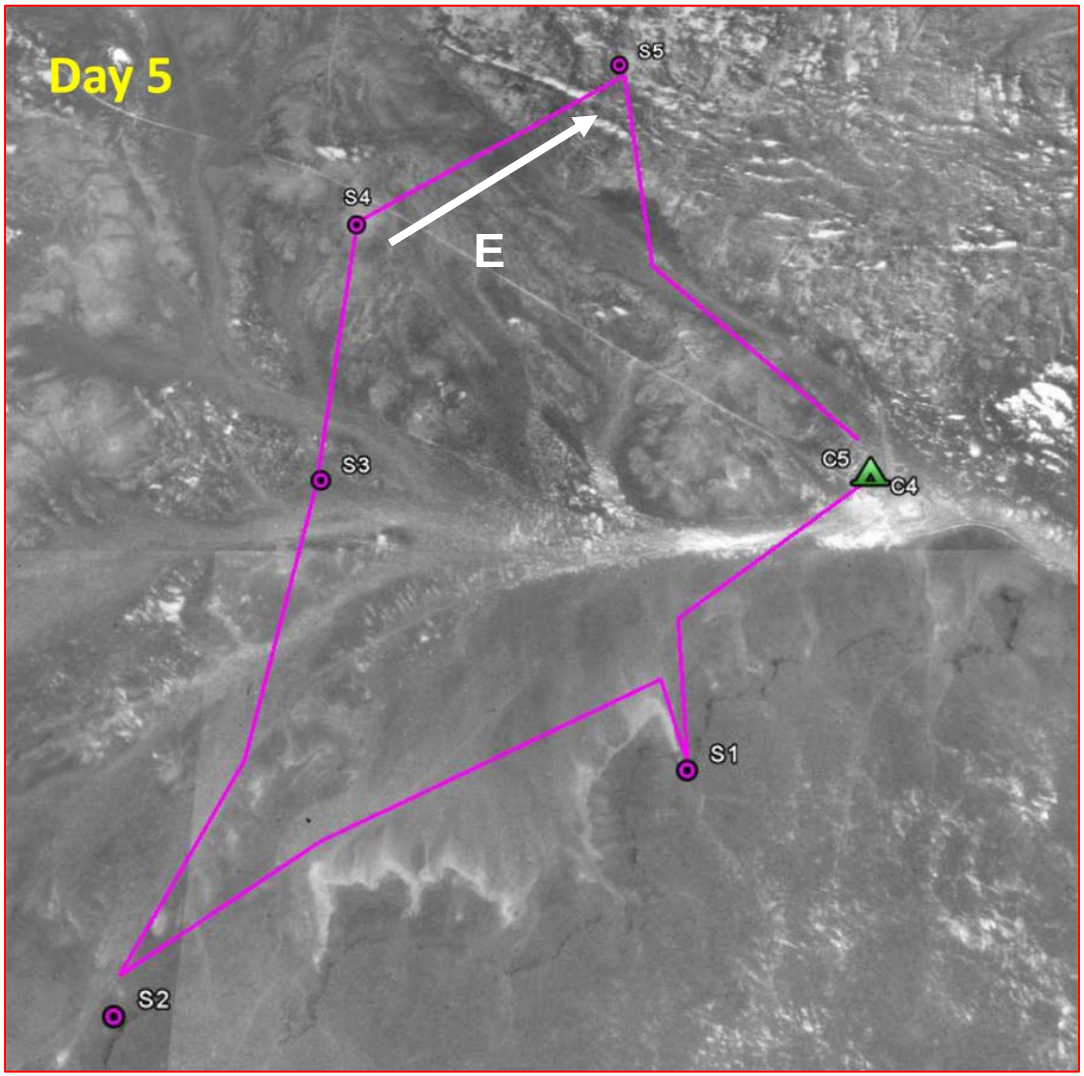


Station 4:

Describe and sample layered units in stratified mesa and nearby cross-cutting channel fill.

Compare to yesterday's Station 5 and the units beneath the lava flow.

Drive E to Station 5

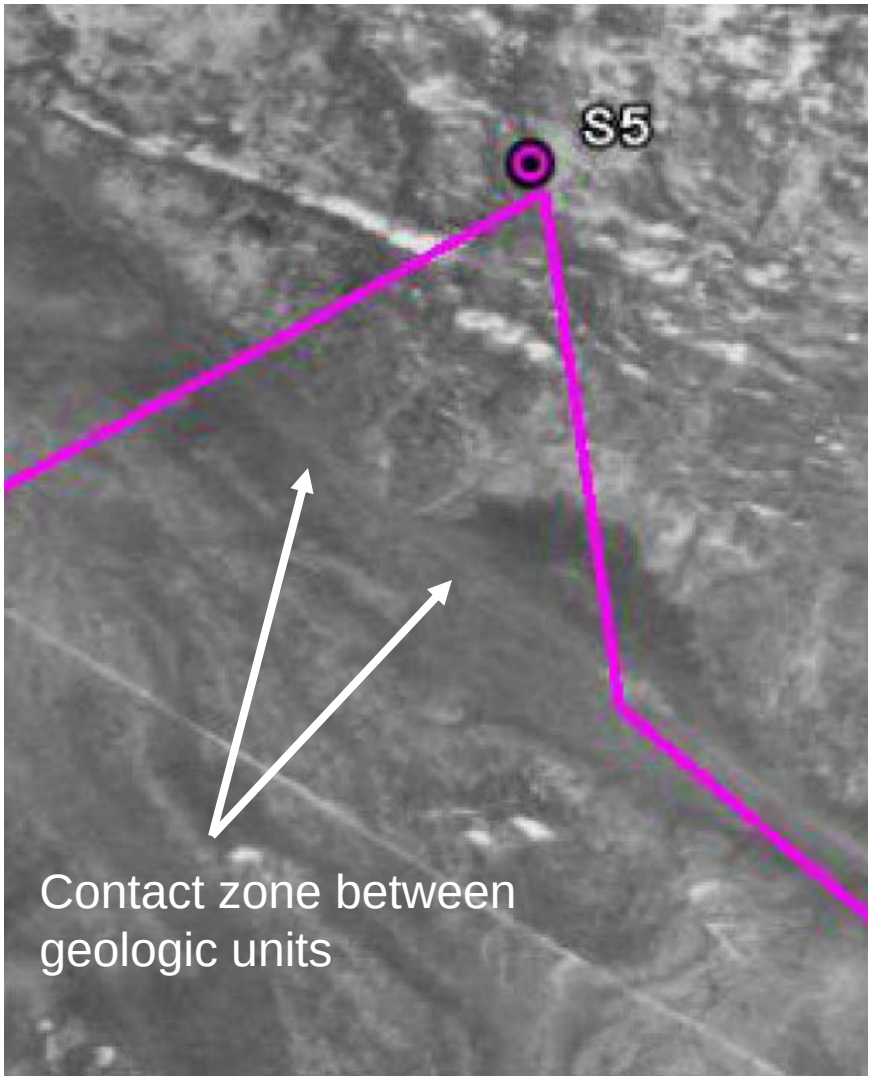


Drive E:

Drive across eastern margin of relatively dark albedo (red) layered units into lighter-albedo layered unit with knobby looking surface texture and lineations.

From within LER, describe the contact between the two layered units.

Station 5

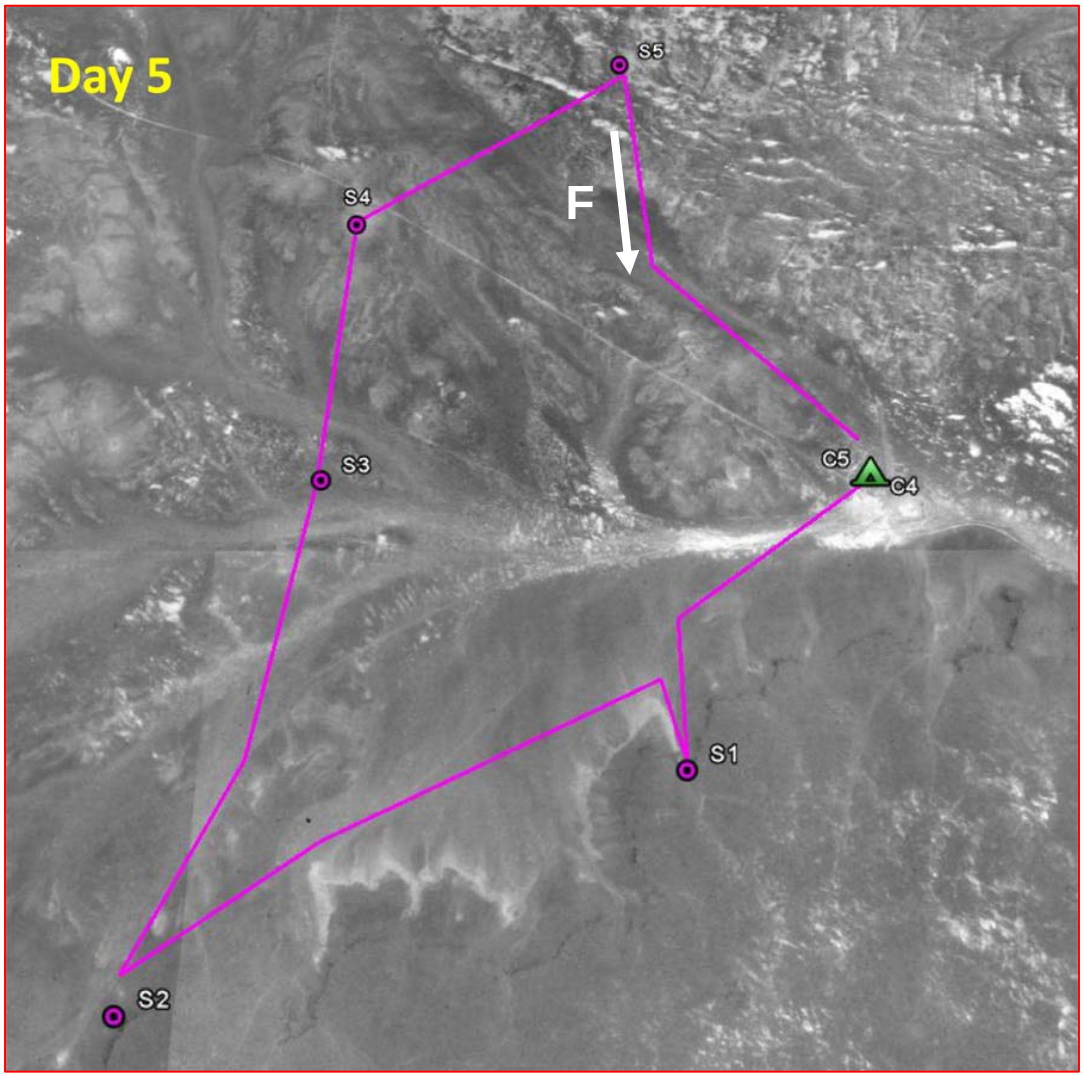


Station 5:

Describe and sample the relatively-light albedo unit with knobby and lineated surface

From the LER, look E-NE and describe any changes in the layered terrain that can be seen.

Drive F to Camp 5



Drive F:

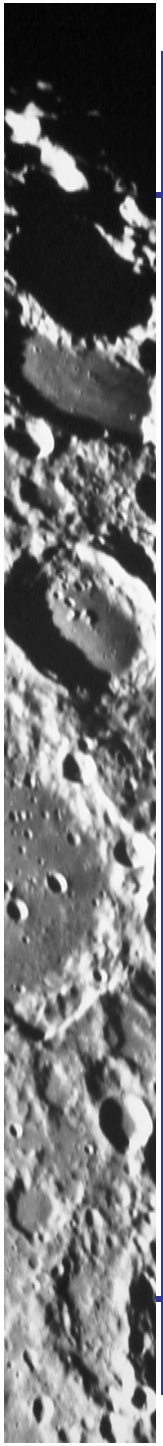
Return to Camp 4, which is Camp 5.

Driving may be smoother on relatively-dark albedo (red) layered unit.

Describe contact zone again when it is crossed.

Camp 5:

PUP and garbage ops.

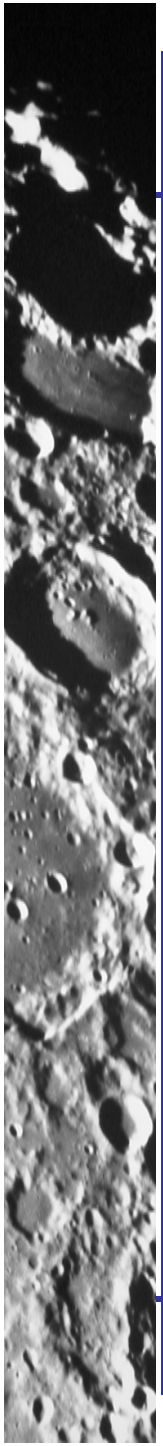


Major Questions for Today

- **Is the dark-albedo layered terrain a sedimentary unit or a volcanoclastic unit? Answer: Sedimentary per Day 4. Now try to elucidate additional details of the sedimentary environment: fluvial, intertidal, marine? Single or variable current directions? High or low energy flow?**
- **Is new, lighter albedo layered terrain also a sedimentary unit? Is the contact between the two layered terrains conformable or not?**

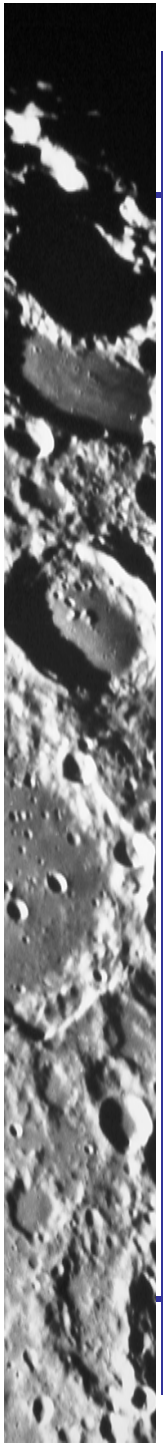
Throughout the day:

- Describe the terrain and relationships between units
- Collect representative samples of the entire stratigraphic sequence



LOS Documentation

- **If we are LOS at another station:**
  - **Is it possible to capture an image of the outcrop(s)?**
  - **If so, is it possible to annotate that image with sample numbers and sample locations? That will provide geologic context for future analyses of the sample.**
    - **Why? An example: a study of zircons in different samples indicates a dramatic shift in the sediment source. If we do not have stratigraphic context during that analytical phase of the mission, then we cannot estimate the time between that shift in sediment sources.**
  - **Perhaps you can upload that annotated image as a "cool point" in the Google-based navigation system**



At End of Day

- **Expand the geologic history of the site that you began to develop yesterday**