Participants in this Portion of the Workshop
Zion National Park - Tom Haraden
Cedar Breaks National Monument - Ann Lundberg
Bryce Canyon National Park - Colleen Bathe and Kristen Legg
Capital Reef National Park – (they did not attend ) - Riley Mitchell
Curecanti National Recreation Area /Black Canyon of the Gunnison National Park - Alison Koch
Petrified Forest National Park - - Marjorie Post
Canyonlands National Park - Nancy Holman
Glen Canyon National Recreation Area - Joan Mayer
Flagstaff Area Parks - Carol Kruse and Sue Fischer
Geologic Resource Division of the National Park Service (NPS) – Bob Higgins
Division of Interpretation and Education, Intermountain Region, NPS – Linda Lutz-Ryan
Grand Canyon National Park – Jacob Fillion

Workshop
The workshop began with the representative of each park giving a short presentation on current visitor programs, media, and educational materials they have and use that focus on geology and deep-time. The purpose of this activity was to assess what was already being done in these parks that related to deep-time and what services could be augmented to more fully implement concepts on deep-time.

Below the two lists are identified as personal and non-personal services that relate to deep-time and geologic features within each park. Personal services are services where a ranger has direct contact with the public. Non-personal services are products with which the public interact such as exhibits, printed media, web material, etc.

Personal services:
- Geology talks – 20 minutes
- Geology walks – 1 hour
- Geology hikes – 2-4 hours
- Curriculum-based educational programs
- Illustrated geology talks, i.e. using slides, PowerPoint, or objects
- Roving (contacting visitors individually, such as at the front desk)

Non-personal services are identified as:
Printed
- Museum exhibits, including relief maps
- Waysides
- Site bulletins, paper and on-line
- Park brochure and newspapers
- Specialized brochures, i.e. Yard stick brochure symbolizing the geologic column from the Grand Canyon National Park
- Junior Ranger booklets
Stratigraphic columns in printed materials and exhibits
- Sales materials: posters, postcards, books, guides
- Trail guides (sales, donation, and free)

Web and Digital
- CDs related to specific time periods
- Park movies/orientation films
- Pod (Park) Casts
- Educational activities
- VC kiosk
- Views of National Parks - Washington Program Based educational program

Education
- Geologic pages, including site bulletins and timeline
- Field Institute classes
- Teacher workshops
- Examples of Education Programs and Activities used in parks:
  - Dynamic Earth – Grand Canyon National Park (GRCA)
  - Rockin’ Through the Ages Petrified Forest National Park (PEFO) – also available on-line
  - GeoDetectives Bryce Canyon National Park (BRCA) – also available on-line (move these three bullets up under Curriculum-based educational programs under personal services)
  - Travelin’ Trunks (GRCA) (BRCA) (move this bullet up under teacher workshops at the same level in the hierarchy as the other three bullets under education)
  - Triassic Virtual Tour (PEFO)
  - Views of National Parks curriculum - Washington Program Based educational program (move these two bullets up under educational activities under Web and Digital)

In the second task the group discussed how to unify the stories about deep-time for visitors as they traveled from park to park. The purpose of these products are too build visitor understanding as it relates to formation of the Colorado Plateau, its geologic features, and the concept of geologic time.

The group identified new personal and non-personal services that would engage visitors in activities that stimulated learning and that would provide opportunities for emotional and intellectual connections to deep-time and the geologic resources. We identified projects that are regional in scope, projects that would tie together the parks of the plateau around the common theme of deep-time and that could be used across the region. The group used the “Big Idea” as it relates to the Colorado Plateau as a whole and not just the Grand Canyon Trail of Time project as a filter for the scope of work.
After both lists were developed the park staff identified which services could be done in the first year or which services were already in place. These services were labeled with a “1.” The same procedure was used to identify services for years “2” and “3.” Services which were listed as possibilities, but fell outside the scope of work for his project are labeled “0.” Using a unified look for Trail of Time was identified by parks as a crucial component of this project. Once the logo is developed for the Trail of Time at Grand Canyon National Park hopefully, it will provide continuity for the products other parks develop.

**Prioritized Product List**
*(Prioritized by 1st year, 2nd year, 3rd year, and 0)*

**Non-Personal Services (Specific to Deep-time)**
- **1:** Yard stick brochure that has been developed by Grand Canyon staff would be used by all parks.
- **1:** Views of the National Park’s module on Deep-time. Views is a Natural Resources Division, Washington base-funded program that develops on-line and CD activities and resource for park interpretation.
- **1:** Grand Staircase posters (3 different ones.) These have been developed through the efforts of cooperating associations and are currently used by all parks. (Associations for funding of publications, such as Plateau Parks Cooperating Association)
- **2:** American Geological Institute (AGI) folder. Is a brochure size folder that Geologic Resource Division (GRD) of the National Park Service (NPS) will develop in conjunction with AGI.
  - This folder will have a Stratigraphic Column on the front related to the Colorado Plateau formations and inside will have different geologic concepts like deep-time, rock types, rock cycles, etc. and in the back will hold brochures (site bulletins) specific to each parks.
  - AGI will develop a website with geology materials and images to download for publications each park publication, so that there is uniformity in design.
- **2:** Element in park newspaper (a four page insert made for all Colorado Plateau park newspapers to use.) Possible subjects for these inserts: Develop a geologic column similar to the one in the Grand Canyon newspaper, but incorporates other parks. Could be a Geologist in the Park (GIP) project.
  - Develop a Junior Ranger book style page that relates to parks’ geology. Could be a Geologist in the Park (GIP) project or a separate Junior Ranger booklet that would cross all parks and the Junior Ranger would have to complete activities in several of the parks to receive the “Time Traveler” Junior Ranger award. They wouldn’t have to complete the activities from all of the parks but from a certain number of them.
  - Develop a Jigsaw puzzle. A stratigraphic column that represents all Colorado Plateau parks and as visitors go from park to park, they collect a
piece of the column from each parks’ representative geologic formation. A possible GIP project.

- Relate deep-time to geologic history page. Address questions such as, how where the formations named? Visitors learn about:
  - Adventure of discovery
  - The geologist’s story
  - Major geologists and their vision, research, and exploration
  - Research development
  - Movie (could be a movie)

- 3: Develop Virtual Caching site at each park (visitors using GPS units to go on a virtual treasure hunt) that are related to deep-time and Colorado Plateau parks, such as geologic exhibits. Visitors photograph the cache, then go to a website and catalog their geologic treasure into their site.
  - Parks could change themes to keep these visitors interested.
- 3: Take information from Views of the National Parks geologic deep-time module for publications to be used within each park.
- 3: Work with the Web Rangers of the National Parks staff to develop an activity on deep-time. This is a Washington-based on-line program where kids can earn their virtual Junior Ranger Certificate.
- 3+: Develop a proposal for an “electronic field trip” as part of the Ball State Program in partnership with the National Park Foundation. This might be a live broadcast from several of the parks on the plateau that would allow the participants to take a virtual tour along the grand staircase of time.
  - Geotime in the Colorado Plateau National Parks
- 3: Develop a DVD/CD audio journey for cars as they travel from park to park. This could be done in conjunction with what is developed digitally with the Trail of Time at the Grand Canyon and the Views of the National Parks virtual module on deep-time. (Maybe Plateau Park Cooperating Association funding could support this and it could also be used for tour buses.)
- 3+: Advertise on buses (shuttles) used in the GRCA both for the Trail of Time in the park and the adventure through other parks
- 3: Develop other Physical Trail of Time in other Colorado Plateau parks (2 of the 9 parks at this meeting were already interested):
- 3 (In 2 parks exhibits are schedule to be redesigned): Including deep-time in future museum exhibits and waysides.

- 0: In conjunction with the Ruler Brochure from the Grand Canyon a stamp book – stamp for each park would be developed.
- 0: Morrison Formation book would be sold in each park. (This will probably happen, but not be a main focus of this project.)
- 0: Each park does a park related virtual resource guide for Views of the National Parks and related their resource guide to the Deep-time Geology module.
- 0: Using paleontology in the plateau parks to link to deep-time in programs. (‘charismatic dead megafauna’
• 0: Develop services that incorporates time as it relates to evolution.
• 0: Develop science publications on latest geologic information on deep-time – like Science News - web

**Personal Service** (Service, Training, and Development Specific to Deep-time)
*(Prioritized by 1st year, 2nd year, 3rd year, and 0)*

• 1: Services - Incorporate each others parks and geology/time into talks, walks and hikes
• 1: Training and Development - GRD courses / publications – GRD has developed a set of manuals, research papers, and link to appropriate web sites for interpreters to access. This year they are developing a survey to test varying levels of knowledge for interpreters. Volunteers, seasonals, concession employees, and interns (without a geologic background) will have basic survey to test their knowledge, while more skilled interpreters will further their knowledge base with more advanced publications and queries. During the Spring of 2007, parks would test incoming seasonals, volunteers, and interns to see if this would help them to develop a better knowledge base for their jobs.(Figure 1)

• 1: Training and Development - Researchers required to do presentations when doing work in park. Set up special training for all Colorado Plateau parks that would feature two geologist who are investigating the same resource and are developing different hypotheses. Interpreters will gain a better understanding of the scientific process and be able to share that process in a richer way with the public.
• 1: Training and Development – Geologists in the Park (an NPS project funded through Geological Society of America) – training, development of materials, auditing park resources. (Funding from other resources may be needed.)
• 1: Training and Development - National Center for Science Education
• 1: Training and Development – GRD’s network and access to numerous geoscientists willing to share their resource with national parks.
• 1: Training and Development - Bob Lillie, Geology Professor for the University of ________ and National Parks Service certifier for the Interpretive Development Program has an on-line course and has done several workshops in parks. This would be promoted further. (We need to find funding.)
• 1: Training and Development - CESU & Colorado Plateau funding call. The funding call is this fall. The group proposed a session on deep-time and geology in NPS on the Colorado. Bryce Canyon has volunteered to lead this effort. Park staff would attend.

• 2: Services – Develop Night Sky programs linked to Deep-time and the age of the earth.
• 2: Services – Develop a tool box of props for presentations. This would be tool boxes developed for honing interpreters’ skills for presentations. Each park would have one and all parks would contribute. Funds could be found from cooperating associations. Some of these items would be included:
• GRCA Geology Training Manual for interpreters & Grand Canyon’s Tool box (Allyson Mathus)
• Challenges on how to interpret geology. Collect research and develop a series of articles and activities for interpreters to sue when interpreting geology to the public.
• Include material that instruct interpreters about the scientific process.
• Material on other beliefs about time. This would give interpreters background to deal with situations with “Creationist” and other beliefs, such as indigenous populations. What is okay to share with the public and what facilitation skills are needed.
• Materials on how scientist dating rocks, which speaks to “how do we know what we know.”
• 2: Training and Development - Trade interpretive trainers between parks. Interpreting geology is a skill that is specialized. These interpreters who have spent a lot of time in geologic parks could share their expertise with newer interpreters.
• 2: Training and Development - Trade researchers between parks. Few parks have geologist and the ones that do will work to have their geologist present at other parks.

• 3: Develop in-house web information for interpreters to view. Compile each parks research materials on the intranet sites (shared only on NPS networks) so that all interpreters have easier access to this material (i.e. Videos from presentations available on intranet, exhibit and museum resource book materials, etc.) – Funding for GIP Interns needed.
# Course Outline

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Conclusion
Once these services were labeled with the appropriate year the session for this group ended with one task left to be completed. The group decided to schedule a meeting the 1st full week of November, 2006 to complete the task. In this meeting the parks will identify approximately five top services for each year and prioritize them. Criteria will be based on:

Rating 1-5 (5 being the highest)
1. What do visitors want to learn or experience?
2. What do we want visitors to learn or experience?
3. What projects do not need funding to be accomplished or funding can be acquired in the appropriate time frame?
4. What projects could be accomplished with in the scope of park staff time frames?
5. Which projects have the best quality visitor experience?
6. What project has more regional focus and can be used simultaneously in multiple parks.

The parks will also begin to develop an Interpretive Concept Plan which will identify key concepts (Interpretive Sub themes), that will focus the intent of all products that are developed for this project.

- Deep-time as it relates to the Colorado Plateau
- Geologic formations as they relate to each park and the Colorado Plateau as whole.