

DOE GIS Users Group Newsletter

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Savannah River Hosts the First DOE GIS User Group Meeting

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GIS professionals from across the DOE complex held a GIS user group meeting in conjunction with the Technology Information Exchange (TIE) Workshop hosted by the Savannah River Site this past November. Many of the GIS users participating in the user group meeting also presented technical papers or posters at the workshop. TIE was established to highlight advanced environmental technologies and



GIS users enjoy a southern bar-be-cue treat at Sconyers in Augusta, GA. Pictured from left to right are: Randy Lee (INEEL), Larry Koffman (Savannah River), Michael Barainca (DOE-HQ), Jim Bollinger (Savannah River), Denise Bleakly (Sandia), Russ Coffey (NTS), and Jack Ditmars (Argonne).

Upcoming Events

- DOE GIS user group meeting at the ESRI Conference, July 11 at 12:20 PM in room 18.
- DOE GIS user group meeting at TIE Workshop in Albuquerque, NM, November 13-15, 2001
- American Nuclear Society GIS session "GIS Applications in the Environmental Sciences," Reno, NV, November 12, 2001.

to encourage their broad dissemination and use throughout the Department of Energy, the Environmental Protection Agency, and the Department of Defense.

Future DOE GIS User group meetings will be coordinated with TIE for a number of reasons. First, the workshop has a strong environmental focus and provides an excellent opportunity for GIS professionals to present technical papers and/or posters. Second, TIE is a DOE sponsored and sanctioned event occurring in the first quarter of the fiscal year. Both the timing and DOE support is helpful in obtaining travel funding to attend, especially for those who are presenting a technical paper or poster.

TIE will be held this year in Albuquerque, NM on November 13-14 and the user group meeting will be hosted by Sandia National Laboratory on

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November 15. I strongly encourage you to submit an abstract for TIE 2001 and join us for what promises to be an outstanding user group meeting. You can submit your abstract online at <http://www.em.doe.gov/tie/alcall01.html>. The GIS panel and poster sessions will be held as part of the Program/Project Management track so make sure to sign up for this session. Abstracts are due by May 18.

I also encourage you to consider submitting a technical abstract for the American Nuclear Society (ANS) meeting to be held in Reno, NV on November 12. ANS has a strong environmental sciences section and is interested in encouraging more GIS participation. The ANS environmental sciences section is sponsoring a session entitled "GIS Applications in the Environmental Sciences." I am planning to attend the ANS meeting in Reno on November 12 and then travel to Albuquerque for TIE that evening. Combining travel to the two conferences provides an excellent opportunity to present two technical papers essentially for the price of one trip. Please contact me if you are interested or see the ANS web page at <http://www.ans.org/meetings/epr/wm2001/>.

At our November meeting, we discussed the organization of the user group at some length and agreed to an informal organizational structure. The main goal of the user group will be to stimulate information sharing across the DOE. Since most of the GIS programs within DOE focus on environmental restoration and management, it also was agreed that

the user group would promote issues involving GIS in the environmental sciences and focus on long term stewardship, a topic that is stimulating a lot of interest.

In keeping with the goal of having an informal, flexible users group, Denise Bleakly (Sandia) and Jim Bollinger (Savannah River) have agreed to coordinate user group activities. These activities will include an annual newsletter, an annual user group meeting held in conjunction with TIE, and an informal user group meeting at the ESRI conference. The newsletter will feature a different DOE site in each issue and highlight the GIS programs, capabilities, etc. of that site. Suggestions for other activities are welcome.

Finally, we plan to meet at the ESRI conference on July 11 (Wednesday) in Room 18 at 12:20 PM and also plan to have dinner that evening. Please mark your calendars and join us in San Diego!

Denise and I are looking forward to meeting with you at the ESRI conference in July and at TIE in November.

Best Regards,
Jim

Your feedback regarding the DOE GIS user group newsletter and planned user group activities is welcomed and would be greatly appreciated. Please send comments to:

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Feature Article: What's Happening at the Federal Geographic Data Committee

By David Morehouse
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The Federal Geographic Data Committee (FGDC) was established by the Office of Management and Budget in 1990 (see Circular A-16) as an interagency coordinating committee charged with promoting "the coordinated development, use, sharing, and dissemination of surveying, mapping, and related spatial data." The ultimate major objective was:

"... eventual development of a national digital spatial information resource, with the involvement of Federal, State, and local governments, and the private sector. This national information resource, linked by criteria and standards, will enable sharing and efficient transfer of spatial data between producers and users. Enhanced coordination will build information partnerships among government institutions and the public and private sectors, avoiding wasteful duplication of effort and ensuring effective and economical management of information resources in meeting essential user requirements."

However, owing largely to the absence of political and therefore senior management support which resulted in lack of appropriate staff and budget in the Department of Interior and other relevant departments, the FGDC was largely without discernable effect until Executive Order 12906 (a product of

the National Performance Review) was issued to remedy the situation in April 1994. It formally charged the FGDC with managing the development of a National Spatial Data Infrastructure (NSDI) and it elevated leadership responsibility to the Cabinet level.

In the seven years hence the FGDC has built a broad national geographic data coalition consisting of Federal, State, and local government, private industry, and professional organization partners. It has also issued 16 geospatial data standards. About 20 more standards are currently moving through the stages of a very deliberate, well-defined preparation and approval process. The FGDC has also become intimately involved in development of the International Standards Organization's geospatial data standards. Many other nations are using the FGDC and the U.S. NSDI as the model for their national geospatial data efforts.

By 1998, it became apparent to many members of the FGDC Coordination Group that the FGDC Secretariat (housed at the U.S. Geological Survey) was becoming seriously overburdened with the combined weight of having to manage the multiplicity of disparate partnerships and also deal with NSDI coordination within the Federal government. An out-of-DC retreat was held in January 1999 to brainstorm solutions to this growing problem. The primary result was a decision to separate the two functions by creating a GeoData Alliance, a new public/private entity at the national level for the purposes of bringing relevant and affected parties together to guide geospatial data activities and the implementation of the

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National Spatial Data Infrastructure. As this new divided structure comes into being, the FGDC will be able to refocus on Federal coordination and effective Federal participation in the new national entity. Much more information about the GeoData Alliance is available at <http://www.geoall.net>.

The FGDC also conducted a thorough internal review of its structure and operations in early 2000. This resulted in a series of improvement recommendations (see http://www.fgdc.gov/fgdc/design_study.html) which are now beginning to be implemented. Among the more immediate fruits are:

- 1) The FGDC Secretariat now reports directly to the Director of the U.S. Geological Survey, rather than to the Director of the Survey's National Mapping Division.
- 2) The FGDC is working closely with OMB staff to update OMB Circular A-16. The new version will incorporate the principal substance of Executive Order 12906, will require all Federal agencies that deal with geospatial data to be FGDC members, and will close many if not all of the FGDC standards compliance "loopholes" that pervaded the 1990 version. The current redraft (it's a work-in-progress which is probably 6 months away from being final) is available at <http://www.fgdc.gov/fgdc/coorwg/2001/a16editfeb901.doc>.
- 3) The General Services Administration has expressed its willingness to

consider including procurement language and technical specifications that are supportive of the NSDI in the Federal Acquisition Regulations (FAR). These new regs would cover both geospatial hardware/software and geospatial data procurements. An FGDC committee is now working on their development.

Notes from November's User Group Meeting in Augusta

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At the TIE workshop in November, Randy Lee (INEEL), Jim Bollinger and Larry Koffman (Savannah River), Denise Bleakly (Sandia), Jack Ditmars (Argonne), Michael Barainca (DOE-HQ), and Russ Coffey (Nevada Test Site/Remote Sensing Lab) met to discuss a wide range of GIS and spatial data topics.

The meeting started with users sharing their experience with the new ESRI Arc 8 technology. The ESRI course "What's New in Arc 8" was highly recommended as an excellent introduction to Arc 8 and the online ESRI Virtual Campus version was recommended for those with limited travel and training budgets. User experience with Arc 8 indicates that it is highly customizable, intuitive and easy to use, and that it handles spatial data editing and projections with ease. Some disadvantages included: Arc 8 is much slower accessing file based systems, there are still lots of bugs present and the software is unstable, ESRI technical support has not been very responsive, and transitioning from ArcInfo 7.2.1 and

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ArcView 3.2 is very expensive since AML and Avenue applications must be rewritten. Many users reported that they are waiting for others to work out the bug and stability problems before using Arc 8 as a production tool. The USGS reportedly has backed off on its deployment of Arc 8 due to some of the problems mentioned above.

Next, the discussion turned to a summary of GIS activities at each DOE site represented at the user group meeting. Russ Coffey started by describing the GIS programs at both the Remote Sensing Lab (RSL) and Nevada Test Site (NTS). RSL maintains and operates the Emergency Communications Network (ECN) for DOE-HQ and provides emergency response, GIS, and remote sensing support for the DOE complex. RSL operates an ArcIMS server on the ECN that provides mapping capabilities for Emergency Operations Centers (EOC) at each site. According to Russ, the annual budget supporting the GIS group at RSL is approximately \$1M and supports a staff of six to seven professionals. The GIS group utilizes ESRI software and has considerable expertise in ArcIMS technology and cartography. They provide the map atlases that are used in many EOC centers throughout the complex.

RSL sponsored a DOE ECN user group meeting in February of this year, which turned out to be an excellent opportunity for ECN GIS users to exchange information. If you are interested in obtaining additional information about the activities at RSL or future ECN user

meetings, please contact Al Guber at (702) 295-8622 or guberal@nv.doe.gov.

RSL also has been providing GIS support to NTS since September of 1999. Supported activities include the site environmental report, various ecological and geological studies, and other NTS customers requesting GIS products. The FY2001 GIS budget is approximately \$370K plus walk-in work supporting two to three professionals. NTS GIS personnel utilize Erdas Imagine, ESRI software, including Arc 8, and have expertise in AML customization and GIS atlas production.

Denise Bleakly provided a synopsis of activities at Sandia National Laboratory (SNL). She is the GIS team lead at SNL and her organization provides support for environmental restoration activities (90% of total budget) and consulting work for SNL scientists. SNL is running a mixed Unix/NT system with Samba and NFS for mapping Unix file systems to NT. They use the ESRI, Erdas, and Trimble Navigation products in their work and also MapInfo as needed. The annual budget for the GIS group at SNL is \$680K and supports a staff of five professionals. SNL has expertise in cartography and connecting the right spatial data to the job. Major challenges faced by the SNL GIS group include the rapid pace of technological change, transition from environmental restoration work to other activities as the environmental restoration programs at SNL wind down, and lack of a management champion for GIS activities. For more information, see the SNL GIS web site located at <http://www.sandia.gov/GIS/gis.html>.

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At the Idaho National Environmental and Engineering Laboratory (INEEL), 90% of the GIS budget is dedicated to providing environmental restoration support in the form of analyses and graphics for reports according to Randy Lee. Funding is provided on an as needed basis to the GIS group by the environmental restoration division supporting five professionals. The INEEL operates a hybrid Unix/NT GIS system using Netware Appliance and Hummingbird Exceed to access the Unix file system from NT. GIS professionals use ESRI, Trimble Navigation, and Erdas products for their work and have completed the migration to Arc 8. INEEL areas of expertise include GIS applications that hit Oracle databases and internet applications for mapping support. The main challenges facing the INEEL include insufficient funding for training and the transition to other work as environmental restoration programs wind down. The INEEL GIS web site is located at <http://www.inel.gov/gis>.

Argonne National Laboratory (ANL) delivers extensive GIS support to the Environmental Programs of several divisions according to Jack Ditmars. The focus of GIS at ANL is quite different in that, while there is GIS support to the Argonne site facilities, most GIS activities are embedded in environmental projects for DOE, DoD, and other federal agencies at sites other than the Argonne site. In addition to the more "standard" uses of GIS, ANL is heavily involved in building custom web sites for performing complex data and uncertainty analysis and environmental modeling. These custom web sites, many of which have a GIS core component,

ultimately are used to aid in the dissemination of data and provide decision making tools to address complex environmental management issues. More information about some of these capabilities and examples of their application is available at <http://www.ead.anl.gov>.

Larry Koffman provided an overview of the GIS program at the Savannah River Site (SRS). The Environmental and Geographic Information Systems (E&GIS) group at SRS was formed in 1997 and resulted from the recommendations of a GIS steering committee. E&GIS provides support for a number of SRS organizations including the environmental restoration division, the emergency operations center (EOC), and other related environmental management divisions. E&GIS operates an extensive ArcView user system with over 180 users, approximately 50 of which actively use the system. The ArcView system is a client/server based system with the GIS file structure residing on a Sun/Unix system served to Windows users with distributed file system architecture (dce/dfs). SRS areas of expertise include ArcView customization, historical photography, and cartography. E&GIS uses ESRI, Trimble Navigation, Erdas, and Intergraph products. For more information, see <http://www.srs.gov/general/srenviro/gis/clearinghouse.html>.

Extensive discussions finally were held regarding GIS and long term stewardship. Long term stewardship is particularly relevant for sites like SNL, Oak Ridge National Laboratory, and the INEEL, which face the completion of

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many environmental restoration activities within the next decade. As the environmental management programs at other DOE facilities wind down, this will become an increasingly critical issue complex wide. The central issue involves archiving spatial and other technical data associated with the closure of waste units so that it is available at some point in the future should questions arise concerning any aspect of the previous remediation activity. These questions would likely involve human health related issues or possible litigation, making the archival and retrieval of spatial and other technical information critical.

This is obviously a difficult issue involving the media on which information is archived, software and operating system versions used to store the information, and the availability of both hardware and software required to retrieve the information at some future date. Anyone who has recently attempted to recover old data from a 5 ¼ inch floppy or bernoulli disk will appreciate the vexing problem of archiving spatial data for retrieval 20 or 30 years from now.

Fortunately, the issue of long term stewardship is being pursued by DOE-HQ in partnership with Randy Lee (INEEL) and Denise Bleakly (SNL). According to Randy, two projects have been initiated as a result of the discussions held at the TIE Workshop: 1) development on a web-based GIS map and data tool that will initially show sites which are currently under or will be under long term stewardship at the INEEL, SNL, and Grand Junction, 2) a

fact finding mission to learn how other federal agencies are dealing with long term storage and retrieval of both spatial and tabular data. The results of this fact finding mission will be published in a white paper. The ad hoc DOE GIS Users Group will be an important part of the long term stewardship program since cooperation among the various DOE sites will be critical to its success. Each site has been in the business of GIS for a number of years and can thus provide both expertise and information.