

EROS DATA

EROS DATA CENTER, SIOUX FALLS, SD

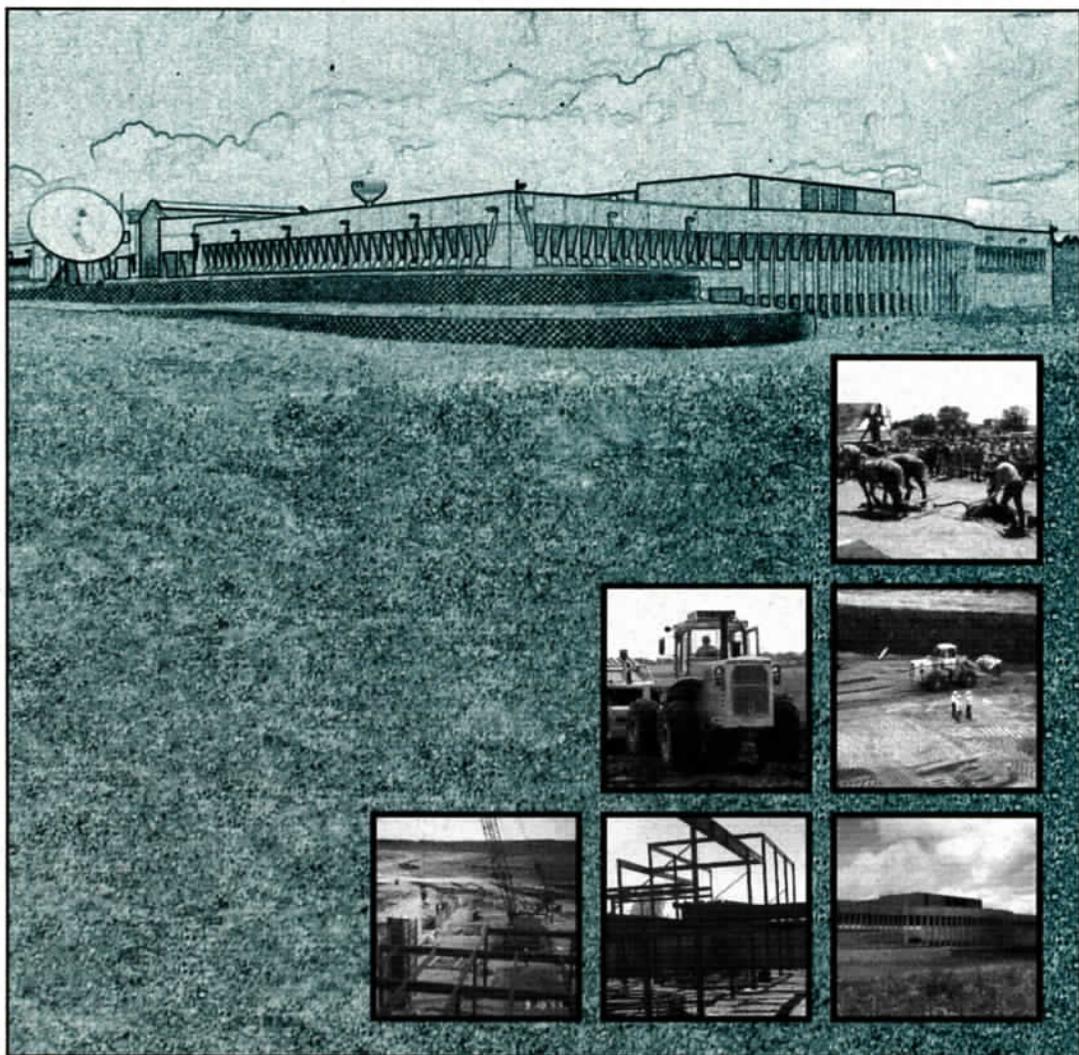
U.S. GEOLOGICAL SURVEY, NATIONAL MAPPING DIVISION

COMMEMORATIVE ISSUE

Dedication of the USGS EROS Data Center Building Addition

The EROS Data Center — a field office of the United States Geological Survey, U.S. Department of the Interior — is a national treasure of global land information. Since the announcement of the EROS program by Interior Secretary **Stewart Udall** in 1966, the Center has vigorously pursued its vision and mission to serve as a steward of remotely sensed land data, advancing the availability and usefulness of these data for scientific and land management users worldwide. Nearly 25 years after its establishment, natural resource managers, Earth scientists, conservationists, and land planners worldwide recognize EROS as a premier manager of unbiased remotely sensed land data.

Not only is EROS entrusted with archiving, processing, and distributing remotely sensed land data sets, it also doubles as an active archive center for NASA's Mission to Planet Earth. As Federal, State, and local dignitaries gather to help dedicate the new addition to the USGS EROS Data Center, this commemorative issue highlights the construction project and reaffirms the Data Center's commitment to the science of Earth observation. ♣



USGS EROS Data Center Dedicates Building Addition

Dignitaries with the U.S. Department of the Interior, the U.S. Geological Survey, the National Aeronautics and Space Administration (NASA), Congress, and State and Local agencies will participate in a dedication ceremony and ribbon cutting as part of a celebration marking the opening of the EROS building addition. Construction of the \$9 million, 65,000-square-foot project began in June 1994 and concluded in March 1996. The new facilities house equipment and people who process, store, and distribute land remote sensing data in support of USGS and NASA programs.

The architectural firm responsible for masterfully blending the existing building with the new addition was Spitznagel, Inc., Sioux Falls. The primary construction contractor administering Spitznagel's plans was Gil Haugan Construction, also of Sioux Falls. Gil Haugan Construction lived up to its reputation by completing the project on time and within budget.

Among the many dignitaries invited to today's ceremony to celebrate the opening of the new building addition are: **Gordon Eaton**, Director of the U.S. Geological Survey; **Richard Witmer**, Acting Chief, National Mapping Division/USGS; **Michael**

Mann, Deputy Associate Administrator of Mission to Planet Earth/NASA and **Robert Price**, Director, Mission to Planet Earth Program Office/NASA; Senators **Tom Daschle** and **Larry Pressler**; Representative **Tim Johnson**; South Dakota Governor **Bill Janklow**; Sioux Falls Mayor **Gary Hanson**; and other State and local officials.

Following the dedication ceremony and ribbon cutting, dignitaries will tour the facilities before taking part in a press conference with local print and broadcast media. Tonight, the Sioux Falls Development Foundation, is commemorating the day by hosting a dinner for community leaders, the U.S. Department of the Interior, the U.S. Geological Survey, NASA, other visiting dignitaries, and members of Congress.

Dignitaries attending today's celebration also are invited to stay in Sioux Falls to participate in the opening ceremonies of the 13th William T. Pecora Symposium - a technical conference on satellite remote sensing of the Earth, which usually draws 200-300 scientists and engineers from the U.S. and abroad. ☺

Facts About the New Addition to the USGS EROS Data Center:

Architect:

Spitznagel, Inc., Sioux Falls, South Dakota

Construction Contractor:

Gil Haugan Construction, Sioux Falls, South Dakota

Cost: \$9 million

Dimensions of Addition:

Depth - 300 feet

Width - 250 feet

Height - (at front entrance and curved windows) 30 feet

Floor Space - 65,000-square-feet

Authorization:

Department of the Interior 1994-95 Fiscal Year appropriations

Structural System:

- 581 tons of steel
- 21,776 square feet of fiberglass insulation
- 94,500 square feet of wire mesh
- 57 tons of steel rebar
- 137,500 square feet of concrete slab
- 13,900 cubic feet of concrete for footings & pads
- 127,500 cubic yards of excavated soil and fill material

Facilities of New Addition:

Main Level

- 283-seat sloped-floor auditorium
- Donald G. Moore Training Room
- Applications & Demonstration Labs
- Computer Room
- Offices
- Atrium Lobby Area

Lower Level

- Mechanical Room & Expansion Area
- Lower Level Computer Room
- Archive Expansion Area
- Office Expansion Area ☺



Southeast view of the EROS building addition.

Building the USGS EROS Data Center Addition: A Bumpy Ride

In retrospect, the EROS Data Center's new addition project was much like a ride at an amusement park - without much of the amusement. Before Gil Haugan Construction completed in March 1996 the 65,000-square-foot addition to house the always expanding National Satellite Land Remote Sensing Data Archive and the Land Processes Distributed Active Archive Center for NASA's Earth Observing System Program, the project experienced many highs and lows that put it in jeopardy on more than one occasion. Many bumps, such as budget uncertainties, nearly killed the project before it began. There were several scares - including the possibility of a finished building shell, with no funds to complete much of its interior. Thanks to the dedication and creativity of many people at NASA, the Department of the Interior, the U.S. Geological Survey, USGS Contracts in Denver, and the EROS Data Center, the addition is a reality. A summary of the ups and downs leading to today's dedication can be recounted with the help of **Dennis Hood**, EROS Building Task Force Chair and former Center Operations Manager:

- As far back as 1987, former Chief of the EROS Data Center, and later Chief of the USGS National Mapping Division, **Dr. Allen H. Watkins**, envisioned an addition to the Center. According to Dennis Hood, "The identification of the EROS Data Center as a Distributed Active Archive Center (DAAC) was due to the efforts of Al Watkins and **Gary Metz**."
- Originally, the Sioux Falls Development Foundation gave the Federal Government 318 acres of land, then arranged financing and built the existing facility under a 20-year, lease-purchase agreement. "When we got ready to build the addition,"

explained Hood, "we hoped to use the same procedure. We had started to assemble the reams of paperwork required to make a number of similar arrangements."

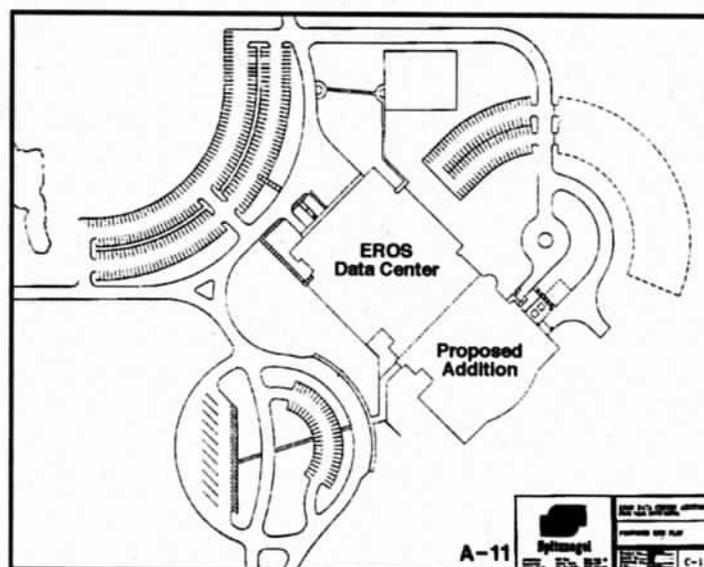
- When planning for the expansion began in the spring of 1991, a seven-member task force met to decide what form the proposed building addition would take. Early on, NASA agreed to indirectly underwrite the cost of the addition. "Since the building would support mostly DAAC activities," explained Hood, "NASA appeared willing to pay an annual overhead fee - enough to make the lease payments on the building."
- By the spring of 1993, plans to expand EROS were temporarily put on hold because of uncertain funding. Because of new Office of Management and Budget (OMB) requirements, EROS could not approach the Sioux Falls Development Foundation for leased construction. The Government was forced to pursue funding to expand the building under three different scenarios:

1. as a part of the President's economic stimulus package;

2. as a supplemental appropriation to the Fiscal 1993 budget;
3. as a Fiscal 1994 budget issue.

"As the time approached that we hoped to put the addition under contract," said Hood, "we had an extensive design and complete bid package prepared for full development of the addition that totaled an estimated \$13.4-million in 1993. During the planning process, Branch of Contracts in Denver discovered a recently enacted OMB procedure called scoring. This procedure meant the building had to be funded out of annual appropriations. Thirteen million dollars was too big of a hit for the Department of the Interior to swallow. It soon became apparent that EROS might expect a \$9-million appropriation spread over two fiscal years. This meant we had to go back to the drawing board, issue another contract to the architect to redesign the addition, and eliminate enough of our original plan to get down to the \$9-million target. This put us on the street about a year later than we expected, but with a much tighter and more-solid contract. Unfortunately, the contract didn't permit full development of all of the space so we had to leave portions of the lower level with a sand floor instead of concrete, not put in the cafeteria, not put in extensive parking and roadways on the back of the addition, and so on."

- From the rocky times, EROS recovered a bit by expanding the contract to use all of the \$9-million. "There is a requirement that you set aside a certain percentage of your total budget as a contingency fund," explained Hood, "in case you run into things like unexpected archaeological evidence, or simply unstable soil conditions that cost a lot to remedy. Normally, this is about a ten percent recommendation. So, there were about \$900,000 held aside to cover any problems. About half-way through the



June 1992 site plan proposed by Spitznagel, Inc.

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Spitznagel, Inc., Sioux Falls, South Dakota, is a full-service architectural, engineering, and interior design firm established in 1930 by Harold Spitznagel. The firm expanded significantly in 1969 when the Spitznagel Partners founded offices in Rochester, Minnesota followed by offices in Minneapolis and Willmar, Minnesota; Rapid City, South Dakota; Sheridan and Gillette, Wyoming; Denver, Colorado; and Marshalltown, Iowa. Spitznagel designed the original EROS building in the late 1960's as well as the new addition. With 34 people in its Sioux Falls office, Spitznagel operates with the philosophy, "Quality, Service, and Integrity...Attitudes to Build On." Spitznagel relied on the knowledge, skills, and abilities of eight of its staff members to deliver an architectural design with lasting value. These people included: **Ann Behne**, Interior Designer; **Doug Pederson**, Project Manager; **Frank Hughes** and **Dave Rosenstein**, Mechanical Engineers; **James Bruget**, Site Developer; **Kent Quail**, Structural Engineer; and **Tony Dwire**, Electrical Engineer. A writer for the EROSDATA recently interviewed Spitznagel Architectural Designer **Brian Heidbrink** to discuss the design approach taken to meet the needs of the USGS EROS Data Center. And this is how it went.



PROFILE:

Name: Brian Heidbrink
Title: Architectural Designer
Firm: Spitznagel, Inc.
Experience: joined Spitznagel in September 1987
Education: Iowa State University, Ames, Iowa (1987)
Hometown: Brandon, South Dakota

EROSDATA: Brian, what was the inspiration or impetus for your design?

Heidbrink: "There were two main things that drove the design. They (EROS management) wanted to improve the public interaction of the facility. In the old facility you walked into the lobby and that was it. It kind of had the feeling of, 'Don't go beyond these walls.' You had a security guard in there and had to check in. Visitors were confined to that area and EROS was limited in what it could display. To make the public feel welcome, we moved the public functions (e.g., auditorium, library, customer services, computer room, etc.) to the core area.

The other thing we wanted to provide was a more user-friendly facility - not just in how it functions, but also how the employees feel. The existing facility features a sterile corridor, tunnel effect, like in a hospital. To create a more open feeling, we used secretarial pods that open to the corridor and accented with skylights. This gives it a more friendly and inviting atmosphere for employees."

EROSDATA: The first thing that strikes visitors when they enter is the immenseness of the lobby area. What was your source of creativity in designing that?

Heidbrink: "They (EROS manage-

ment) wanted a very flexible space. They really didn't have an idea of what the displays would be like 5 years into the future. There was some talk of hanging a few satellites in the lobby. What we wanted to do is create a backdrop for those displays. We don't have real vibrant colors in there, other than highlighting the entrance to the auditorium. Colors are muted so the displays are the focal point. Since you have a 280-seat auditorium, you have to have space for those people to mingle. We tried to get the most out of our dollars in that area because so much feeds off that (e.g., the auditorium, the corridors between the two buildings). We wanted to make this the showpiece of the building."

EROSDATA: You've mentioned flexibility. Is that a trend in architectural design today?

Heidbrink: "It is. Due to the building materials that were used, we have very few load-bearing walls. Because of technology, no one knows what our buildings have to be like 10 years down the road. Because no one knows what will happen, we need to design flexibility into buildings to meet unknown future needs."

EROSDATA: Does the EROS addition follow any architectural trends?

Heidbrink: "Typically you have a

fire-rated corridor. Doors have to have closers on them and you've got some fire-rate requirements in them. What we did is separated the office areas into four parts. The code would look at that and say you've basically got four buildings here. If there's a fire in this building, you walk through a curtain-wall and get into another building (versus a fire-rated corridor system, which isn't as flexible)."

EROSDATA: How large of a project was the EROS building addition for your firm?

Heidbrink: "We consider it one of our larger projects. Our average-size project is about \$2-million. This one came in at about \$9-million. Twenty million dollars is the largest project since I've been here (1987)."

EROSDATA: What was the most challenging aspect of the EROS project for you?

Heidbrink: "Dealing with the technology, special requirements, and terminology associated with a super-computing facility. We visited other supercomputing sites such as the Cray facility in Minneapolis, a site in San Diego, and the National Center for Atmospheric Research in Boulder, Colorado. That gave us some ideas and showed us what didn't work in those places and how to fix the problems

here. The biggest thing we found was flexibility. At most locations they said design more than you need and double it because you have no idea of what you will need. The requirements for the heating and cooling of the computer room, the security requirements, the mechanical and electrical systems are on the cutting edge."

EROSDATA: Is it tough to design a facility five years before it is completed?

Heidbrink: "Not really. We did have a setback when the budget got cut and we had to shell out some space, but we overcame that. I have to compliment Dennis Hood in that he kept the integrity of the design. Some people thought that we should cut back square footage, or maybe we didn't need to do it this way. Dennis stood up and said we need to do this because in 5 years we are going to need the additional space again. We kept the integrity of the design and didn't cut back on materials or quality of construction. We simply eliminated some space that was easy to put back in later."

EROSDATA: Is that perhaps your greatest source of satisfaction when you reflect on the project?

Heidbrink: "I think it is. It's nice to know that they (EROS management) didn't take out the 'nice-to-have' items. We kept the concourse. We kept the lobby. We kept some of the special lighting and finishes. They give the addition that punch that makes it go beyond that typical institutional feeling to more of an inviting place to work."

EROSDATA: Some people have wondered if the building is too inviting. What is your response to people who may think the addition is too nice?

Heidbrink: "Part of the public interaction issue is public awareness. If the public can't see what it is spending its money on, then that creates a bad feeling. In this facility, the public can see how their money was spent. We also have to realize that this isn't just a place for people to work. It's also an international training center, where dignitaries come from other countries, so it does need to be somewhat of a

showpiece because it represents the U.S. Geological Survey around the world."

EROSDATA: Is there a difference working on a Federal Government project such as the EROS addition versus something in private industry?

Heidbrink: "They (Federal Government staff) have their ducks in a row before they start the project. They've got their program set. They've got their budget set. Their rules and methods are established. We don't have to train the Government about the process. They already know it and they tell you what they want. A private individual often has no idea about the process. They don't have their budget set, so it's nice to work with the Government that way. Some of the approvals and letter-passing takes time, but that's to be expected."

EROSDATA: From day one on the project your approach was to blend the existing building with the addition. Can you expand on that?

Heidbrink: "We didn't want it to look like an addition. We wanted it to look like it was all designed that way to begin with. We removed some of the existing wall panels and put them on the front of the new building. We basically put a shell around the building that matched. The original entrance was rather nondescript. It didn't jump out and say, 'Here's the front door!' By almost doubling the size of the facility, we felt we needed something that stood out a bit more. Another thing we did, since this building is getting long, is terminate it. We know we won't probably expand to the south any more because of landscaping difficulties. We wanted to terminate it by adding a slight curve on the south end of the building. It also gives a nice panoramic view of the landscape beyond from inside the building."

EROSDATA: What would you say is the heart and soul of your architectural designs?

Heidbrink: "Designs are somewhat personal, yet they need to satisfy the client. While the designer has to be happy with it, we can't create a monument to ourselves and not care what everyone else thinks. Working on a

project like EROS for 5 years, if you're not interested in it, it gets to be a long process."

EROSDATA: What keeps you motivated during a 5-year project like EROS?

Heidbrink: "It's exciting to watch something that you've put on paper take shape. Hopefully there are no surprises. There are problems in any process. In the long run, everything worked out O.K."

EROSDATA: Were there any unpleasant surprises with the EROS project?

Heidbrink: "No. Everything turned out the way I visualized it in my mind. We did a lot of sketches and 3-dimensional studies so there were no spatial surprises. Technically, yeah there were some things that needed to be worked out. Between Dennis (Hood), ourselves, and the contractor (Gil Haugan Construction), we did a good job of fixing those problems."

EROSDATA: What is your response to people who think all of today's buildings look the same - that they lack the character of previous periods in American architecture?

Heidbrink: "Everyone is a critic and everyone has different taste. There are a lot of things going on out on the East and West coasts that are on the cutting edge of design. Some people like it and some people don't. Good design does not mean everyone's going to like it."

EROSDATA: So, what does good design mean for you?

Heidbrink: "Good design must serve the purpose. Functionally, it must work. For design to be good it must spark the interest of the users and anyone associated with it. Five, 15, 100 years down the road, designers hope people can say 'Boy, that's a nice building.' Good design should transcend time." 🍀

Gil Haugan Construction Builds EROS Addition & Its Reputation



PROFILE:

Name: Gil Haugan, Jr.
Title: Project Manager
Firm: Gil Haugan Construction Company
Experience: field work and project manager for family-owned construction company under the direction of his Father and Mother, Gil and Lola Haugan
Education: graduate of Mankato State University, Mankato, Minnesota (1981)
Hometown: Sioux Falls, South Dakota

Under budget and on time. That's the reputation of the Gil Haugan Construction Company. For 36 years, Gil Haugan Construction of Sioux Falls has built many buildings in a 150-mile radius of South Dakota's largest city. During the same time, the company also has constructed an impressive reputation. From June 1994 to March 1996, the company added to its reputation by constructing the \$9 million, 65,000-square-foot EROS building addition.

According to Project Manager, **Gil Haugan, Jr.**, several problems challenged his company during construction. "The sheetrock in the main corridor was a main challenge along with the heavy mechanical requirements. Moving 90,000-plus yards of slimy muck, which is beneath the addition, was a challenge. There was a lot of clay and water. We placed piles of the mucky material all over the back of the property and brought in a dozer later to spread it out. We continually got the dozer stuck in the muck. It was pretty slimy stuff."

Another problem involved carpet. "There's always something that's a thorn," added Haugan. "On this particular job it was the carpet that didn't show up on time. There was a problem with availability."

Haugan says because construction financing is expensive, clients want jobs done quickly. "Just to get it done on time was a heck of a challenge." At the peak of construction activity, Gil

Haugan Construction had slightly more than 100 people in various construction trades (electricians, plumbers, carpenters, masons, etc.) working on site to complete the project. Depending on the scope of the job, the firm employs ten crews (with eight to 15 members) who work anywhere from Fargo, North Dakota to Sioux City, Iowa, to Pierre, South Dakota.

There's a certain amount of pride that goes with completing a job and doing it well. This is especially true with a project such as the EROS building addition - a high-profile job in the public spotlight. "It was a big project and it's satisfying now it's done just because of the sheer scope of the work. The square footage (65,000-square-feet) isn't huge, but every bit of it is impressive construction with the heavy-duty precast, and the heavy steel (more than 600 tons)."

Gil Haugan Construction started cranking on the EROS building addition project shortly after the formal ground breaking ceremony, May 31, 1994. The project went according to schedule over the next 21 months - with only the final five months drawing a concern. "That's when it takes a real serious effort to get done," explains Haugan. "It was a struggle at the end. The last few weeks were a bear. That's always how it is. All of a sudden when everyone sees that next Tuesday we have to be done, they look ahead and say, 'Oh God, we're not going to make it, we'd better get

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Early results of Gil Haugan Construction excavation (top) and foundation (bottom) work.

Current and Future Use of the EROS Building Addition

After years of planning, riding a roller coaster of funding uncertainty, and displacing employees because of construction, a \$9-million, 65,000-square-foot addition is ready for use. So, now what? With the help of **Lyn Oleson**, Deputy Chief of the Satellite Systems Branch, the following text will attempt to answer this and other questions involving present and future uses of the new computer rooms.

Current Use: Sparse

According to Oleson, if you were to tour the new addition today, you would see sparse usage. "Initially, we will be installing Version 0 and other test delivery Version 1, or Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS), hardware in the computer room. It will look pretty sparse because the equipment will be spread out in different locations of the room. The bulk of what we're doing now is Version 0 operations. We're bringing in some existing NASA data sets, setting them up for archiving and distribu-

tion, and making them available through our EOS information systems."

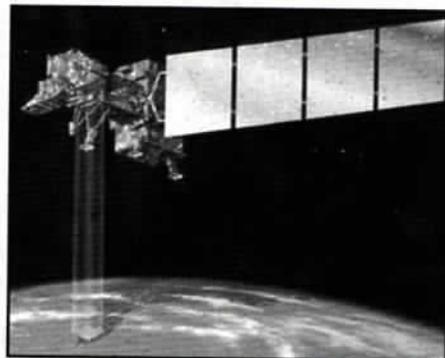
SIR-C

This fall the new addition will receive a copy of the Spaceborne Imaging Radar (SIR-C) production system. SIR-C data includes both survey and precision data from Shuttle flights. According to Oleson, the system will be installed by staff from the Jet Propulsion Laboratory (JPL), Pasadena, CA. "This will allow us to take over their ongoing production projects. JPL has been focusing on producing SIR-C products for the principal investigating science community. There are a lot of other users of SIR-C data that haven't been able to get any of the data. So, that will be a significant blip in the fall because this activity will have several computers associated with it."

Landsat-7

The first significant evidence of a gearup for Landsat-7 will take place this fall as the new addition and its staff prepares for its operation. "A

cement pad will be poured on the hill behind the Center in early fall for installation of a Landsat-7 antenna (to be installed in the winter or early spring of 1997). In addition to this installation, we'll see some small computers installed in the new computer room that relate to Landsat-7. We won't see significant amounts of Landsat-7 hardware showing up, however, until the fall of 1997."

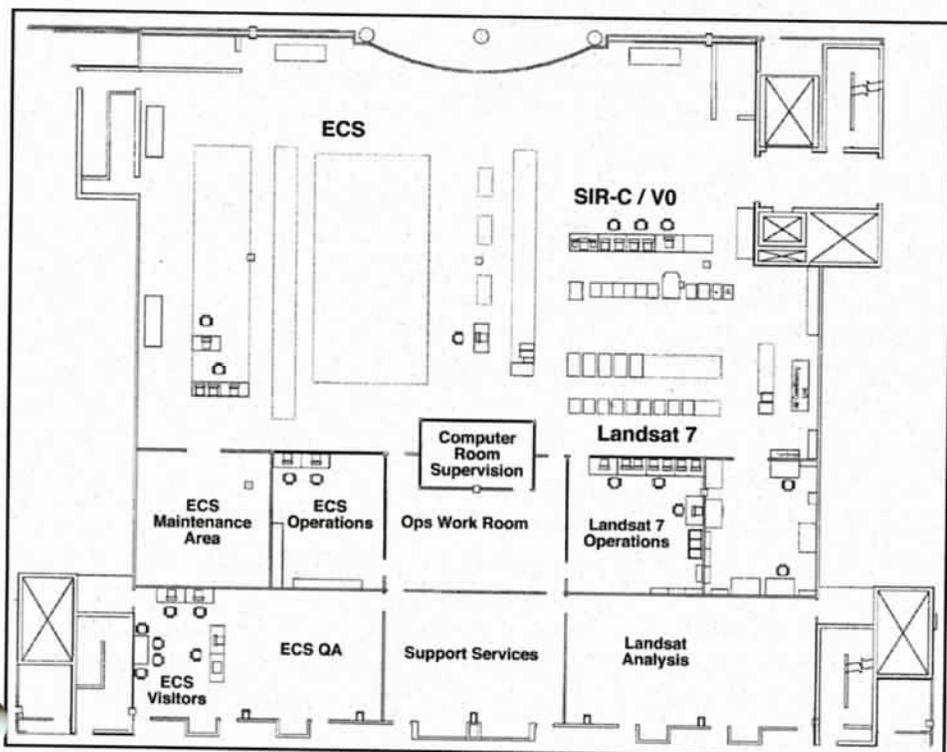


ECS Systems

The major rampup of new people and influx of new systems won't start until next winter. "We'll start to see hiring activity by Hughes Applied Information Systems (HAIS) in March of 1997," explains Oleson. "New hires will start to show up in late spring and go through training in the summer. And that rampup will continue into the fall. We will receive the major delivery of the bulk of the hardware in the fall of 1997. People will see large robotic juke box devices in the computer room. You'll see lots of strings of computers systems showing up requiring major networking interfaces. This will occupy much of the south end of the new computer room area."

The Invisible Rampup: DAAC Down Under

In addition to some of the behind-the-scenes activities associated with the new addition, other uses not readily visible to most Center staff will occur in a computer room in the lower level of the new addition. "There is a raised-floor area in the basement below the southeast corner of the main floor computer room. Right now this area has networking gear in it. That is where the tape drives that will read



Future floor plan of EDC DAAC computer room.

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*Current and Future Use
Continued from page 7*

high-density Advanced Spaceborne Thermal Emission Radiometer (ASTER) data tapes from Japan will be located. This area also will house people to perform data dissemination functions."

Over Time

Following an expansion of people and hardware in 1997 in preparation for the launch of the first in a series of EOS sensors in mid-1998, the next wave of expansion will occur. "About the same time as launch," says Oleson, "we'll start to see the next wave of systems that need to be there by when the volume of data starts to pickup. So, by the end of 1999, we could have a string of two or three large robotic silos - potentially larger than the one presently in the Center's original computer room."

As current and future changes take place in the new computer rooms, new staff will arrive gradually and ultimately reside in two primary areas. One group will be located in offices adjacent to the new computer room. Another contingent will be housed in the area featuring the bowed windows on the main level. So, late this year there will be an effort to acquire modular, or cubicle-style, systems to furnish the area by the curved windows. In addition to staff associated with the Satellite Systems Branch and EOS/Landsat-7, the Science and Applications Branch will relocate to office space on the northeast side of the new addition early this fall.

So, if the new addition seems empty now, just wait. Soon you'll see a busy, fully-utilized computer room and suite of offices housing people and hardware. Together, they will use the new addition to process, archive, and distribute massive amounts of remotely sensed data and products of the land as one of several Distributed Active Archive Centers for NASA's Earth Observing System and the U.S. Global Change Research Program. ☺

During the course of building a structure as complicated as the EROS addition, many memorable events colored the experience. There was a swallow that built a nest in a light fixture inside the addition. There was a female cat that entered the construction zone to build a nest for her litter of kittens in a box filled with fiber-glass insulation. While animal stories are interesting, the best yarns involve people. A couple of little-known human-interest stories from the EROS addition construction process involve a couple of employees from Gil Haugan Construction. The following stories were shared by Dennis Hood.

Hard Hat Highlights

A Building Alignment Problem

The superintendent for Gil Haugan Construction, **Dave Mollberg**, grew up in the construction business. He is very thorough and precise and exhibited a careful, quiet tenacity in performing his work. Since a project such as the EROS addition was complex, he wanted to make sure that all of his foundations were in exactly the right place. So, he spent many hours during the major excavation making sure footings were properly located. He found an apparent error of half-an-inch in the rotation of the new addition. Mollberg reset all of his survey reference points to determine angles and distances. After resetting, resurveying, and remeasuring, he still couldn't find the half-inch discrepancy. As designed, this error would have caused the new addition to fail to align with the existing building by half-an-inch at the upper back joint, where the two structures meet. The apparent error was not structural, but drove Mollberg nuts because he couldn't find the problem. One Sunday, Mollberg set up his survey reference points on the existing building from all available points. The result — the error was with the existing building!

Falling Like a Cat: Quick Thinking, Quick Feet

There is a member of the Gil Haugan Construction crew who is sort of a daredevil. His name is **Mike Dossett**. Dossett is compact, built like a wrestler. This very muscular, agile person walked all of the high steel and made most of the connections. Dossett is the "high elevation" specialist. He is the guy you see at a construction site that rides the crane ball up to go to work and down to go to lunch. When the structural I-beams and steel were coming together, the steel workers

wore very heavy tool belts. These belts include big, heavy bolts, large wrenches, and alignment tools. All told, the belts probably weigh 70-80 pounds. One morning in the summer of 1994, it was break time. Dossett and another co-worker were working the steel about 16 feet above the floor level. There were piles of sand the contractor was using for engineered fill material placed at various spots on the lower level. The crane ball went up to get Dossett and the other man working on the high steel so they could come down for break. As one man was riding down on the crane ball, Dossett lost his balance as he removed his belt. In one smooth motion, Dossett (who knew he was about to fall) loosened the tool belt, dropped it so it was centered on the I-beam and did a back-flip into a sand pile below. Dossett knew he was going to fall so he fell on his terms. After landing on his feet, he went over to have coffee as if nothing unusual happened. ☺



Structural I-beams served as a sidewalk for Gil Haugan Construction steel workers.

EROS BUILDING ADDITION MILESTONES

Spring 1991 - Seven-member EROS Task Force meets for the first time to decide what form the proposed building addition will take.

Winter 1991 - Spitznagel, Inc., Sioux Falls, SD, named architect for building addition. 

Winter 1993 - Building addition is delayed because of complex budget issues.

Winter 1994 - Addition takes new look as funding decreases from \$12.6 million to no more than \$9-million.

Spring 1994 - Gil Haugan Construction, Sioux Falls, SD, awarded contract to build addition. 

May 31, 1994 - Ground breaking ceremony for construction of addition.



August 1, 1994 - All excavation work for the new addition is complete.

November 1994 - The first level of flooring is completed.

February 6, 1995 - EROS employees tour building addition to see progress.



May 1995 - EROS basement renovation project completed in existing building adding much needed archive space.



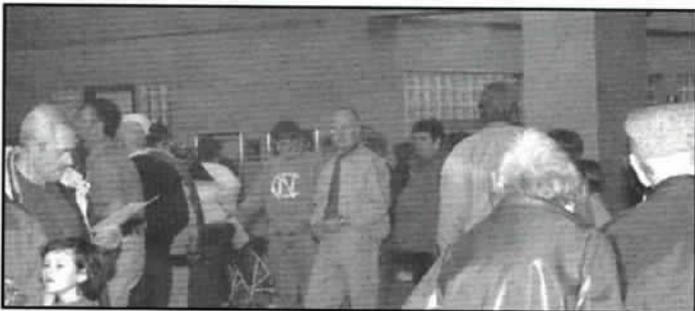
April 15, 1995 - Tours of new addition and basement renovation project provided to family members of EROS employees.

March 15, 1996 - Gil Haugan Construction completes construction on new addition.



March 30, 1996 - Office of the Chief and the Satellite Systems Branch first to occupy new addition.

April 20, 1996 - Open House for families, friends, and the public held in conjunction with Earth Day.



August 19, 1996 - Formal dedication ceremony for new addition to the USGS EROS Data Center.

A Teacher's Perspective of the EROS Building Addition



Name: Larry Beesley
School: Valley Springs Elementary, Valley Springs, South Dakota
Teaches: All Subjects to 5th Graders
Teaching Experience: 11 years at Valley Springs, 2 years at Salem, South Dakota

Before the Data Center closed to public tours because of construction of the new addition in the summer of 1994, EROS gave an average of 70 tours to nearly 1,700 students each year. Larry Beesley, a 5th Grade Teacher at Valley Springs Elementary School, visited EROS in 1993 - before construction of the building addition. He returned May 28, 1996 with 28 fifth grade students. As an educator and taxpayer, he was impressed with the new look of the Center.

"It's really nice and totally different," said Beesley. "This is a great place to bring groups, especially school groups. I'm not sure 5th graders are ready for some of the technical things, but the kids are enjoying themselves and it has got some neat things." ☺

Senior Views of the New Addition



Name: Dorothy Vestweber
Hometown: Lakefield, Minnesota
Age: 82



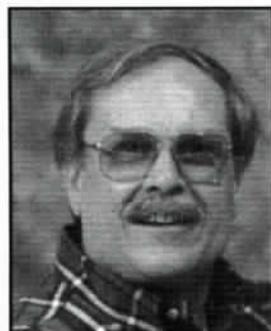
Name: Viola Voehl
Hometown: Lakefield, Minnesota
Age: 81

Dorothy Vestweber and Viola Voehl have driven by the EROS sign along Interstate-90 during trips to Sioux Falls from their homes in Lakefield, Minnesota many times since 1972. Yet, neither of the women ever visited. The two ladies finally discovered what EROS is about when their Southwest Tour bus made a surprise stop at the Center the afternoon of June 11, 1996. As senior citizens and taxpayers, the two ladies liked what they saw.

Vestweber: "I didn't realize we had anything this important that close to us. When I leave, I'll remember the video (the EROS orientation videotape shown to visitors) and learn to appreciate the things I have. We just don't realize the importance of the Earth."

Voehl: "It's beautiful. This reminds me of the United Nations building." ☺

A Visiting Scientist's Viewpoint



Name: Dr. Larry Tieszen
Position: Professor of Biology
Institution: Augustana College, Sioux Falls, South Dakota
Education: B.A. Augustana College, Biology, Ph.D. University of Colorado, Boulder, Colorado

Dr. Larry Tieszen is a professor of biology at Augustana College, Sioux Falls, South Dakota. As a visiting scientist since July 1994, he has used remotely sensed data at several resolutions to study the role of fire and bison in determining landscape patterns in the Great Plains of North America and other grasslands of the world. Support for Tieszen's research comes from the USGS, EROS cooperators, and The Nature Conservancy.

"The EROS Data Center is a valuable facility for developing our understanding of the response of the Earth surface. This is especially important as mounting populations place continuing pressure on our natural resources and atmosphere worldwide.

The new addition offers visiting scientists an opportunity to contribute to the resources of EROS and assist in interpreting surface features. This provides excellent opportunities to extend the work of EROS to other institutions both in South Dakota and around the world." ☺

*Building the USGS
EROS Data Center Addition
Continued from page 3*

project, it became apparent we weren't going to need all of the \$900,000. Also, contractors suggested ways to improve the efficiency of the electrical distribution system. This change order saved the Government about another \$30,000. Together, all of these funds allowed us to complete more of the addition than had been included in the revised design."

- "There were a lot of uncertainties," said Hood. "We really didn't know whether this project was going to go or not, and if so, at what level. When EROS had to face the reality of a smaller appropriation than the addition originally required, **Don Lauer** had a really tough decision. Do you reduce the amenities in the existing design and maintain that square footage, confident that it would some day be fully developed, or do you downsize the addition and forever restrict your ability to take on new tasks, new mission responsibilities, house more data, etc.? Don was steadfast. Downsizing was not the most cost-beneficial option." ❧

*Gil Haugan Construction
Continued from page 6*

moving or get some more guys out here."

While most construction techniques are standard, the EROS addition was unique because of the technology used to cool the new addition. "The chiller system uses cheaper electricity available during off-peak, or night, to cool the Center during the day."

While the heart and soul of any construction project may be blue prints, concrete, and steel, the primary foundation of Gil Haugan Construction is its people. "**Gil, Sr.** (his Dad) and **Iola** (his Mom) worked closely for 36 years, and that's what made our company work. Senior (Gil, Sr.) is kind of an idea man and Iola is a real go-getter and gets everything done. They're trying to retire but are here 85-90% of the time. We're just a family-owned, small business that has been in big business the last 10 years.

We've also got really good superintendents and a stable, main construction crew of regular family guys rather than seasonal help. If there's some worrying to be done on the job, they're always thinking about it."

The costs of construction have risen significantly in recent years. Take the EROS construction project for example. In 1992, when the project was in the planning stage, construction cost was estimated to be \$12.6-million. Inflation and construction estimates

increased the original \$12.6-million building plans to over \$13.4-million by 1994. Later, due to funding limitations, the project was scaled back to about \$9-million using a "bare bones" approach. "You basically have to bid projects at your cost. Everybody jokes that you have to bid projects below cost and make up for it in volume. That's not too far from the truth. There's a perception out there that you build a \$16-million job and make just a ton of money. It's not that way at all. The Associated General Contractors average end of the year gross is less than 1.5%. Today, construction contractors all know their costs better because of computers. Costs can be estimated to the penny, so the competition is really tight."

Finally, if there was one concern Gil Haugan Construction worried about, beyond a tight time frame and carpet availability, it was impacting EROS staff members. "It was a concern that if we got working and tore apart walls that we might have some computer gurus on our behind," Haugan added with a laugh. "But it wasn't that way at all. They were good people to work with."

The people of Gil Haugan Construction were good people to work with as well. Add that to the firm's accuracy and responsiveness for completing projects under budget and on time and it's easy to see why everyone involved with the project see it as a tremendous success. ❧

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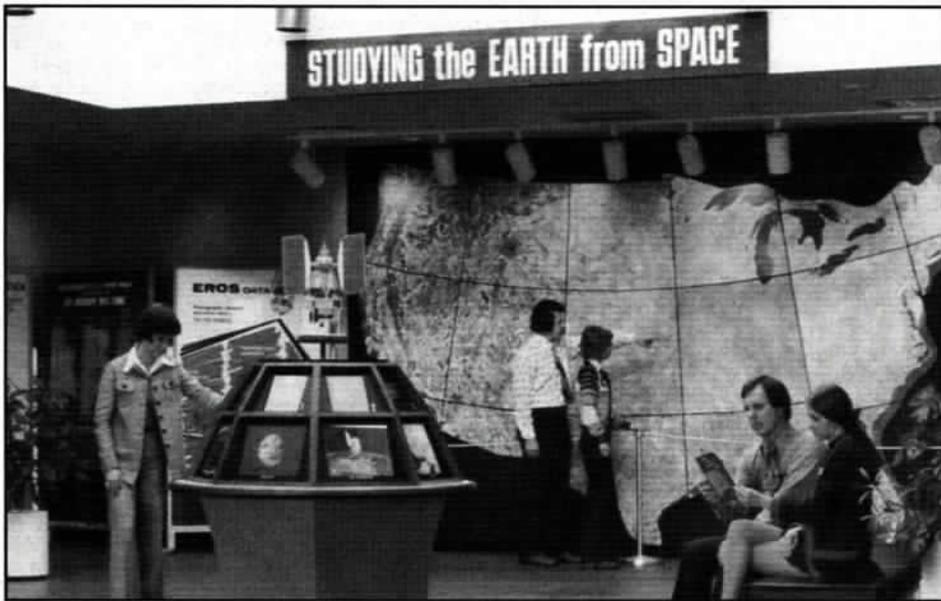
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Gil Haugan Construction excavates part of the 127,500 cubic yards of soil and fill material during construction of the building addition.



← THAT WAS THEN . . .

Ron Risty, Data Services, and Gail Hanson, Program, Budget and Administration Office (center), take a closer look at a map of the conterminous United States in the old EROS lobby in December 1975.

THIS IS NOW . . . →

The new EROS lobby in August 1996, complete with atrium and display kiosks.



The EROS Vision:

We are stewards of land remote sensing and associated spatial data, advancing the availability and applicability of these data for scientific and land management users worldwide.

Our Mission:

The fundamental mission of the EROS Data Center is to contribute to meeting the Nation's needs for basic geographic, cartographic, and other types of Earth science information by acquiring, managing, and distributing land remote sensing and associated spatial data. In support of this mission we:

- Provide data products and services to scientific and land management users worldwide.
- Develop, implement, and operate advanced data storage, information management, data processing, product generation, and product delivery systems.
- Define and document user requirements, conduct research, and develop data and related technology applications.