

Forecasters Warn of Solar Storm

—By Barbara McGehan

Space weather forecasters at NOAA's Space Environment Center in Boulder, Colo., were put to the test during the last days of October when the sun turned stormy, sending millions of tons of electrically charged particles and gases hurtling towards Earth.

At 6 a.m., Tuesday, Oct. 28, solar forecaster Bill Murtagh was at home when he received a call from operations specialist Court Williamson, on duty in the space weather forecast center.

"Bill, we've had an X-17 flare," Williamson said.

Although not scheduled to begin his shift at the forecast desk until 8 a.m., Murtagh immediately left for the center.

The X-17 flare, on a one to 20 scale based on size, is like seeing an F-5 hurricane develop at the end of November—possible but not typical.

Three years past solar maximum and nearly spotless for a week, the sun should have been fairly quiet.

What makes the flare even more significant is that the region of sun spot activity is almost dead center on the sun, facing Earth. If the flare had exploded on the other side of the sun, the gasses and particles would have gone off into space.

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New NOAA Ship Launched

—By Jeanne G. Kouhestani

The 208-foot ship seemed enormous as it loomed above the dock. Then, at the blast of two tugboat horns, it slid down its ways into the Escatawpa River.

The noise of the horns and huge avalanche of displaced water obscured the collective sigh of relief as spectators watched the ship roll back and float safely upright on the river. The sound of cheers mixed with the Navy band's rendition of "Anchors Aweigh" in celebration of the successful launch of the NOAA Ship *Oscar Dyson*.

The Oct. 17 christening and launch of NOAA's first of four

planned fisheries survey vessels at the VT Halter Marine shipyard in Moss Point, Miss., marked a milestone in NOAA's efforts to modernize the fleet.

"This is going to make a huge difference in taking the United States from a fleet that's 40 years old to one that's going to be at the top, one that's at the cutting edge and able to manage and properly exploit and conserve our resources," said NOAA Administrator Vice Adm. Conrad C. Lautenbacher, Jr., USN (Ret.) during his keynote speech.

Oscar Dyson is state-of-the-art, a *continued on page 7*



Ray Broussard for NOAA

The new NOAA Fisheries research ship Oscar Dyson is launched in Moss Point, Miss., Oct. 17 as NOAA officials, Alaskan stakeholders and VT Halter Marine employees look on.

NOAA Volunteers Remove Fish Line From Tampa Bay

—By Chris Smith

Bright sunshine, moderate temperatures and a pleasant breeze provided ideal conditions for the 28 NOAA staff, family and friends who gathered on Saturday morning, Oct. 18, for the third annual monofilament fishing line cleanup in Florida's Tampa Bay.

The bay-wide event is sponsored by Tampa Bay Watch and the Audubon Society. But the cleanup got started with NOAA funding three years ago. It's now one of several annual community outreach efforts by NOAA staff in the Tampa Bay area.

This year, the NOAA volunteers came to Fort DeSoto Park in south St. Petersburg equipped with sunscreen, hats and gloves for protection and pocket knives, scissors and poles to extract the monofilament line from foliage in and near the water.

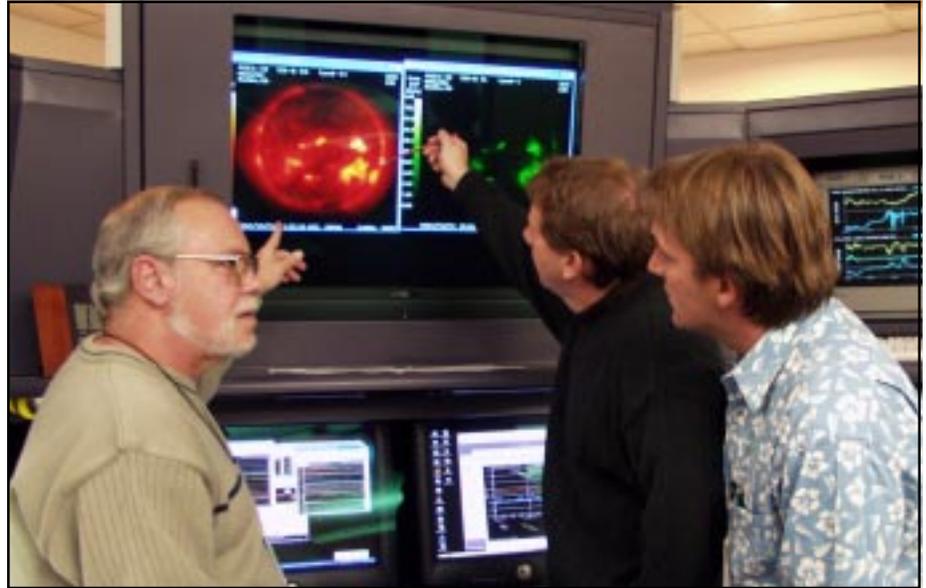
The volunteers dressed in shoes and shorts that could get wet while wading in Tampa Bay's mucky bottom.

Their mission was to clear discarded and lost monofilament fishing line from bird refuges at Egmont Key and Passage Key near the mouth of Tampa Bay and in mangrove islands in and around Fort DeSoto Park, areas that are typically off limits to the public.

The team assembled a small flotilla of vessels, ranging in size from a 25-foot NOAA response boat to a small, inflatable kayak, to serve as shuttles and support platforms throughout the day.

"Monofilament fishing line in the environment poses a significant entanglement hazard that frequently leads to sea bird deaths

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Wilfred VonDauster/NOAA

Space weather forecasters (left to right) Larry Combs and Bill Murtagh and operations specialist Patrick Gajdys check an image of the sun from NOAA's solar X-ray imager during the October solar storm.

Solar Storm

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The NOAA Space Weather Operations Center, located on the first floor of the David Skaggs Research Center in Boulder, Colo., is a room filled with monitors and computers.

As Murtagh arrives at the center, images of the sun and the flare are prominent on large screen monitors. They loop, continually displaying the coronal mass ejection that occurred earlier.

The room has a large window wall so visitors can stand outside and observe the images and the activity. On a quiet day, there might be only the forecaster and an operations specialist in the room.

But at 7:30 a.m. on this Tuesday morning, with a gas cloud blasting towards Earth that is 13 times larger than Earth, the pace in the forecast center noticeably quickens.

Murtagh looks at the various monitors and reports, trying to get up to speed on what's been happening.

Other forecasters and staff stand in small groups, talking and check-

ing out the solar flare. There are red and green images of the sun, as well as black and white images that look like snow on a television screen.

The telephone begins to ring with the center's customers calling to check on what to expect.

NOAA's Space Environment Center has been in existence since the 1960's, advising power and satellite companies, the airlines, the military and others on space weather conditions. Solar storms can disrupt radio communications, navigation systems, satellite operations and power grids, as well as cause the spectacular phenomenon known as the northern lights.

The day "officially" starts with a weather briefing at 8:10 a.m. as it does every morning. A dozen or so staff are waiting to hear the latest news.

The center is run jointly by NOAA and the Air Force. NOAA staff mostly in jeans and sneakers work alongside counterparts in Air Force blues.

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Lt. (j.g.) Keith Golden/NOAA
Phil White.

Phil White Is the Employee of the Month

—By Jeanne G. Kouhestani

His fellow crew members call him “Fill-In Phil” for the many hats he wears. The moniker was coined when he was aboard the short-handed NOAA Ship *Townsend Cromwell* and still applies today.

Officially, Phil White, the November Employee of the Month, is a senior survey technician aboard the NOAA Ship *Oscar Elton Sette*. Unofficially, he has taken on a far larger role in supporting the ship’s missions.

“In addition to his normal duties as a survey tech, Phil has served as the ship’s only emergency medical technician, a diving medical technician, a scientific diver, a small boat coxswain, a bridge watch stander and a deckhand,” said Lt. (j.g.) Keith Golden. “When the ship sailed without an electronics technician for several cruises, Phil also stepped into that role. A common thread in his performance of these many roles was a tenacious attention to detail

and a willingness to ensure that each job was done correctly.”

White accumulated his diverse skills over a number of sea experiences. Hailing from the mountains of North Carolina, he moved to California when he was a teenager and joined the Sea Scouts. The scout organization had its own ship, and the scouts were responsible for raising funds to operate and insure it and for doing whatever it took to keep it going.

White also spent four and a half years in the Coast Guard, worked aboard a tugboat and, while an oceanography major at Humboldt State University in California, served aboard the university’s research vessel.

He began working for NOAA off and on in 1991, alternating jobs aboard the NOAA Ships *Miller Freeman* and *Whiting* with time in college.

He joined the crew of the NOAA Ship *Townsend Cromwell* in 1999. When the ship was decommissioned last year, he switched over to the new NOAA Ship *Oscar Elton Sette* with the rest of *Cromwell’s* crew.

White credits these varied ship experiences with giving him the dexterity to do so many shipboard jobs.

According to Lt. (j.g.) William Mowett, “Phil not only fills a variety of roles on the ship, he is also a pleasant and highly regarded shipmate. The scientific successes of the NOAA Ships *Townsend Cromwell* and *Oscar Elton Sette* are largely the result of Phil’s many abilities and his willingness to always go the extra mile.”

As the senior survey technician, White maintains the laboratories, equipment and sensors aboard the ship, helping the scientists who come aboard successfully complete their missions.

White said the favorite part of



Alison Smith/NOAA
Loleta Rollerson.

Loleta Rollerson Is the Team Member of the Month

—By Glenda Tyson

Loleta Rollerson, the November Team Member of the Month, began working as a receptionist with NOAA’s Coastal Services Center in Charleston, S.C., in 1999.

She describes her primary duties as making each visitor feel welcome.

But her coworkers say she does much more, motivating and encouraging everyone around her.

“What makes Rollerson such a special employee is that she approaches absolutely everything that she does and everything she is asked to do with not only enthusiasm and gracious humor, but she always goes the extra mile,” said center director Margaret Davidson. “She even offers to pitch in on things that are not her scope of responsibility, but knows would be really good to do. She helps us to maintain a good family spirit.”

As the center’s receptionist, Rollerson is the primary point of

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Focus On...

NOAA Fisheries Saving Sea Turtles Through Education



Yonat Swimmer/NOAA

Nearly 150 fishermen and their families in San Mateo, Ecuador, participated in discussions of sea turtle research and conservation methods.



Yonat Swimmer/NOAA

Charlie Bergmann (center), a NOAA fishery methods and equipment specialist, examines the hook box of a longline fishing vessel in Manta, Ecuador.

—By Jim Milbury

The twelve-year-old boy and his younger brother sat as quietly as statues on a wooden bench amongst their elders in the bamboo hut meeting center of the small fishing village of San Mateo, Ecuador. The boys and the village fishermen listened closely to the scientist from NOAA Fisheries explain how to avoid accidentally catching or harming sea turtles while fishing.

When the younger boy turned his head to whisper a question to his brother, the older boy didn't answer. Instead, he directed his brother's attention back to the front of the room, intent on not missing a word from the speaker.

The presentation that captured the attention of the fishermen and future fishermen of the village was one of a series of workshops conducted by NOAA and Ecuadorian fishery scientists throughout coastal Ecuador this fall.

The workshops are vital for protecting sea turtles, as Ecuador has one of the largest and most robust commercial fishing fleets in South America.

In ten days, the team conducted nine workshops attended by over 800 fishermen in major cities such as Guayaquil, Manta and Esmeraldas and in small fishing villages such as San Mateo and Santa Rosa.

The training included the best techniques to build and use turtle excluder devices, called TEDs.

"A TED is a grid frame installed in a shrimp trawl [net]," said John Mitchell, a research fishery biologist from NOAA Fisheries' Mississippi laboratories in Pascagoula and one of the TEDs trainers. "Its function is to provide an escape hatch for sea turtles that become caught in the trawl."

"Our group goes all over the world doing outreach and review of
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Alexa Avendano/SRP

Martin Hall of the Inter-America Tropical Tuna Commission and Betty Fioravanti, a community leader in Manta, Ecuador, talk to fishermen and their families about the need to protect sea turtles.

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TEDs' use," said trainer Charlie Bergmann, a fishery methods and equipment specialist also from the Mississippi laboratories. "We have future trips planned for Asia, Africa and throughout Latin America during 2004."

Mitchell and Bergmann combined technical discussions on the use of TEDs with hands-on demonstrations of rigging techniques.

Instructors also presented ways to reduce the number of turtles inadvertently caught during long-line fishing for fish such as mahi mahi, tuna and swordfish. Turtles may become caught when trying to eat the bait off a hook or are snagged when swimming through fishing areas.

"Ecuador is interested in finding out what is available in terms of turtle friendly fishing practices," said Yonat Swimmer, a scientist from NOAA's Pacific Islands Fisheries Science Center in Honolulu, Hawaii. "We're trying to find out what we can do to modify



Yonat Swimmer/NOAA

NOAA Fisheries' Charlie Bergmann (center) watches as Ecuadorian Fisheries' Luis Torres (holding grate) shows a group of fishermen in Esmeraldes, Ecuador, how a turtle excluder device is used with a trawl net to avoid catching sea turtles.

fishing methods to reduce sea turtle interactions."

Swimmer presented information on sea turtle biology and ecology, handling techniques and other topics that were translated into Spanish for the participants. She also distributed educational materials, including sea turtle posters that now decorate many of the meeting

centers of the fishing communities the team visited.

The willingness to learn new turtle-safe fishing techniques illustrated the concern and respect the Ecuadorians have for sea turtles. "After all," as one elderly fisherman put it, "The turtles have been living from the sea much longer than we have." ☺

Solar Storm

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Crown begins the briefing.

“Space weather for the past 24 hours has been severe,” she reports. “There’s a strong solar radiation storm in progress and a severe radio blackout.”

She goes through the list—protons, electrons, severe geomagnetic storming for the next 24 hours.

“We had an X-17 solar flare this morning at 4:10 a.m. Mountain Standard Time,” Murtagh says, “and there was an Earth-directed CME associated with it.”

The CME, or coronal mass ejection, is a huge cloud of gas, loaded with charged particles that is sometimes ejected from the sun when a solar flare occurs.

A sense of excitement builds in the room. Scientists, researchers, forecasters and other staff know this storm is a big one.

After the briefing, Joe Kunches, chief of the Space Weather Operations Center, holds an impromptu meeting for forecasters.

Someone asks what to say about possible effects of the storm when the news media start calling.

“Most of the effects other than the protons are unknown right now,” Kunches says.

“What’s happening with ACE [a satellite that tracks the solar wind]?”

“It lost its ability to look at the solar wind already, due to the protons,” Kunches replies.

“What about the aurora?”

“It’ll be better in Europe than it will here,” someone responds.

“Aurora is always a long shot,” Kunches says. “Even if there’s an aurora, you have to be looking at the right time.”

He winds up the meeting.

“Thanks everybody. Just try to be around,” he says.

The forecasters disperse as the

phones continue to ring.

After coordinating his forecast with the Air Force, “so we’re singing from the same sheet of music,” Murtagh says, he briefs NASA’s Space Radiation Analysis Group in Houston, Texas. The group briefs NASA health officials, Mission Control and management, who make decisions regarding astronaut safety.

“When solar radiation levels are high, we work much closer with [the group], updating them frequently on the changing hazardous space environment,” Murtagh says.

There are several types of solar storms—radio blackouts, solar radiation storms and geomagnetic storms. When there’s a large blast on the sun, all of these storms can occur. Forecasters predict the speed of the storm and measure the amounts of protons and electron particles.

According to Murtagh, it’s a lot like forecasting Earth weather, but with a few major differences.

“Just as weather forecasters look at charts and soundings, we look through telescopes and at sensors and satellites in space,” he says. “We look at the activity on the sun and try to figure out how fast the storm is coming and how strong it’s going to be. The difference is, the forecast isn’t for Washington, D.C., or Denver, it’s the Earth. But it’s a similar process.”

Of the various monitors surrounding him, Murtagh says, “Each one gives us a piece of the puzzle. We study the sun and what’s happening on it. Then we have a 90-million-mile gap until the storm reaches the ACE satellite, which gives us about an hour’s warning before the storm hits. It’s our buoy in space.”

Murtagh says the space environment monitoring package on the GOES satellite “is our bread and butter.” It has three important

sensors on board which provide valuable information. Forecasters also now have the newly deployed solar X-ray imager, which provides real-time images of the sun.

Although there are still almost 12 hours before the solar storm will hit the Earth, Murtagh says, “This storm is becoming more and more significant to our customers.”

He says the airlines will be watching this closely. “The radiation levels can have an effect on the passengers and crew when flying over the poles. And high frequency communication will be gone for hours,” he says.

The phones keep ringing. The New York Power Authority is on the line.

Television crews conduct news interviews in the forecast center. Another forecaster is giving a telephone radio interview.

Space weather bulletins and alerts are being issued and the operations specialist begins calling the customer list.

Murtagh is scheduled to leave at the center at 6 p.m. He ends up working until midnight.

The next day, Wednesday, Oct. 29, Murtagh is back on duty at 7:30 a.m. During the night, the storm hit the Earth’s magnetic field in almost record time, arriving in 19 hours at the level predicted.

Forecasters were pleased they nailed the forecast almost perfectly and that their users took actions to mitigate solar storm impacts based on NOAA’s warnings.

“The geomagnetic storm of Oct. 29-30, 2003, will rank as one of the strongest in the last 40 years,” Murtagh said.

Although there were reports of satellite problems, they were scattered. “Clearly, we got the word out,” Murtagh said, “and users of our data were able to take appropriate action to protect their assets. I think our forecasters did a superb job.” ☺

Oscar Dyson

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new class designed specifically to meet the mission requirements of NOAA Fisheries as well as tough international standards for quiet operation. The ship, to be home ported in Kodiak, Alaska, will be so quiet as it monitors the Bering Sea and Gulf of Alaska ecosystems that it won't frighten away the fish it is meant to study.

NOAA expects to take delivery of *Oscar Dyson* in the summer of 2004, and will put the ship through extensive sea trials before it goes into operation.

Once fully outfitted, the ship will be able to handle any type of fishery while conducting simultaneous oceanographic sampling. Among its many capabilities, it will be able to "see" fish populations with hydroacoustic sonar and operate far more quietly than fisheries research ships currently in the domestic and international fleets.

Oscar Dyson, which will be operated and managed by NOAA Marine and Aviation Operations and under the command of Cdr. Frank Wood, will join the NOAA Ships *Miller Freeman* and *John N. Cobb* in conducting fisheries research in Alaska.

"That it's just the first of four new modern ships that will help NOAA conduct its mission with greater accuracy and scope is great news for NOAA," said Rear Adm. Evelyn Fields, director of NOAA Marine and Aviation Operations and the NOAA Corps.

Oscar Dyson was constructed under the management of NOAA Marine and Aviation Operations' research vessel acquisition program, led by Geoffrey Fuller.

The NOAA contract has given a boost to the shipyard and local economy, with 150 jobs devoted to the building of *Oscar Dyson* and a

second fisheries survey vessel, which began construction Oct. 16 with a steel cutting ceremony.

Sen. Ted Stevens of Alaska, unable to attend the ceremony, said in a statement, "Oscar Dyson was a North Pacific fisheries pioneer and an industry leader and great personal friend. It is an honor to his memory and for Alaska to have this NOAA research vessel named after him."

The senator's wife, Catherine Stevens, is a sponsor of the ship.

Wielding a bottle of champagne that refused to break against the ship's hull on her first two tries to christen the ship, Peggy Dyson-Malson, widow of the ship's namesake, successfully shattered the bottle on the third swing with the help of VT Halter Marine CEO Boyd King. Wet with the spray of champagne, Dyson-Malson was presented with a large bouquet of roses.

"Three's a charm!" she called to the cheering crowd.

For 25 years, Dyson-Malson served as a ship-to-shore weather broadcaster for NOAA's National Weather Service, providing everything from marine weather forecasts to birth and death announcements to ships at sea.

Oscar Dyson, who died in 1995, was an Alaskan fishing industry leader who pioneered a number of the state's fisheries, including pollock, the largest in the U.S.

In a statement from a meeting of the International Commission for the Conservation of Atlantic Tunas in Vancouver, B.C., William Hogarth, assistant administrator for NOAA Fisheries, said, "It's so appropriate that this ship be named after an Alaska fishing industry leader who worked so hard on the study of Alaska's fisheries. This new NOAA ship, and the ones to follow, will really put us on the cutting edge of fish and marine mammal studies." ☺

Fish Line Cleanup

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and injuries to turtles and marine mammals," said Tom Moore of the southeast office of NOAA Fisheries' Restoration Center, who coordinated NOAA's participation this year.

"It rarely seems as though it's deliberate. But when fishermen's lines get snagged or break on a fish or bird, it stays in the environment and doesn't break down for hundreds of years," Moore said.

Birds often get entangled in monofilament line while hunting fish in the water or collecting it to build nests.

But entanglement isn't the only fishing-related problem for sea birds.

"Sometimes birds try to eat a fish after it's hooked and the hooks are a major problem as well," said Daphne Macfarlan of the Restoration Center. "We have photos of pelicans with hooks and monofilament in their beaks, which prevents them from eating and results in starvation."

Unfortunately, the NOAA team did find one dead bird during this year's cleanup. Other groups reported that several birds were found dead as a direct result of monofilament entanglement.

"It's still not known how much monofilament line was recovered this year because there were hundreds of other people working in teams all over Tampa Bay," Moore said.

"But we learned that many areas are far worse than others and the hot spots change from year to year," he said. "Preliminary results show that some of the islands we covered had less monofilament than in past years, potentially due to NOAA's and locally sponsored efforts to educate the public on the harmful effects of monofilament in the environment." ☺

White

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his job is “working with everybody when a new piece of gear comes onto the ship.”

White said he can't wait for a new piece of equipment to arrive so that he can start the process all over again.

“It's rewarding to work with the scientists, officers and deck crew to come up with the solutions needed to make everything work and to get the data they want,” he said

“When we acquire new equipment, Phil immediately acquires the manual, sets up the system and a few days later is the recognized expert on its use,” said Rusty Brainard, head of the coral reef ecosystem investigation team of NOAA Fisheries' Honolulu laboratory. “He has routinely offered to lead our conductivity-temperature-depth data processing efforts. As such, he has become our ‘corporate memory’ for how to properly conduct many of these operations.”

White credits his selection as Employee of the Month to the effectiveness of the whole crew.

“The *Sette* crew came from *Townsend Cromwell*, and we brought with us the *TC* spirit,” he said. “I think we're an exceptional crew. We've been tasked with exhausting missions and have risen to the occasion. I'm just more visible because I work with the scientists. Another reason I was selected is because I have a strong sense of public service that I inherited from my father.

“It's a tough row to hoe with the amount of time a year we spend at sea,” White said. “It's not the best money, and it takes someone who is capable and dedicated.

“I get some ribbing about being the one who was selected, but I know my fellow crew members are happy that one of us has been recognized.” ☺

Rollerson

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contact for all external guests, from dignitaries to visiting scientists to school children.

Her colleagues at the center say her expertise and experience with helping people have been critical to the overall operational support of the center, which frequently depends on her for coordination and problem solving when trying to locate or contact staff and visitors.

Because of her positive and often humorous attitude when relaying verbal or e-mail messages to staff and guests, her strong work ethic and customer focus, Rollerson has been dubbed “the positively charged core” of the Coastal Services Center.

Rollerson recently revamped the center's security, instituting a number of new procedures, including using numbered visitor badges to increase the accountability of visitors to the center.

The center also now has a more detailed log-in process and a panic button at the front desk for emergencies.

Despite a battle with breast cancer, diagnosed in May of 1998, Rollerson has maintained not only her professionalism, but her optimism and good humor.

“With all of the adversities in her life, Loleta has persevered and done it with a smile on her face,” said Mike Warren, the center's infrastructure program manager and Rollerson's supervisor. “She always greets people with a smile and has nothing but a kind word for everyone. This shows a lot about her personal character.”

Rollerson said she prayed during her bout with cancer that she could be an advocate for other people.

“If I'm struggling, then I know that other people are,” she said. “I wanted to let people know that

there is always a way out, without feeling like you have to give up.”

In 2000, Rollerson received the perseverance award from FORTIS Insurance Company for her breast cancer advocacy work.

Rollerson lives in North Charleston with her four children. She spends much of her spare time helping and encouraging young children through her church, where she is a youth leader.

Rollerson also has represented the center in local community events, such as the “lunch buddy” program in which she spends her lunch hour several times a month tutoring a child at a local school in reading, math and other subjects.

Lunch buddy participants are paired with a specific child so that they can develop a relationship to improve a child's academic skills and serve as a positive role model, a task well suited to Rollerson's caring nature, wit and optimistic attitude.

“Children encourage me,” Rollerson said. “They are one of the major reasons that I am holding on. We have to let the kids know that they can make it, no matter what type of hurdles or trials they face.”

Rollerson said she loves to make people laugh. “Laughter is a part of healing,” she said. ☺

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