THE CONSULTANT

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Chairman's Corner — *John Dunn, President, Ambertec, Inc.*

Tropical storm Ernesto of early September is now just a memory, but it's a memory with a lesson.

Ernesto had lots of rain and a lot of wind, not quite of hurricane strength, but with gusts up to sixty miles per hour. Stories of fallen trees and squashed cars were all over the news. Utility power failures happened all over the place. Power in Merrick was off for five hours.

I called the utility company when the lights quit and listened to a list of towns with outages. What a list!! It was like the whole of Nassau and Suffolk Counties had power failures.

Then my wife got a phone call from a friend who was using her cell phone because her regular phone had quit working. That regular phone used Voice Over Internet Protocol (VoIP) but with no power, there was no internet access and thus, no phone service. Then she realized that her cell phone was low on charge and there was no way to recharge it with the power gone.

I wouldn't call it panic, but some measure of alarm did set in.

Through all of this, what did keep working was our regular, old fashioned, land-line telephone service. That didn't quit even during hurricane Gloria in 1985 when that storm's eye came directly over this block, when there was hundred miles per hour horizontal rainfall, trees falling down everywhere and even when the electric power failed and stayed off for a whole week.

What goes on here? Why would someone deliberately risk going incommunicado in an emergency for the sake of a lower monthly phone bill? Is it for the same reason that LED traffic lights going non-visible in adverse weather (snow, ice and/or very high winds) is acceptable for the sake of a lower electricity cost?

Has anyone actually given any thought to these safety risks or is everyone blinded by the almighty dollar sign?

I guess we can't personally affect the traffic light decision, but it will be past the end of creation before this guy changes telephone service.

All Landline Phones are not Created Equal

Comment by Dick LaRosa

We have a GE digital answering phone and recorder on our landline. It uses LIPA power for some functions, and when the power goes off we can dial outgoing calls and have a conversation. But the ringer doesn't work, so we have no indication that somebody might be calling us. We have to substitute a simple telephone whose ringer is powered by the landline.

Meetings

October 2006

7:00 PM, Wednesday, October 4, the first Wednesday of the month.
Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY
See website for directions: www.consult-li.com

Peter Buitenkant will continue to moderate a discussion on the topic "Control or Conniptions, What's Good and What's Bad in Today's Professional PC".

Part 1 of this seminar was an incredible event. The questions that were posed and the plethora of answers and information that were offered in response way overshot the available time at the August meeting. That's why we are going for Part 2 for the October meeting.

The October meeting will also continue the subtopic "How to Buy a new PC" started at the August meeting.

Light refreshments will be served. Admission is free (no charge), and no pre-registration is required. For more information, contact Chairman John Dunn at (516)378-2149 or e-mail ambertec@ieee.org.

Other Meetings

Consult the Events Calendars on the Section website: www.ieee.li and the LICN site: www.consult-li.com.

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Loop Current Guide — ***Dr. Richard LaRosa, sealevelcontrol.com***

On September 10 and 11 of this year, the Loop Current in the Gulf of Mexico almost pinched off an unusually large warm-core ring that would have drifted westward across the Gulf. The main part of the current would have gone directly from the Yucatan Passage to the Straits of Florida, which is exactly what the Loop Current Guide is intended to do. The Loop Current Guide is a screen that extends a few hundred meters down from the surface and runs along the western and northern boundary of the desired current path from the Yucatan Peninsula to the Florida Keys. The top of the screen would be at a depth that would not interfere with most surface marine traffic, so some of the Loop Current would spill over the top and spread out over the Gulf. For the sake of economy and practicality, the screen would not extend down to the full 800-meter depth of the current. The cold, slow water at the bottom of the current would be allowed to pass under the screen and circulate in the Gulf. The idea would be to keep most of the warm water confined to the direct path from Yucatan to the Florida Straits. This would greatly reduce the accumulation of deep pools of warm water that can supply energy to a hurricane that might be passing through the Gulf.

But instead of pinching off, a big surge of water came through the Yucatan Passage and fattened up the input side of the pinch-off point. As of September 21, the Loop Current extended to within 200 km of New Orleans, and the width of the loop was between 200 km and 300 km over most of this intrusion.

In mid March of 2002, the Loop Current actually did separate into drifting rings and a main component that followed an almost direct path from Yucatan (Notice that I never mention Cuba.) to the Florida Straits. This condition lasted until early May of 2002. During this time the current made a rather abrupt turn from northward to eastward, with an outside radius of curvature of about 167 km. I estimated that a guide screen could start the turn sooner, resulting in a more gradual turn. It appeared that a radius of curvature of 288 km would be practical for the screen and would result in a radius of 240 km at the center of the stream. The radial force on the screen is equal to the centrifugal force of the current. The centrifugal force is inversely proportional to the radius of curvature of the current's path. In the July newsletter I estimated a force of 94.2 kN per meter of length for a radius of 248 km at the stream center line. The 240 km radius would result in a slightly higher radial force, but making the screen less than the full height of the current would reduce the force. Therefore 94 kN per meter of length is a good value to use on the curved part of the guide screen. The straighter portions at input and output would have lower forces, but they might not always act outward from the current. For now, assume that the curved portion of the path presents the more severe condition.

The guide screen would have to be flexible. Mooring attachments must be closely spaced along the length, and from top to bottom, in order to keep the screen from bulging between attachments. The maximum basin depth along the path of the screen appears to be 3500 m. If the mooring lines are inclined 30 degrees from horizontal, the maximum mooring line length is 7000 m. Ropes made from nylon, kevlar, polypropylene, and other synthetic fibers have close to neutral buoyancy, so they will be fairly straight when under tension. The many ropes would be combined into fewer ropes at some distance from the screen. Then these fewer ropes can be combined into still fewer and thicker ropes at a second stage.

Sealed steel pipes were considered for the main mooring lines, but for neutral buoyancy, the wall was too thin to avoid crushing at these great depths. Water exerts a pressure of 350 atmospheres at 3500 m depth. That's 5145 psi. This crushing force can be a problem for the suction cup anchors that I was considering. The internal pressure of the cups could be kept at one atmosphere by venting them to the atmosphere through a long tube. But what kind of hose can resist collapsing when subjected to an outside pressure of 5145 psi? The hose would have to accommodate a smaller hose which would bring compressed air down to the suction cup to bubble up any water and silt that leaks into the suction cup.

There are also questions about the material to be used for the guide screen. It might be woven from some synthetic plastic, or it might be a continuous sheet with fiber reinforcement to prevent tearing. Another question is whether it should be perforated to allow some water to leak through. Perhaps there must be many openings large enough for marine animals to pass through and there must be enough of them to be easily found. The pressure differential from one side of the screen to the other and the resultant velocity of the water passing through the holes might make it too difficult for creatures to swim from the Gulf into the current path.

The Loop Current velocity drops to zero at a depth of 800 m. If the mooring ropes are inclined 30 degrees to the horizontal, the topmost ropes will pass through the bottom of the current at a distance of 1.4 km from the screen. The lower ropes will have even less exposure to the current, whose width is about 100 km. The drag forces of the ropes will create a wall friction layer that will reduce the velocity near the screen. I am hoping that the drag power dissipation will be much lower than the 28.6 GW that I had previously calculated would slow the Florida Current-Gulf Stream system by 10%. Enough questions? Stay tuned.