Factoid

It doesn't have to be 32^{0}F or colder for it to snow. It has been known to snow with temperatures in the mid 40's. Temperatures are below 32^{0}F up in the clouds where the snow is forming.

Latest Enhancements

HSE continues to launch enhancements in ALERT2 functionality and Repeater/Concentrator capability. We also offer cellular communication and controller output capabilities for sirens, cameras, and flooded roadway warning systems.

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THE SIERRA SUMMIT
A Newsletter for Customers of High Sierra Electronics

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SIERRA SUMMIT CHALLENGE

Try answering this weather quiz. You may be surprised at the answers.

1. Why don't hurricanes occur all year long?
   a) Winds are not strong enough in the winter
   b) In the winter, there is not sufficient shear in the atmosphere
   c) Convection does not occur in the winter
   d) The water temperatures are not warm enough to foster the growth of the storms

2. The region in the U.S. with the greatest annual frequency of hail is:
   a) Florida
   b) Great Plains
   c) Mississippi Valley
   d) Pacific Northwest

3. On approximately what date is Earth farthest from the Sun?
   a) January 3
   b) March 3
   c) July 3
   d) September 3

4. A lunar halo is caused by the moon shining through what type of clouds?
   a) Cirrus
   b) Cirrostratus
   c) Cumulus
   d) Cumulonimbus

ANSWERS INSIDE

INSIDE THIS ISSUE

Banking on Stability
Levee Erosion Monitoring

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ALERT2 Repeater

Did You Know?

If the earth were flat, water would cover everything in a layer two miles deep. Wouldn't it run off the edge?

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FEELING LUCKY

It's 2015 and a time to feel energized, hopeful, and yes, lucky. Lucky because the New Year offers us a chance to rediscover and rejuvenate ourselves. At HSE, we look forward to an exciting year that includes greater advancements in technology, product development, and customer satisfaction. Join us in this journey by visiting our web site often and stopping by our exhibit booth at the next local conference. Until then, Happy 2015!

"I am a great believer in luck, and I find the harder I work the more I have of it".
-Thomas Jefferson

BOOST YOUR BUYING POWER

The benefits of cooperative purchasing are more and more evident these days. Municipalities hampered by ever-shrinking budgets are turning to purchasing cooperatives to boost their buying power. By partnering with other departments and/or organizations, small to mid-sized communities can enjoy the same discounts and advantages as their big-city counterparts.

In addition to vetting companies and working to find the best supplier match, agencies are also keeping their eyes on emerging trends in purchasing. One such trend is the use of U.S. Communities Contract for Homeland Security Solutions. HSE and Safeware, Inc. have forged a successful business relationship that allows qualified cities and counties to cost-effectively purchase public safety products and services. HSE customers can capitalize on "piggybacking" and combine their purchasing power with 90,000 other participating state, county, and cities across the U.S. For more information about Safeware, Inc. and the U.S. Communities Contract, visit www.safewareinc.com.

VISUALLY CONNECTED
Camera System to Aid in Flood Monitoring

Fairfax County in Virginia recently implemented a smart camera system within their Regional ALERT network. The project provided a secondary means to verify real-time water depth levels and debris loading on a flood control structure during storm events, day and night, via real-time video.

The County's Flood Warning System utilizes a regional ALERT network. While the data sent from the field is reliable, the camera system allows visual assessment and provides a redundant means of collecting water level readings. HSE's Bob Eitel, Technical sales worked with Don Lacquement of the County's Public Works Stormwater Planning Division to implement an infrared (IR) camera system.

The challenge was to provide a solar-powered, Internet-based system requiring a minimal bank of batteries and solar panel footprint, while also being able to access real time camera images from any standard device with a standard Internet browser. To manage the power of the system, the Cellular, Modem, Camera, and IR light banks are triggered by HSE's two-way ALERT Protocol. A "Turn On" command is issued by the base station operator, which in turn activates the cellular modem and the camera. The user can point their browser to an IP address and access the camera images with a user name and password.

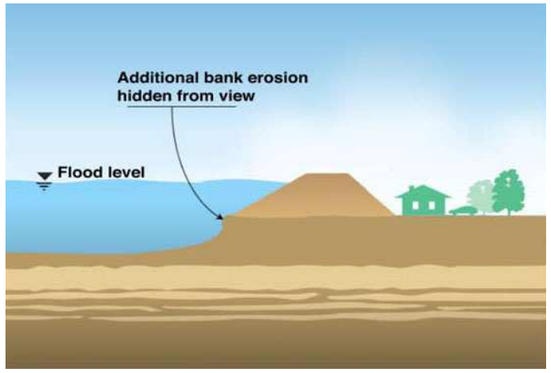
HSE also incorporated a local timer to automatically deactivate the system, at a user-specified interval, to accommodate variable power and data usage. This ensures the batteries maintain a high state of charges to the camera system remains available for later use, and the cellular data is limited.

BANKING ON STABILITY
Levee Erosion Monitoring

During high water events, erosion can take place at or below the water surface. Even if a levee is being patrolled during an event, unseen erosion can threaten the structure's integrity. HSE, in partnership with a company based in Sacramento, has developed a Remote Erosion Monitoring System (REMS) that offers advance warning that erosion has taken place before the water recedes. This early warning provides officials time to fight the problem immediately where possible, to warn emergency managers when appropriate, and to evacuate citizens that are at risk behind the levee.

The system uses embedded devices that are released and float downstream if the soil around the device is disturbed; i.e., shifts or is removed. The device emits a beacon signal which includes an ID correlated to its embedded location and depth. Beacons can be placed at multiple depths to provide an indication of the severity and progress of an erosion event. Detectors are installed downstream that 'pick up' the signal from the floating beacon and transmit the information to a data collection center. Notification of the erosion location is automatically provided to appropriate personnel via text or e-mail.

Example of levee with potential erosion



SEA LEVEL RISE

When Superstorm Sandy struck the New York and New Jersey area in October 2012, it caused more than $50 billion in damage, according to NOAA. Much of that cost came from coastal flooding. Dr. Radley Horn, a climate scientist at Columbia University and NASA's Goddard Institute for Space Studies, says three environmental factors contributed to the level damage: sea level rise, warming upper ocean temperatures, and arctic sea ice melt. "Sea levels were higher when Sandy hit then they were 100 years ago," Horton explained to CBSNews.com. "As a result of that, the damage, the water piling up, was higher than it would've been before we had the sea level rise."

STRENGTH OF EXPERIENCE
ALERT2 Repeater

At HSE, we continue to develop and adapt our equipment to fit new applications. A good example is our 3302 Series of Repeaters to support ALERT2, the next generation of wireless communication protocol for use in real-time hydrologic monitoring systems. The Repeater is a key component used to relay data from remote sites to a central site where line-of-site radio paths are marginal or do not exist.

The 3302 Series is capable of receiving and forwarding both Concentrated ALERT (ALERT messages bundled into an ALERT2 transmission) and ALERT2 messages. HSE's concentrator receives Legacy ALERT messages and compacts them into a single ALERT2 message that is transmitted in its own TDMA (Time Division Multiple Access) time slot. Thus the hop from gauge to Repeater is ALERT, and the hop from the Repeater to the base station is ALERT2. This greatly increases the output channel capacity and eliminates all errors and contention on the output channel.

There are several choices in hardware configuration ranging from the type of enclosure (rack mount or NEMA-4X) to a serial data port for ALERT concentration and/or an external Ethernet port for network connectivity. Call 1-800-275-2080 to discuss HSE's ALERT and ALERT2 solutions, pricing, and delivery information.

ROAD WEATHER

Weather acts through visibility impairments, precipitation, high winds, and temperature extremes to affect driver capabilities, vehicle performance (i.e., traction, stability and maneuverability), pavement friction, roadway infrastructure, crash risk, traffic flow, and agency productivity.

HSE's RWIS/ITS product team can help you minimize the impacts of various weather events on roadways, traffic flow, and operational decisions. Contact us 1-800-275-2080 to learn more.

BOOST WINTER OPERATIONS BUDGET
IceSight Sensor or Surface Sentinel

The IceSight sensor is used to activate ITS public warning devices when the road or bridge surface has adverse conditions. Alternately, the Surface Sentinel sensor can be used to activate an ITS device whenever the temperature of the road or bridge surface falls below freezing or a user set threshold. The sign remains active as long as the sensors thresholds have been met. This gives the driver additional information about the road to make the decision to slow down.

5433 ICESIGHT

Non-intrusive Road Condition Sensor
- Surface Condition (dry, damp, wet, snow, ice), Surface Friction, Surface Temperature, Air Temperature, Relative Humidity, calculate Dew Point
- Ethernet, RS-232 and RS-485 Communications
- Contact Output (freezing temp and non dry condition)
- Suitable for Solar Power Applications
- Mobile Version Available

5439 SURFACE SENTINEL

Non-intrusive Surface Temperature Sensor
- Surface Temperature, Air Temperature, Relative Humidity, Dew Point
- SDI-12 Communications
- Contact Output (low/high threshold, frost warning)
- Low Power Consumption
- Fan Aspirated Air Temp and RH
- Mobile Version Coming Summer 2015

Keep in mind that the Surface Sentinel can easily integration into ALERT and ALERT2 systems.

ADVICE FROM THE FIELD

Tip: Siting Weather Station Sensors
Bob Eitel, HSE Technical Sales
Grass Valley, CA

Selecting the proper site for weather station sensors is just as important as selecting the proper sensor for a particular application. Siting standards should be given first consideration in sensor placement; however, unusual requirements may call for special techniques.

1. **Wind Speed & Wind Direction Sensors**
   Placement should follow standards established by agencies such as the World Meteorological Organization (WMO) and the National Weather Service (NWS). The standard exposure of wind instruments over level, open terrain is 33 feet (10 meters) above the ground. Note: For roof mounted sensors, the exposure should be at a height that is at least 1.5 times the height of the building.

2. **Air Temperature & Relative Humidity Sensors**
   Mast-mounted sensors are usually positioned about 6.5 feet (2 meters) above ground level, on the north side of the mast. These sensors should be installed in a properly ventilated solar radiation shield for accurate ambient measurements.

3. **Solar Radiation Sensors**
   Solar Radiation sensors should be mast or pole mounted and always located in an open area in full view of the sun at all times. These sensors are usually mounted approximately 6.5 feet (2 meters) above ground level.

4. **Barometric Pressure Sensors**
   There are no special installation requirements; however, it is best to choose a location free from vibration. Calibration can be verified by obtaining a current barometric pressure reading from the nearest government weather service office. These readings are normally converted to sea level calibration to eliminate the effects of altitude.

5. **Precipitation Sensors**
   Gauges can be placed on the ground, on a pole/stand, or on a small concrete pad. Leveling of gauges is very important for proper operation, so it is best to choose a relatively flat, open area.

Answers to Sierra Summit Challenge on back page

1. *D - Hurricanes feed on the moist tropical air that forms over the warm ocean water.*
2. *B - Great Plains*
3. *C - July 3rd is known as aphelion. At this point, earth is about 94 million miles away, about 3 million miles farther than its closest point.*
4. *B - Cirrostratus*