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THE STATE OF MINNESOTA PROVIDES THIS TECHNICAL BULLETIN IN THE INTEREST OF AVIATION SAFETY AND TO PROMOTE AERONAUTICAL PROGRESS IN THE STATE AND THE NATION

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Minnesota Names New Transportation Commissioner

ST. PAUL, MINN. – Charlie Zelle, president and CEO of the Jefferson Lines bus company, was named by Gov. Mark Dayton to lead the Minnesota Department of Transportation. Zelle succeeds former commissioner, Tom

Sorel. Zelle recently participated in a task force set up by the governor to recommend ways to fund public transportation. The committee's recommendations include increasing the gas tax and tab fees. While Dayton

said he does not currently support a proposal to raise the gas tax, he is looking forward to hearing Zelle's ideas on how to increase funding for transportation. □

New Assistant Aeronautics Director Named

ST. PAUL, MINN. – The Minnesota Department of Transportation (MnDOT), Office of Aeronautics is undergoing a leadership transition. Director Chris Roy has returned to the highway side of MnDOT, as Director for the Office of Project Management and Technical Support, effective December 4, 2012.

Jay Hietpas has joined the Modal Planning and Program Management Division as the Assistant Director of the Office of Aeronautics. In this newly-established six-month mobility

position, Hietpas will provide leadership for staff in the Office of Aeronautics and manage the office's daily operations, while a search for a new director is underway.

Hietpas comes to aeronautics from MnDOT's Office of Construction and Innovative Contracting (OCIC), where he most recently served as the



Jay Hietpas

Innovative Contracting Director. Prior to that position, he worked as Design-Build Program Manager and as Project Development Engineer in OCIC. He has several years of experience working as a transportation project manager for a private consulting firm. Hietpas holds both B.S. and M.S. degrees in Civil Engineering from the University of Minnesota. He can be reached at 651-366-4210.

The new director will be announced in an upcoming issue of *Midwest Flyer Magazine*. □

The Beauty In The Skies Sun Dogs, Halos, and Sun Columns

Those who spend time in the skies are privileged to see some of the unique and fleeting atmospheric events that occur throughout the seasons. One of these unusual and beautiful atmospheric events is what we often refer to as a "Sundog," or Sun dog. The actual name is Parhelia. Some people may also refer to them as mock suns. Sundogs are closely associated with the 22-degree halo.

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They can most easily be seen when the sun is low in the sky, though they can occur when the sun is also very high in the sky. The most immediate difference between those conditions is that when the sun is low, the Sundogs will be found at the same height and will appear relatively close within your field of vision. The higher the sun gets, the further apart the Sundogs appear to be. Their brightness varies with the

conditions. Some may be brilliant and colorful, while others may be somewhat muted in intensity and color.

Sundogs are formed in the upper atmosphere when horizontal plate ice crystals form. When these crystals fall relatively undisturbed by wind, they automatically orient themselves horizontally. Thus, when the sunlight passes through crystal side faces at 60 degrees to each other, the light is bent



up to 50 degrees. But the light rays nearest to the minimum deviation of 22 degrees are the most numerous and form the bright inner edges of the sundog. When the crystals refract the incoming light by different amounts, the colors are created.

The 22-degree halo mentioned in the first paragraph is created when sunlight encounters columnar ice crystals. As the light enters the crystal, it is refracted, and is refracted once again when it exits the crystal, thus creating the observed halo. The amount of refraction depends on the actual diameter of the crystals. Randomly oriented hexagonal crystals create the observed halo, while

horizontally oriented hexagonal crystals with their flat faces horizontally aligned, create the observed Sundogs.

Sun columns or pillars are created when light from the sun shines up (from the low sun angle as seen by the observer), through relatively undisturbed ice crystals. They are falling in a fairly straight line from the base of a thin cloud very near or at the top of the column of light. Because of the angle of the crystals as they fall, the light shining into and coming out of them is equally refracted, thus retaining the color of the incident sunlight.

The millions of slowly falling crystals appear to form a visually “solid”

column of light. This gives the observer the impression that the light is being beamed up from the sun in a singular column. “Lower” pillars are formed when sunlight is reflected upwards from the topmost crystal face. “Upper” pillars are created when light rays are reflected downward from the lowest faces of the crystals.

These are just a very few examples of the beauty in the skies that can be seen with amazing clarity from the air. While the events mentioned here can also be seen from the ground, nothing compares to what can be seen when in flight. It makes the pleasure of flying even greater. □

Keeping Up To Date

by Nick Modders

Aviation is a dynamic thing. Everything is changing all the time. Keeping track of what’s new can be a major undertaking. Here are some thoughts on easing at least a part of that burden.

The Aeronautical Information Manual (AIM) is a big book that is not really convenient to carry. In addition, the printed book is outdated by the time you buy it. What to do? You might find it handy to utilize the web-based version. The AIM can be found on the internet at <http://www.faa.gov/>

[Air_Traffic/publications/atpubs/aim](http://www.faa.gov/Air_Traffic/publications/atpubs/aim)

Once you have that page on your screen, you will see a couple of inches down from the top and slightly left of center an invitation to “Open the AIM PDF here.” Do so and you’ve just saved yourself a couple pounds of book and \$12.00 or more.

You will also note that the AIM webpage covers the changes that have been made since the latest version was published. Here is where you can really shine.

Did you know that last February, a major change was made to the way you must operate aircraft transponders? The proper procedure now is to turn the transponder to ALT before you taxi. Basically, the transponder should

be in full operation any time the engine is running. If you make sure the transponder operation switch is in ALT before you turn on the avionics power switch and then never touch it, you will be in full compliance with the current Air Traffic Control procedures.

How do you stay up to date? About every three months, go to the URL cited above and check the AIM cover page for changes. If changes are indicated, you will have them right in front of you. Look for “Explanation of Changes” for all the latest news.

Fly safely today and every day!

EDITOR’S NOTE: Thanks, once again, to Lt. Col. Nick Modders for sharing this timely and very useful information. □

Black Ice – Nearly Invisible!

One of the preparations for winter flying should be the heightened knowledge and awareness of rapidly changing weather patterns and their effect on area surface conditions.

Aviators and drivers have had to deal with the inconvenience and potential danger of a phenomenon called “black ice” since hard surface runways, taxiways and roadways were invented. Black ice can be nearly invisible on paved surfaces, or can appear to be a shallow puddle of water on the paved surface.

It usually forms when the air temperature and the dew point meet. For this to happen, the air temperature is at or below freezing, but is above the pavement temperature. Then the air can no longer hold its moisture and that moisture condenses on the pavement. The ice can form with a very smooth,

flat surface that visually appears to be nothing more than a shallow puddle of water. It does not have to be snowing or raining for black ice to occur.

It can be very difficult at best to see black ice, especially at night on roadways, taxiways, runways, and even sidewalks. One way to make a valid assumption that black ice might be present is to look at your vehicle windshield wipers and side mirrors if your vehicle has been parked outside of a garage or parking deck for instance. You may also see evidence of the potential for black ice by looking for small icicles hanging from tree branches and ice formed on fences and railings.

Even if you do not see hints of black ice presence, it is very important to maintain that awareness that it can be present on any paved surfaces. It is just as important to drive safely as you head

to and from the airport. Bear in mind that a heightened level of awareness must be maintained as you taxi, takeoff and land at your airport.

When conditions are conducive to black ice formation, remember that even though you may not have experienced black ice on your well-traveled roadways, the possibility may still exist that black ice may be on your airport taxiways and runways. Staying alert and aware of conditions in the ground, as well as on the ground, is critically important to your safety, and the safety of your passengers.

Finally, if you own a vehicle that is capable of four-wheel drive or is simply front wheel drive, you are just as much at risk for losing control of your vehicle on black ice (or normal ice) as a rear-wheel drive vehicle (MnDOT Office of Aeronautics). □

AOPA Foundation Releases Passenger Safety Video

PALM SPRINGS, CALIF. – The AOPA Foundation’s Air Safety Institute (ASI) released its “Critical Information: The Passenger Safety Briefing” video during the AOPA Summit, October 11, 2012 in Palm Springs, which covers often-overlooked items that should be part of every passenger safety briefing. ASI created the video in response to an NTSB safety recommendation for better preflight safety briefings of passengers in the event of pilot

incapacitation after an accident.

In the 2010 accident that killed Sen. Ted Stevens, there was an 18-hour delay in locating the aircraft. Among the reasons was that the surviving passengers were unaware that a working satellite phone was aboard the aircraft. This video helps encourage pilots to spend more time, and be more thorough, in providing basic post-accident survival information to passengers prior to flight.

That information includes: how to use the aircraft’s radio after an accident; whether there’s a handheld radio aboard, and how to use it; how to activate Emergency Locator Transmitters; and what, if any, survival and first aid gear is aboard, and where it’s located. The video also includes an example of a real-life briefing.

The video can be viewed at www.airsafetyinstitute.org/video/paxbrief. □

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