Successive slot allocation at each level will be four minutes apart, with a maximum of three aircraft entering at each slot-commencement time. Slot allocations will be for a duration of 20 minutes or multiples thereof. In the example given on the previous page (see figure 1), an aircraft occupies two slots from 1000 to 1040.

Restricted Area Patterns

There will be up to four circuit patterns (dependent on demand and the cloud base) within NZR 190 to accommodate VFR traffic overhead the race course. The same levels and slot allocation system will be used for NZR 191, except aircraft will not be required to fly a circuit or at a particular speed. There will be a maximum of 18 aircraft allowed to operate at each level within NZR 190 and six within NZR 191 (see Figure 2 for further details).

Aircraft Restrictions

A complete list of requirements, including use of radios, transponders, altimeters, circuit procedures, and reporting requirements will be available in the America's Cup briefing package, or may be viewed on the CAA web site. General aircraft requirements for entry into NZR 190 and NZR 191 will be as follows:

- No banner towing aircraft, paragliders, hang-gliders, balloons, gliders or kites,
- Aircraft shall be operated with landing lights and/or anti-collision lights switched on,
- Aircraft shall be operated with two serviceable radios, and
- Aircraft shall be operated by two pilots, or a pilot and an observer (someone who has no other technical duties such as a professional camera operation for example), while within the restricted area.

Emergency Procedures

Any aircraft within the NZR190/NZR191 with a radio failure, or suffering an emergency situation, is required to immediately vacate the area as soon as practicable.

In the event of an aircraft blocking primary frequency 130.1 MHz, aircraft should change to frequency secondary 130.3 MHz while the interference continues.

Further Information

Further information regarding APEC and America's Cup airspace is available on the CAA web site at **http://www.caa.govt.nz under Aeronautical Services.** There is also an automatic notification service available from this web site under **Notification Service**, which will keep you up to date on pertinent information and will even notify you when the restricted areas are activated. If you are going to be affected by these events, then you are strongly urged to subscribe to this free service. ■

The Fuel Goes Into the Helicopter

This item is taken from Transport Canada's Aviation Safety ***Vortex****, Issue 5/97*

I'm a 47-year-old helicopter pilot with nineteen and a half years in this business and I have accumulated over 8500 hours of accident-free flying in Bell helicopters. I have flown over, and worked in, most parts of Canada and some parts of the United States.

Just when I was getting comfortable and starting to think I knew something, a funny thing happened on the way to work. No, let me rephrase that: I took a shortcut and it almost cost me my life. Here's hoping that you won't have to try this. Remember, the fuel goes into the helicopter, not the pilot!

While I was getting ready for a routine flight in a Bell Jet Ranger, the customer called to inform me that he had shortened the trip and wanted to add more people. In order to be within legal weight limits for takeoff, I determined that some fuel had to be removed from the aircraft. I didn't have the proper hose and fittings for the electric pump, and so I decided to use a rubber hose and siphon the fuel into a barrel. I exhaled and took a fairly hefty suck on the hose and, sure

Photography by Neville Dawson.

enough, the jet B started flowing. However, I inadvertently took in a considerable amount. I spit out the awful-tasting liquid and rinsed my mouth with coffee, stuck in some chewing gum and went flying.

As it turned out, the customer changed his mind again. New destination, two landings above 4000 feet and a reconnaissance flight for some roads and cutblocks. I then had to go to the nearest airport for more fuel. I questioned the customer again about how much flying was involved.

> ***"It felt as if all my joints had hot, wet sand in them and it hurt to move or to lie still."***

He said enough to do the originally planned trip, and so I added adequate fuel. Returning to pick up the other passengers, we carried on. We had just gotten airborne when they decided that they were hungry and wanted to return to Grande Prairie, Alberta. About five hours had passed since I had ingested the jet fuel and the only effects so far were horrible burps, which brought up that horrible taste again. However, my right wrist and shoulder were starting to ache and I had mild chest pains. The flight was

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scenic with fall colours and went very well.

After the deplaning and paperwork, my left shoulder started aching and I started feeling nauseous with flu-like conditions. I decided to go home and lie down. Conditions got worse. It felt as if all my joints had hot, wet sand in them and it hurt to move or to lie still. My chest pains got worse to the point that breathing became difficult. Severe headache and nausea. I phoned my doctor and he was kind enough to see me right away. He sent me to the hospital for chest X-rays, blood work and an electrocardiogram. After more poking and prodding, I was left in an emergency room with my peek-a-boo nightgown and hooked up to a monitor. I lay there in pain for about three or four hours, not knowing what was going on with my body or my career. My doctor came in and informed me that I had pneumonia, brought on by chemical burns to my lungs. They wanted to keep me in the hospital, but, with cuts to our health-care system, no beds were available.

I was discharged at about 7:30 p.m. and told to return in the morning for more tests. The doctor gave me a prescription for an antibiotic and told me to take Tylenol for the pain. Needless to say, I didn't sleep very much and returned at 8:00 a.m. for more tests. I had asked the local refueller for a material safety data sheet (MSDS) after I got home and asked that it be at emergency for me if I needed it during the night. Apparently he didn't have time or something, but, in any case, the information wasn't there. Fortunately, my friend Bruce brought a copy over to me.

In the hospital, the chest X-ray showed slight improvement to my lungs, but, with the MSDS, we discovered that there is also some diethylene glycol monomethyl ether (which is a fancy name for antifreeze) in with the kerosene and naphtha in jet B.

The data sheet says, "Small amounts of jet B drawn into the lungs through swallowing or vomiting may cause **severe** health problems such as bronchopneumonia or pulmonary edema." Bingo!

We had no way of knowing how much fuel I had taken in, and so more tests were performed: a urinalysis, more blood work, a liver-function test and a really neat oxygen test (for this one they poke a needle right into an artery in the wrist). The MSDS stated that the toxicity level for a rat ingesting jet B is 2500 mg/m^3. The relationship of these studies to humans has not been established, but my doctor calculated that less than four spoonfuls in the lungs would be fatal.

With all this wonderful information, I was again discharged and told to wait for test results and not to fly until more was known. All of this started on Thursday, September 25, 1997, and so I spent the weekend at home sick, in pain and grounded. On Monday, September 29, I again went to my doctor and he said that the test results were good, but I still had pneumonia and had to wait another week before having my next X rays and checkup.

I have noticed some vision loss and some memory loss. I don't know what the future will bring and, God willing, I want to keep flying, but, even if I don't, I hope this will help someone else not to do this.

A footnote to the original item stated that the pilot returned to flying status but, tragically, was killed, along with his two passengers, in the crash of a Bell 206 less than a month later. The Transportation Safety Board of Canada was investigating but, at the time of publication, had not determined the cause of the accident. ■

A Primer on Primers

by Patrick Benton

This article was published in the September 1998 issue of ***FAA Aviation News****. The author, an Assistant Professor, School of Aviation Sciences, teaches aircraft systems courses at Western Michigan University. Pilots should check the flight manual of their aircraft type and follow any specific recommended priming techniques.*

Anatomy of a Primer System

The engine priming system seems to be one of the most misunderstood systems on light aircraft. What exactly does the primer do, and how does it do it? Should you use the primer for every start or just when it's cold? Is it okay to prime the engine by pumping the throttle a few times? These are some of the questions frequently asked by new and experienced pilots, including flight instructors.

To develop safe and efficient priming techniques, it is necessary to understand the system and how it works. A primer system is used on aircraft engines to introduce a small amount of atomised fuel into the engine to improve cold starting. The priming system is a stand-alone system and is not part of the carburettor.

"Even if you've had success "priming" with the throttle, it's only a matter of time until an induction system fire occurs..."

The system consists of a fuel pump, discharge nozzles, and interconnecting plumbing. There are two types of systems in use. One type uses a small, manually operated fuel pump located in the cockpit. The other type uses the aircraft electric boost pump to provide fuel pressure to the discharge nozzles. The electric primer system also incorporates an electrically operated valve to control the fuel flow to the nozzles. The discharge nozzles and plumbing (normally one-eighth-inch tubing) are the same for both systems. Most small aircraft use a manual primer system, while large or multi-engine aircraft may have electric primer systems.

The discharge nozzles are very important to the proper operation of the system. They have a small discharge orifice, which causes the fuel to atomise much like the nozzle on a spray bottle of window cleaner. The nozzles are usually located in the cylinder head, in front of the intake valve. Some engines have a nozzle in all the cylinders, while others have nozzles in only some of the cylinders. Sometimes there is only one nozzle for the entire engine. When a single nozzle is used, it is normally located in a central location in the induction manifold, rather than in the cylinder head.