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Awaiting Mir's Crash Down Under

Stewart Taggart  02.19.01 | 2:00 AM

SYDNEY, Australia -- When the decrepit Russian space station Mir crashes to Earth next month, it'll be aimed like a basketball at a huge hoop of lonely ocean between New Zealand and Chile.

Minutes after de-orbiting, it will likely smash into the Southern Ocean's waves with amazing force, sinking without a trace in a burial at sea. This, of course, assumes everything goes according to plan.

"To a large extent there isn't much we can do about Mir if it hits us, apart from basically warning people not to go near it until proper authorities arrive," says Patrick Helm, chairman of New Zealand's ad hoc Satellite Re-Entry Committee.

The committee operates out of the offices of the Prime Minister and cabinet. For its part, Australia's Mir entry organization is Emergency Management Australia, the country's lead agency for coordinating federal disaster response.

All either country can do right now is sit back and wait, and continually recalculate the odds of Mir hitting them. At this point, Russian space officials are handicapping the odds of Mir hitting land at about 3 percent -- small, but significant enough to pay attention to.

While space debris has been falling on Earth for years -- as have bits and pieces of airborne aging jets -- Mir is the mother of all space junk. Weighing 135 tons, it will be among the largest pieces of man-made space junk ever to fall to Earth.

Both Australia and New Zealand already have first-hand experience with falling space junk. Australia got hit by America's Skylab. New Zealand was hit by the still mysterious "Ashburton Balls."

Skylab --- half the size of Mir -- came crashing down on parts of suburban Perth and the remote deserts of Western Australia in 1979. At the time, 17-year-old Stan Thornton of Esperance, Western Australia, scooped a few pieces off the roof of his home, caught the first flight to San Francisco and collected a \$10,000 prize from the *San Francisco Examiner* for the first piece delivered to its newsroom.

Seven years earlier, four mysterious 14-kilo titanium gas canisters fell in the Ashburton area of New Zealand's South Island. After being analyzed by scientists, the Cyrillic letter-covered balls were believed to have come from a Russian space probe, possibly bound for Venus. U.S. specialists were aghast at the advanced state of the titanium, which appeared superior to anything the Yanks had at the time.

Under existing space law, New Zealand was obliged to return the balls to the Soviet Union.

But the Soviets denied any knowledge or ownership of them. That left the Kiwis in a pickle.

"In the end, since it fell in farm country, the farmer wanted them back as a souvenir," said Graeme Beere, then a research adviser to New Zealand's Ministry of Defense. "Since we couldn't establish ownership, we had to give it back to him."

Perhaps the messiest bit of space junk to hit Earth was Cosmos 954, an out-of-control nuclear-powered Russian satellite that crashed over northern Canada in 1978, spreading radiation over the sparsely inhabited region. At the time, Cold War mistrust hindered cooperation between the Soviet Union and Canada in the cleanup. Things are different now.

"For the Mir splashdown, the Russians seem well prepared and are keeping the international community well informed," Helm said.

He noted Mir has no nuclear, biological or chemical nasties aboard to complicate things -- apart from its sheer dead weight.

At present, Mir is drifting ever lower into the atmosphere and picking up speed as it goes, but teetering at every turn. Its path is about as predictable as a poorly balanced neophyte riding a skateboard down an incline, buffeted by winds.

Thus, little can be known for certain about Mir until just before it enters the atmosphere for the final time.

As the Mir watch increases in coming weeks, Web surfers can keep up through a [NASA Web page](#).

Launched in 1986 with an intended life of three years, Mir just kept going, kept alive on an ad hoc basis by an admirably improvisational Soviet Union and Mir's successor political owner, Russia. For the past 15 years, it has orbited Earth every 90 minutes at an altitude of 350 kilometers.

Currently, the bulky, six-module Mir continues to orbit Earth at around 270 kilometers in altitude, falling toward Earth at anywhere between 200 and 650 meters per day depending on the influence of such hard-to-predict variables as atmospheric drag caused by solar activity.

It's when Mir hits an altitude of 240 to 250 kilometers that things will be critical, forcing controllers to whip out their calculators to figure Mir's final descent trajectory --- now estimated to occur sometime around March 6 to 10.

At that point, Mir will use its final fuel on board to aim for that oceanic basketball hoop in the Southern Pacific. As Mir falls, the heat caused by its re-entry should start burning it up around 80 kilometers above Earth and breaking it apart at around 70 kilometers.

The impact zone should be a shower of debris in a long ocean line, somewhere roughly 3,000 kilometers east of New Zealand, around longitude 140 degrees west and latitude 47 degrees south.

Of Mir's original 135-ton bulk, about 40 tons are expected to survive the battering from Earth's atmosphere and hit the ocean --- so everyone hopes. The few planes and vessels that will be transiting in the area will be warned in advance.