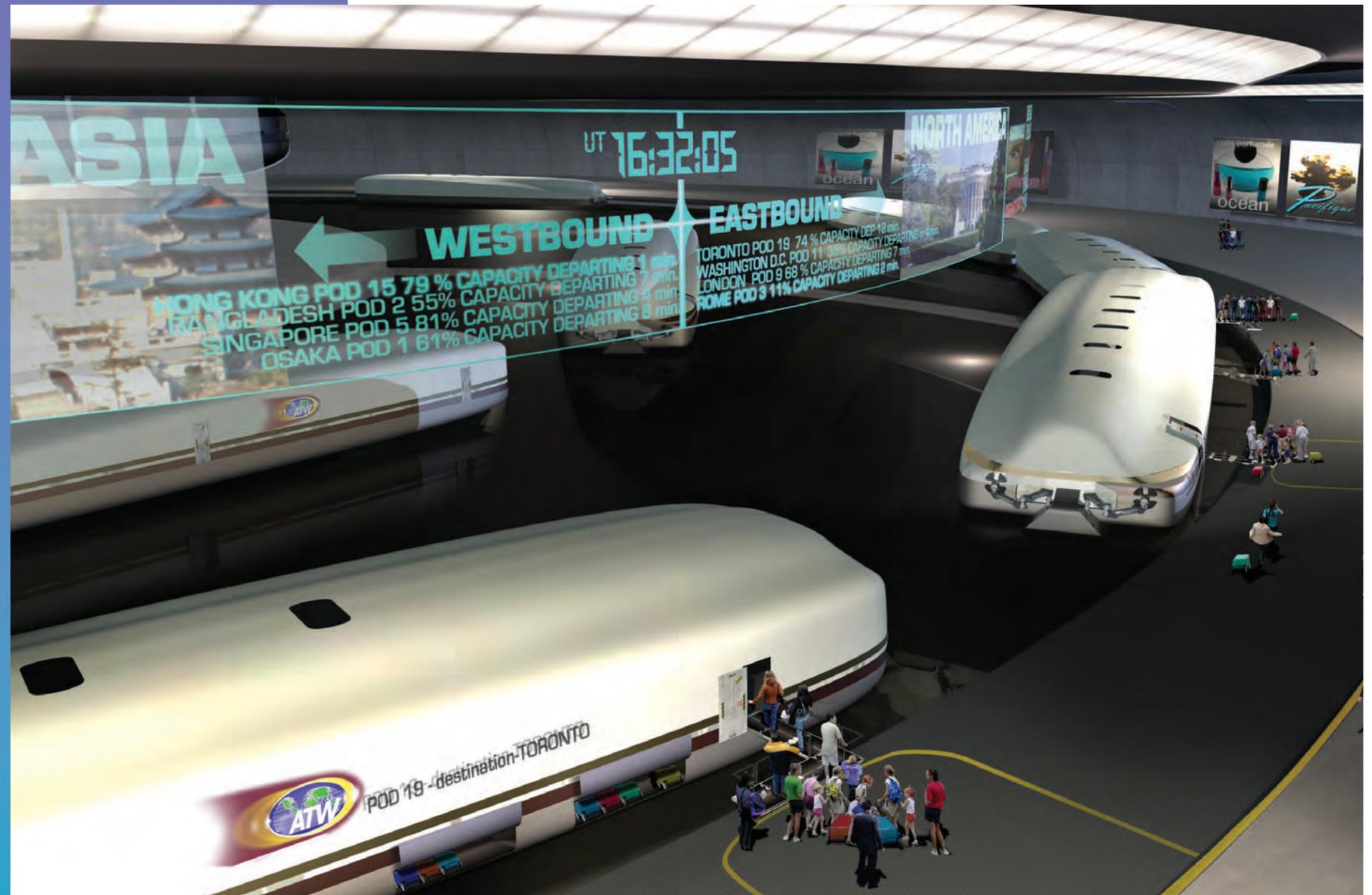


# TURNTABLE BOARDING AND CAT LAUNCHES

>> We'd come across the water from San Diego in a shuttle train, watching the red navigation lights of Global Clippers appear in the dark southwestern sky and then disappear at the horizon. At dawn, we got the first glimpse of our destination—the still-unopened



terminal of Neil A. Armstrong Intercontinental Airport. As our shuttle slid silently past the imposing domed structure and came to a stop between the towering cement haunches of the runway pier, airport architect Lakshmi Prasad stretched and stepped off the train into

a corridor filled with sea air. "Box that one back up!" she yells to a group of workers unwrapping a hideous sculpture donated by a prominent West Coast family. The men laugh and ask if she's giving yet another dime tour of the airport. "Well," she replies, "he is only here for one day."

Completed just days ago, in time for a December 3 opening, but \$52.6 trillion over budget, the mammoth island airport was active this morning as part of a 48-hour test of its integrated, automated guid-

ance system. Two dozen Global Clippers were shuttling back and forth on programmed routes over the Pacific, each with a flight computer loaded with software designed to tax the IAGS with a different hypothetical problem. Collectively, all this data would create a landing pattern logjam that the airport's computers would have to repeatedly sort through safely, and all of this at the whim of wind direction and the pilots hired to run occasional interference with lumbering span-loader transports. Arm-

strong's management hopes to receive passengers on the 17th-powered flight's 200th anniversary—and will bring aerospace bigwigs and governmental officials to a much ballyhooed opening event.

"I'm happy that I don't have to plan that too," jokes Prasad. Since she was nominated for the project in the early '90s (Soundings, Apr./May 2091), she's endured oversight from Congress and the Federal Aviation Administration—Armstrong is 65 kilometers off the southern California coast, beyond

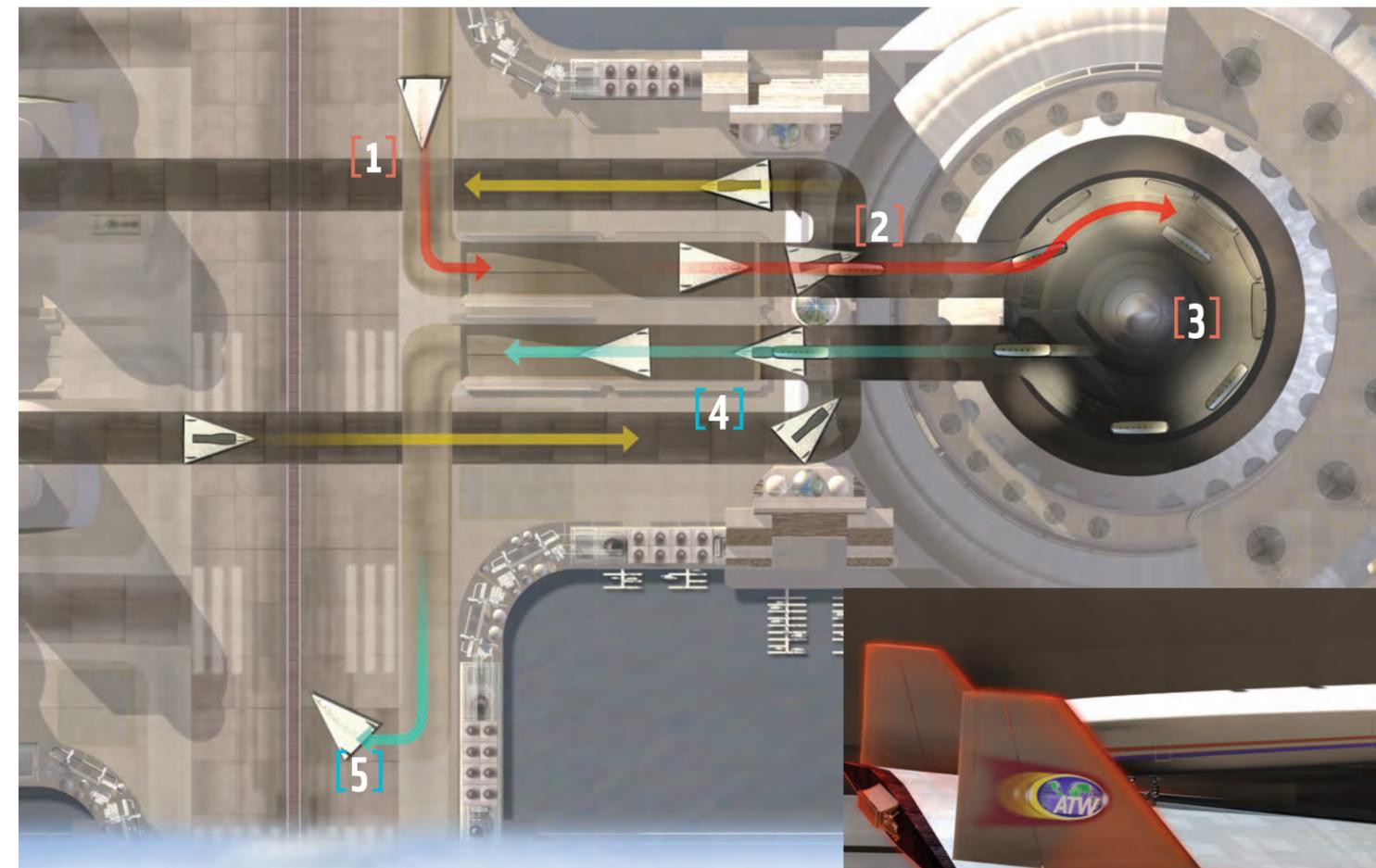
**THE CAROUSEL: ARMSTRONG'S UNIQUE SLOW-TURNING BOARDING DECK ALLOWS TRAVELERS TO STROLL INTO ONE OF UP TO 22 PODS.**

the reach of state law—as well as International Civil Aviation Organization scrutiny. She has spent the past decade designing the airport: overseeing the grooming of the ocean floor for construction, analyzing wave and wind direction, and managing the construction of the

terminal that will set Armstrong architecturally and operationally apart from other Clipper-serviceable airports.

At the terminal's heart—under the knobby rooftop communications center and the arboretum, over the shopping area, which dips 20 levels and 100 meters below the surface, and surrounded by docks and levels of parking for personal air vehicles—is a 15,000-square-meter turntable, the boarding area affectionately called the Carousel.

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WHEN A CLIPPER ARRIVES AT THE TERMINAL [1], ITS PASSENGER POD SEPARATES [2] AND IS PLACED ON THE CAROUSEL [3]. AFTER DE-PODDING AND BOARDING, THE POD IS MATED TO A REFRESHED CLIPPER SHELL [4] AND HEADS TO THE CATAPULT [5] FOR TAKEOFF.

(continued from page 3)

"There's really nowhere left on the [California] coast that could have accommodated this," says Prasad. "This site was a gift. I didn't have to worry about the environmental footprint of the project, which has constrained other designs." Clipper-serviceable airports have been built along coastlines to keep the aircraft's intrusive sonic booms over water and away from inland homes, but

coastal land is expensive, and laws designed to protect fragile coastal ecosystems restrict land use to narrow swaths that force designers to utilize boarding systems similar to old rail terminals: passenger pods arrive along a straight track and exit along the same route to awaiting Clipper shells.

Prasad's Carousel is based on a new philosophy. Its wide disk slowly carries pods plucked from arriving Global Clippers along its circumference. From there, passengers de-pod onto an outer platform. When the pod has been emptied, it is designated for another destination and travels along the Carousel's rim and fills with passengers. Pods continue along the Carousel until the scheduled departure time, then are sent to the exchange ramp and mated with Clipper shells. If a pod's capacity is reached before the departure time, the pod is sent to the ramp and a supplemental pod is brought

to the line. "The only limit on destinations here is how many pods can fit along the circumference," says chief engineer J. Brent Andrews.

"We can fit 22 pods along the rim—enough to ensure that at least one pod will head toward each Clipper-accessible destination per 90-minute window," adds Prasad as we take an elevator to the airport's apex—a control tower and observation platform that reaches 300 meters above the water. It was added late in the project at the insistence of the FAA in case the IAGS fails. Supported by an elegant arch ("I did the best I could to reconcile it with the already existing design," apologizes Prasad), it will be lightly staffed unless there is an emergency, though it offers travelers a better glimpse of glowing Clippers returning from the stratosphere, panoramic views of the towering photovoltaic power cells in the hy-

AFTER SEPARATION FROM PASSENGER PODS, CLIPPER SHELLS TRAVEL BY TUNNEL TO THE MAINTENANCE DECK, WHERE THEY ARE INSPECTED FOR MECHANICAL PROBLEMS AND SCANNED FOR CRACKS AND TEMPERATURE ANOMALIES. IF ALL GOES WELL, SHELLS ARE REFUELED AND READY FOR NEW PODS IN 25 MINUTES.

drogen plant two kilometers away, and a God's-eye view of diners at the hotel's glass-domed rooftop restaurant.

Later, down on the seaport level ("Clearly the best part of the place," says Prasad),

the gambling and cruise industries, which believe Armstrong to be an ideal jumping-off point for offshore betting and vacations in the Pacific. Though Armstrong will collect billions of dollars annually in fees from cruise lines and casinos, about a quarter of the revenue from water traffic will be generated by leasing space to smaller boats. "Most of the inter-

est we've seen has been from deep-sea fishing outfits who would save on fuel costs by keeping their boats out at sea rather than in a coastal harbor," says Josh Huisenga, Armstrong's business manager. But fishermen won't have to travel far for good waters; the complex's pylons have been seeded with coral to

catalyze a lively ecosystem. So as not to scare away fish or hotel guests, the extraordinarily loud hydrogen-powered catapult used to launch Global Clippers is muffled by a state-of-the-art black-sound speaker system. It should be an upgrade over earlier models notorious for allowing occasional claps and stresses buildings at other airports—most notably causing the collapse of a storage silo at McKenzie Airport in Vancouver two years ago.

But on the maintenance deck 30 meters below the

runway—where muffling is supposed to have the greatest effect—it's clear the system still has bugs. Employees of an entertainment company using the space to set up for the airport's grand opening had learned to recognize the purr at the start of the catapult sequence, and periodically rushed to strap on earmuffs to insulate themselves from the booms and the cursing that followed.

The \$900 million opening will feature a half-hour holomusical that will block out a quarter of the sky and be visible to beach-goers from north of Los Angeles to the Baja. The ribbon cutting will also mark the end of Prasad's

duties, and the start, she hopes, of a long vacation. "Forget about the travelers and dignitaries," she says. "I'll be the one catching the first flight out of here."

POWERED BY HYDROGEN SLUSH TRANSPORTED THROUGH SEAFLOOR PIPES, A CATAPULT ACCELERATES CLIPPERS TO 400 KNOTS IN 13 SECONDS—BUT PASSENGERS EXPERIENCE LESS THAN A 1-G LOAD. THE 4.25-KILOMETER RUNWAY ENSURES THAT AIRCRAFT HAVE ROOM TO RECOVER WHEN TAKEOFFS ARE ABORTED.

