of FlightSafety's course, Merino says. Instructors' internships are awarded following successful completion of the 270-300h ab initio programme and only after strict screening which includes an airline-style simulator check ride, he says.

Internships are growing in importance in US career-pilot training. UND Aerospace, part of the University of North Dakota, has struck a deal with United Express carrier Great Lakes Airlines for graduates of its Spectrum ab initio programme, to build experience by flying as paid first-officers on the lowa-based regional's Beech 1900s.

UND's internship programme has been expanded to include Montana-based regional cargo airline Corporate Air, a business-jet operator, and Reflectone's Dulles simulator centre and "...others are being developed", UND says.

The relationship with Great Lakes began as the consequence of UND's contract to provide ab initio training for Taiwan's China Airlines. Under this contact, 48 students a year undertake UND's 12-month Spectrum programme, followed by a 15-month Advanced Spectrum course, during which they move to the Beech King Air and get their Beech 1900 type rating before flying for 160h as first officers with Great Lakes.

On completion of their internships, China Airlines students return to Taiwan, where they become first officers on aircraft operated by the airlines. "Students from here have gone straight to Boeing 747-400s," says UND.

The university is marketing its ab initio training, primarily to foreign airlines, and, while it does not anticipate much US interest, it does expect alliances to develop between airlines and universities to ensure that the training provided meets the carriers' needs.

Spectrum, developed with Northwest Airlines, is being offered as a four-year degree course, the university says. Graduates will receive an internship with Great Lakes, during which they are expected to log 300-400h of valuable experience. UND is developing a preferred hiring programme with Northwest, under which the carrier and its commuter affiliates, when they need pilots, will hire from the University's ab initio degree programme.

Oakland, California-based Sierra Flight Academy expects the US ab initio industry to grow, but through foreign, rather than domestic, airline business. "The Asia-Pacific region is facing a critical shortage of pilots by mid-decade," says chairman and chief-executive Skip Everett.

Sierra has performed training for 38 airlines and its latest and largest contract, under way since 1991, is to train 90-120 students a year for Korean Airlines. A separate school was set up in Livermore, California, to handle the Korean contract, where students receive nine months and 250h of training before returning to Korea, where Sierra instructors continue their training on Piper Cheyenne 400 twin-turboprops.

"In the USA, there is a historical hesitancy to get involved in ab initio programmes," Everett says. "The US general-aviation industry is well-developed, the cost of training is reasonable and people can go out on their own and get training." Citing a mid-1960s scheme, under which United Airlines hired private-pilot licence holders contingent on their receiving a self-funded commercial-pilot licence, he says: "The United model might return if demand outstrips supply."

ARIZONA SUPPORT

The strongest proponent of introducing the ab initio concept to US airlines is Phoenix-based Airline Training Center Arizona (ATCA). The school, which performs ab initio training for German national airline Lufthansa, was acquired by the carrier in March 1992, when ATCA was training students sponsored by Japan's All Nippon Airways, Air France, Spain's Iberia and EVA Air of Taiwan.

ATCA is petitioning the FAA to establish a certification class for ab initio training, separate from the Part 61 and Part 141 regulations which govern US flight schools. The company says that few US schools provide true ab initio training, which it describes as "quality-oriented, rather than hours-based". ATCA says that the traditional route followed by the civil student "...builds hours, but not skills", whereas an ab initio course introduces airline-like procedures from the start.

Most major airlines accept first-officer candidates only with 3,000-4,000h in the cockpit, mostly in military aircraft. Lufthansa fills its right seat after only two years and less than 200h of flight training. That includes 170h in single- and twin-engine aircraft, plus 30h in simulators. A further 20h in turboprop aircraft and 40h in simulators, plus 40-60h in airline simulators and about 2h in the aircraft, are provided at its training centre in Bremen, Germany.

"Our long-term strategy is to set up ab initio training for US airlines," says ATCA president Capt Willy Kuhweide. "The bigger airlines are still looking for experienced pilots — somebody who has accumulated thousands of flight hours. We have very good experience with our lower-flight-hour students, but you have to make sure their training is complete," he acknowledges.

"But I think [the airlines] will have to reconsider, because the resources are disappearing. Their basic resource has been ex-military, but, now, the requirements are different and it takes a lot of money to transition a pilot from the military to the new commercial aircraft. Experience is fine, but it isn't everything," he continues.

ATCA is also re-training Lufthansa flight engineers to be first officers. Other business includes twin-engine training for Swissair, ab initio training for Iberia and EVA and training to multi-engine and instrument proficiency for All Nippon.

The school is talking to Latin American and Caribbean carriers about establishing a foundation — the Pan American and Caribbean Pilot Initiative (PACAPI) — to train their pilots in the USA. Most of the region's carriers have a small demand for pilots, but a big need to maintain their individual airline and country cultures during training, ATCA says.

Under the PACAPI proposal, carriers would send students to ATCA for ab initio training to first-officer proficiency at Phoenix and Bremen. Students would be trained in pairs and groups chosen according to cultural similarities. Trained pilots would return to their airlines, where payroll deductions would pay for the next class.

Chicago-based American Flyers avoids using the term ab inito because it is not well understood in the USA. The company also disdains close links with airlines, preferring to deal with self-financed individuals. It provides professional-pilot courses in Florida and southern California. Graduates are then recruited into the company's private-pilot training schools to build hours by working as instructors.

While Jay Elder, head of the Florida academy, believes that US airlines "...can ill afford the cost of supporting ab initio training", he accepts that the US flight-school industry "...is going to have to seek standards that the airlines will be comfortable with".

Cadets at ATCA, in Phoenix. ATCA is a strong ab initio supporter