

Loan From Tehran Saved Third World

By Steve Coll
Washington Post Foreign Service

TRIESTE, Italy—High on a bluff above the Adriatic Sea here sits a little-known, 28-year-old advanced science and nuclear physics facility that was rescued from financial crisis last year by a timely \$3 million loan from the government of Iran.

The facility Tehran saved is the International Center for Theoretical Physics, founded and run by Mohammed Abdus Salam, Pakistan's preeminent theoretical and nuclear physicist, who each year oversees post-doctoral research work by scores of government-employed nuclear and other scientists from Third World countries such as China, Iran, Pakistan and India.

An examination of the Trieste center's activities and interviews with director Salam and other nuclear physicists raises questions about whether some of these Third World government scientists, in addition to peaceful research, are carrying out in Trieste work related to nuclear weapons, missile systems or other military technologies.

Salam said in an interview that his research center follows a "policy of ignoring" whether visiting Third World nuclear and other scientists are working on civilian or military projects.

"We have this official policy that work must be done for peaceful purposes, but it's more official than kept up because it's difficult to keep up," Salam said. This is because there is no practical way to distinguish between military or peaceful purposes in the kind of sophisticated nuclear physics and science research that the Trieste center sponsors, he said.

"That which we can do, we do [to prevent military work], particularly in regards to the labs," Salam added, referring to Trieste facilities that include access to a U.S.-made supercomputer, lasers and advanced microprocessors. But when Third World institutions tied to the Trieste center such as state-controlled nuclear and scientific organizations in Iran, China, Pakistan and India send their senior scientists for advanced research, "we don't know what they do," Salam said.

Salam made these remarks while articulating his lifelong conviction that scientists from poor countries deserve the same opportunities as their counterparts in the developed world and that the Trieste center is one of the few places they can find such opportunities in a collegial atmosphere with advanced research facilities.

Yet there are apparent contradictions between the goal of transferring the most advanced science from rich to poor coun-



tries on the one hand and the growing effort on the other hand to contain the spread of nuclear weapons in the post-Cold War world.

For example, although the Trieste center receives some funds each year from the main international nuclear watchdog agency, the International Atomic Energy Agency (IAEA), hundreds of government-employed scientists travel to Trieste annually from countries such as India, Pakistan and Brazil that have rejected inter-

Nuclear Research Center

national nuclear safeguards supervised by the IAEA and have refused to sign the Nuclear Non-Proliferation Treaty, which is designed to curb the spread of nuclear weapons.

India, which sent 258 scientists to Trieste last year, detonated a nuclear bomb in 1974, rejects the Non-Proliferation Treaty and has a wide range of unsafeguarded nuclear facilities. Pakistan, which sent 55 scientists to Trieste last year, announced this year that it is capable of deploying nuclear weapons. Pakistan says it will not sign the treaty as long as India refuses to do so, and it maintains a number of nuclear facilities outside the IAEA's inspection and monitoring regimes.

Trieste director Salam was a member of Pakistan's Atomic Energy Commission for 16 years until he resigned in 1974. Western analysts said there is disagreement about what role, if any, Salam has played in the Pakistani nuclear weapons program since then. He has maintained ties to Pakistan's government, sponsored Pakistani nuclear physicists at his center and recently received Pakistan's highest civilian award for public service. A Nobel laureate in physics in 1979, Salam has preached publicly against defense spending and nuclear weapons for decades, and he repeated his commitment to peaceful science in an interview.

Some countries that send scores of government-employed nuclear and other scientists to Salam's Trieste center annually, including China and Iran, have signed the Non-Proliferation Treaty but have been accused by Western governments nonetheless of exporting nuclear and missile technologies or of harboring nuclear ambitions.

In 1991, the year Iran made its \$3 million loan to the Trieste center, the Tehran government sent 77 nuclear and other scientists from government ministries and universities to attend courses and conduct research at Trieste, according to the center's records. Some of these Iranian scientists came from the Atomic Energy Organization of Iran, the government's main nuclear facility.

Three scientists from the Iranian Atomic Energy Organization attended a 1990 "workshop on reactor physics calculations for applications in nuclear technologies" staged at Trieste. Three other Iranian nuclear scientists also attended, as did nuclear physicists from India, China and the Pakistani nuclear centers where Western analysts believe Islamabad's nuclear weapons were designed.

The U.S. government has accused Iran of attempting to acquire nuclear weapons, and intelligence officials have publicly

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warned that Tehran could achieve its goal by 2000. Iranian officials deny this and say they have gone out of their way to invite international inspections of their nuclear facilities.

To some Western analysts, as one U.S. nuclear physicist and part-time government analyst put it, Trieste is "very clearly a window on the technology and the computational power that you would need to work on purely military or disguisably military physics." But to others, the more important issue is that "you cannot prevent a country from educating its people" even if its government refuses to sign nuclear weapons treaties, as one prominent U.S. physicist said.

To nuclear proliferation specialists, the Trieste center illustrates just how rich the world of science—and particularly nuclear science—has become in the developing world at a time when the West is trying to control the spread of nuclear weapons. The question many scientists wrestle with is how to contain this spread of knowledge without limiting the development of poor nations.

The course work and research facilities available to Third World government scientists in Trieste range from purely civilian subjects such as pure mathematics, weather forecasting and earthquake prediction to applied science and nuclear physics subjects with obvious potential for military applications, according to the center's records and to several nuclear physicists familiar with its work.

A 1991 "research workshop in condensed matter" attracted six nuclear physicists from Iran, including one from the government's Atomic Energy Organization; more than a dozen nuclear

scientists from China; and similar numbers from India and Pakistan. According to the Trieste center's records, which the center made available on request, the Indian delegation to this course included a scientist from the Bhabha Atomic Research Centre, the unsafeguarded nuclear research facility that built the atomic bomb India detonated in 1974.

In a telephone interview, IAEA official Maurizio Zisserero defended the agency's support for

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— IAEA official Maurizio Zisserero

the Trieste center. He said the IAEA exercises "a close scrutiny" on the kinds of subjects and research projects sponsored at Trieste. Because the center does not teach detailed aspects of nuclear technology—such as how to separate nuclear bomb ingredients from one another or how to fabricate nuclear fuel—the center's activities do not pose a threat to international nuclear safeguards, Zisserero said.

"You cannot deny education to gifted scientists," regardless of whether their governments agree to international nuclear treaties, Zisserero said. "This is a place where gifted scientists try to fight against isolation."

But Zisserero acknowledged that there is evidence that the Trieste center has previously been used by at least one Third World nuclear physicist involved in secret nuclear weapons

building. IAEA investigators looking into Iraq's secret nuclear weapons program after the Persian Gulf War discovered that the Baghdad weapons program's director, Jaffar Dhia Jaffar, a Western-trained nuclear physicist, attended the Trieste center briefly during the 1970s to conduct advanced research, said Zisserero, who is a member of the team investigating Iraq's nuclear program.

Jaffar also conducted research at the European Community's main nuclear research facility, the European Center for Nuclear Research, or CERN by its French initials, Zisserero said. CERN continues to sponsor research by visiting theoretical physicists and nuclear scientists from around the world, including scientists from countries that reject the Non-Proliferation Treaty or are accused by Western governments of contributing to nuclear weapons proliferation.

A CERN official in Geneva, who asked not to be identified, said it "would be absolutely, outrageously naive to say that there could never be military applications" for the kind of nuclear and scientific research conducted there and at Trieste. "But all the research we do here is pure research. There are no industrial or other applications involved in the work."

At present, there are about 300 Chinese physicists conducting research at CERN, the official said. There are also eight physicists who have Iranian citizenship now conducting research in Geneva, the official said, although seven of these scientists are employed by or affiliated with Western universities.

Correspondent Caryle Murphy in Cairo and special correspondent Clare Pedrick in Rome contributed to this report.