

Nuclear Engineering

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BOX 7 FOLDER 5

# Committee left many questions

By Mike McNamee

Charles Kindleberger was tentative as he presented his committee's report to the faculty Wednesday afternoon. The report "hinted," "suggested," "reminded;" the committee had "considered" matters, frankly "skirting around" some issues which they felt were too much to handle within the six months they had had to work. Suggestions rather than guidelines, feelings rather than proposals — Kindleberger offered the faculty a report they would have to grow into, not quite a finished product.

But the faculty members at the meeting apparently expected more of Kindleberger and his Ad Hoc Committee on International Institutional Commitments. The group born last spring in the fire of debate over the Iranian nuclear engineering program ran into a gentler blaze of questions and doubts, a blaze that shed more light than heat on the difficult matters at stake in MIT's "foreign policy."

Kindleberger's group offered the faculty a eight-page report and two motions for consideration. Splitting the issues involved in foreign programs into two types — educational and "political" — the committee suggested a two-tiered structure to deal with them. Educational issues would go to the committees already dealing with them, the Committees on Educational Policy (CEP) and Graduate School Policy (CGSP). "Political" issues — questions about the suitability of programs, about whether MIT should deal with a given country — would be referred to a new Committee on International Institutional Commitments for advice — but not approval. The Ad Hoc Committee had defined the membership of the CIIC, laid down the split of issues between the two tiers of organization, and was apparently satisfied with its results.

But the faculty was not. Professor after professor asked Kindleberger and other committee members to clarify, define, guide, distinguish, delimit, to lay down stricter standards for questions which the committee apparently had preferred to leave vague.

The Tech  
October 17, 1975

What is an international program, they asked, and when did it become institutional instead of personal? How do you distinguish between educational programs and research programs if you aren't sure what education is? Can MIT afford to skirt political issues, as it has tried to do so many times in the past? What would be the effect of the committee's proposals on the CEP and CGSP, the individual faculty member, the ad hoc seminar or symposium with foreign participants, the research contracts?

Disappointment seemed to be in the air. Professor of Electrical Engineering Louis Smullin, a member of the Ad Hoc Committee, admitted his own misgivings about the report: "I feel there are issues where one ought not take a neutral stand, where one should take some stand on this government or that project," he said. "I realize the impossibility of writing any kind of general guidelines into this report. But this document carefully skirts all political issues . . . and it disturbs me."

And President Jerome Wiesner, remarking that "MIT has never had a formal procedure for passing on political issues before," wondered aloud if the committee "really recognizes the enormity of their steps (in creating the CIIC) and has considered it thoroughly enough."

In the end, the motions of the committee were sent back for a tune-up — for improvements in wording, some clarification of purpose and intent. But whether the committee could grasp in less than a month the issues that didn't seem to show up in this report, the result of six months of work, remains to be seen. Hard questions still lie ahead for the Kindleberger committee's soft report.

# Iranian nuc program runs into problems

The Tech  
Sept. 16, 1975

By Mike McNamee

The MIT program to train nuclear engineers for the Atomic Energy Organization of Iran has suffered from a number of problems and setbacks since the program's first class of students arrived in June, *The Tech* has learned.

Difficulties in arranging support services for the students, misunderstandings about the precise nature of the program and the admission of several students who were not eligible to come to MIT this year have plagued the program, MIT officials have said.

As a result, enrollment in the program's first class has dropped from the 27 students admitted to 20, some students have threatened to leave the program and go back to Iran, and some of the students began academic work this fall without the summer training which had been planned for them.

Cultural differences, problems in informing the students of what was expected of them before they left their country and in coordinating their arrival here apparently were responsible for many of the difficulties, Professor of Nuclear Engineering Kent Hansen, who negotiated the contract under which the students are being trained, said.

"These (difficulties) are in the category of start-up transient problems, the kind you'd find in any program," Hansen, who is acting as Registration Officer for the students, told *The Tech*. While admitting that the problems had affected the program and slowed some of the students

down, Hansen stressed that they were only "administrative difficulties."

The students are the first of two classes of Iranian students to be admitted to MIT and trained as nuclear engineers under a contract negotiated by Hansen and Dean of Engineering Alfred Keil with the Atomic Energy Organization of Iran last March. The contract provides for a three-year program in which up to 54 Iranian students will receive master's degrees in nuclear reactor engineering.

The program ran into heavy opposition from students and faculty who objected to MIT contracting with foreign governments for educational services and who felt the training increased the dangers of nuclear proliferation. As a result, the Ad Hoc Committee on International Institutional Commitments was established and instructed to report in October on its deliberations.

Under the contract, the students were to arrive in June to start an intensive program of study in mathematics, physics, history of nuclear engineering, and English. But some of the students failed to arrive on time — two students did not arrive at MIT until Labor Day weekend, Hansen said — and some of those who arrived on time apparently were not aware of what was expected of them.

"Two of the students who came in June showed up here and said they wanted to get doctorates, rather than the master's program, and in mechanical, not nuclear engineering," Hansen said. "We told them no, they had been admitted for a special program and couldn't transfer, and so they left and went to Stanford University to study mechanical engineering."

Other students, Hansen said, "never left Iran," including some who were in the armed forces and were not eligible to come to the United States this year. Others, he said, accepted admissions offers from other schools and went elsewhere, leaving MIT with 20 of the 27 students admitted.

The problem of academic program was not the only misunderstanding between MIT and the students. Although a decision had been made early in planning for the program that the students could not be housed in MIT dormitories, many of the students failed to accept this, and protested when they were told they would have to make their housing arrangements for the fall. Housing the three women participating in the program was especially difficult, as Iranian single women do not often live in apartments by themselves and the students objected to the idea.

"Ultimately, all the students were reconciled to the idea," Hansen said, "but the girls were much more upset than the men." The three women were placed on waiting lists for MIT graduate housing, but, Hansen said, "at least one has given up" and taken an apartment.

Hansen refused to comment on reports that the women threatened to go back to Iran, saying they had met with the Deans for Student Affairs and had "expressed concerns — there were no angry scenes." But Dr. Paul E. Brown, Assistant Director of the Center for Engineering Studies and administrator of the program, told *The Tech* that "If there had been a way for them to get back, I think some of them would have taken it. They were very unhappy."

Hansen said that the students had been adequately informed of what was expected of them,

and attributed the problems to cultural differences and minor misunderstandings. "In Iran, apparently, signing a contract doesn't mean that a negotiation is ended — there's still room to bargain," he said. "Many of these students just didn't seem to take seriously what we told them." The mistakes and problems, Hansen said, will help smooth the path for the second class in the program, due to arrive next June, and help MIT's planning in future foreign programs.

But other MIT officials have expressed serious concern about the program's failings, and stress the need for caution in such future dealings. Vice President and Dean of the Graduate School Kenneth Wadleigh '43, for example, said the program showed that "inadequate attention" had been given to the support services needed by the foreign students.

"This (Graduate School) office will certainly be more involved with future international programs," Wadleigh said, noting that the Dean for the Graduate School had been involved in planning the Iranian program "after the deal was signed." His office, Wadleigh said, would strive to be "instructively critical" of future programs.

And Brown pointed out that "it would have been nice if they'd been better informed . . . I don't think we'll ever be able to convince them that they're regular students now

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To: JBW  
From: WAR x c: BSW



BARBARA SCOTT NELSON  
OFFICE OF THE PRESIDENT  
SEP 9 1975  
REF. TO \_\_\_\_\_  
FILE \_\_\_\_\_

Massachusetts Institute of Technology  
Center for Advanced Engineering Study  
Cambridge, Massachusetts, 02139  
Room 9-221

OFFICE OF THE  
PROVOST  
SEP 4 1975  
Ref. to \_\_\_\_\_  
File \_\_\_\_\_

September 3, 1975

OFFICE OF THE PRESIDENT  
ROOM 3-208  
SEP 5 1975  
REF. TO \_\_\_\_\_

MEMO TO: Dr. Walter Rosenblith

FROM: Paul E. Brown

Dr. Tribus asked me to write you a brief memo on the status of the Iranian Nuclear Program.

There are now a total of 19 students in the Program. Fifteen students arrived in June or early July for the Summer Program. The Summer Program consisted of intensive training in English as a Second language, a review of Advanced Mathematics subject, an Introduction to Modern Physics subject, a History of Nuclear Engineering subject and a number of orientation lectures and meetings concerning housing, safety, medical, social services, student affairs, academic affairs, and libraries.

- One student arrived on August 18, 1975
- One student arrived on August 25, 1975
- Two students arrived during the Labor Day weekend.

The major problem that arose during the Summer Program was housing. Even though the students were told before they left Iran that on-campus housing would not be available and I also wrote to them in Iran telling them that they could only stay in Ashdown House during the Summer while they looked for off campus housing, they want to stay on campus. However most of them are now settled off campus.

The other problem area concerns misunderstandings between what some students expect and what the Program will offer. I think that for the group that will arrive in June, 1976, much more extensive interviewing and orientation should be done in Iran.

*Paul*  
Paul E. Brown  
Assistant Director

PEB:dw

- cc: Dean James Bruce
- Prof. Kent Hansen
- Dr. Myron Tribus



DEPARTMENT OF NUCLEAR ENGINEERING  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

77 Massachusetts Avenue

Cambridge, Massachusetts 02139

XC BSN

OFFICE OF THE PRESIDENT  
ROOM 3-208

AUG 20 1975

Room: 24-109

August 19, 1975

BARBARA SCOTT NELSON  
OFFICE OF THE PRESIDENT

(617)253-3806

AUG 20 1975

REF. TO

FILE

TO: Distribution  
FROM: K. F. Hansen *KFH*  
RE: Evaluation of Iranian Special Program

This memo is to inform you of the appointment of Ms. Lois Godikson as a research associate in the Nuclear Engineering Department and the Center for Policy Alternatives to conduct a study of the impact of the Iranian Special Program. You may recall that in the faculty discussion of the program it was stated that an evaluation of the special program impact would be undertaken.

Ms. Godikson received her Ph.D. in Sociology from Northwestern University and has recently specialized in the area of participant training programs. Before taking on the Iranian program evaluation she was working in the Center for Policy Alternatives on human resource development for the Sahelian project. Prior to coming to M.I.T. she worked for a year in Afghanistan on the evaluation of AID training programs. She brings to the Iranian study a valuable and unique background.

As part of the study, Ms. Godikson will need to meet with many members of the faculty and administration. I am writing to ask that you cooperate with her as your schedule permits. I am certain that the quality and usefulness of her report will be improved by your cooperation.

KFH:fg

file - Iran

marked the emergence of Western Europe as a *de facto* neutral bloc. The removal of tactical nuclear weapons would simply carry this process a step farther. In the current jargon of international affairs, it might eventually result in the "Finlandization" of Europe—and therein would lie its appeal to the Soviet Union.

Such a reduction of the American military presence would doubtless provoke an outcry both here and abroad,

along with the charge that we were "selling our allies down the river." But the arguments for that presence have long since lost their rationale and become little more than a mental reflex. We need to balance the *possibility* of a slight increase of long-range hazards in Europe against the *probability* of a marked decrease of immediate dangers in the Middle East. When the question is posed in this fashion, the choice seems clear.

Read part to JOW / page 4/23/75

SELLING M.I.T.

# The Iranian Uranium Connection

**JAMES KOHL**

The Great Iranian Uranium Connection—M.I.T.

Presented by Chi Epsilon, Civil Engineering Fraternity, dedicated to engineering ethics; An open forum for discussion of the issues by the M.I.T. community; Friday, 14 March 1975; Room 26-100; 3-5 P.M.

*Boston*

So read a poster in one of this Institute's interminable complex of corridors (there are 35.5 miles of them). As an ex-faculty member of what it likes to call "the community," I decided to attend the forum and observe both the issues and the constituency. My interest in the "Iranian Uranium Connection" was part of a continuing reconnaissance of this New England branch of the Pentagon (more than half of its budget is provided by the Department of Defense; these are sometimes classified for security clearance), known for its success in the research and development of marketable technology.

Chi Epsilon's moderator began the forum by stating the fraternity's position: "We don't as a group hold any feelings." A few minutes after 3 P.M. the administration's representatives, including President Jerome Wiesner, joined the 300 persons assembled in Room 26-100 and M.I.T. began to discuss the issues involved in the probable sale of nuclear technology to Iran, the first "developing" nation to appear with cash in hand.

M.I.T.'s role is, at this writing, a small part of the Shah's grandiose nuclear scheme. He has earmarked \$10 billion for the purchase and maintenance of ten nuclear reactors and to train the technologists to operate them. While M.I.T. will receive twenty-seven students (20 per cent of the total number of graduate students in its Nuclear Engineering Department), more than 250 other Iranian students will be arriving at nuclear engineering departments around the United States. The issue, therefore, is who, if anyone, has the right to make decisions of such magnitude?, and it is of national importance. This point was lost on many faculty and students present, and most of those absent, and it was predictable that it would be. An integral part of the "New American Mandarins" education is the acquisition of a technological perspective,

more as an effect of socialization than by deliberate effort. The stress is on research and the development of technological *problems*; the more intellectually rigorous the problem, the greater its validity and importance. As professionals, engineers either ignore ethics or leave them to other specialists, specifically philosophers. But that hardly meets the issue at M.I.T. where a constant debate centers upon the Philosophy Department's exclusive devotion to analytic philosophy, which, it contends, is the only philosophy sufficiently rigorous and scientific to be worth scrutiny.

It was consistent, then, for M.I.T.'s administration spokesmen at the forum to ignore broader issues, and many listeners had to be reminded by one speaker from the audience that there was an external world which was also considering similar proposals. M.I.T.'s elite mentality quickly asserted itself in the opening remarks by Prof. Kent Hansen, acting chairman of the Nuclear Engineering Department. He said that M.I.T. had been approached by the Atomic Energy Organization of Iran "because it's the best in the world." He then added that he had returned so recently from Iran that he hadn't "had time to get my slides developed or I would show them." Hansen stressed that the Iranian students he had interviewed were both competent and civilized, although later remarks ("I only learned to say 'thank you' and 'cheers' ") would reveal obvious limitations of his capacity for judgment. On the question of curriculum, the chairman observed that the students would not take specific weapons courses, but could choose "plasma physics for electives." The bulk of the academic program is to include reactor physics, materials and heat transfer. Chairman Hansen said M.I.T. would closely monitor the program for "hidden effects."

In an interview given to *Tech Talk*, the Institute's official newspaper, Dean Alfred Keil of the School of Engineering revealed that the school's Center for Advanced Engineering Study would examine the Iranian program for "hidden effects." According to Dean Keil, the center "has long experience in administrating special graduate programs for engineers and scientists from U.S. companies and industries whose mid-career study programs for advanced degrees are *sponsored by their employers*" (my emphasis). Iran, the employer here, "has earned a worldwide reputation for farsighted planning" and "has chosen

James Kohl is the author, with John Litt, of *Urban Guerrilla Warfare in Latin America* (M.I.T. Press).

to develop a nuclear power industry in an orderly manner over the next two or three decades as a substitute energy source when oil is gone."

Obviously the Institute and I have differing concerns regarding the "hidden effects" of the Iranian program; but worse, M.I.T. is presenting the issue in purely business terms, with Iran a mere customer of technology. Finally, the dean stressed that M.I.T. would provide, formally, only the technology for nuclear reactor engineering. Plutonium separation, a requisite for nuclear weaponry, was outside the province of nuclear engineering (specifically, in the Departments of Metallurgy, Chemistry and Chemical Engineering). The dean also entertained lesser questions involving such issues as cost analysis of the program and bureaucratic issues (departmental politics within an institution comprised of a welter of jealous and competitive fiefdoms).

We are witnessing, then, not only a redefinition of international diplomatic relationships, as sub-imperial nations (e.g., Iran, Brazil) purchase nuclear technology, but the redefinition of the university as its resources are sold to those powers able to purchase them. This prospect is as inevitable as the democratization of the power of nuclear destruction, in itself a frightening concept.

Despite largely successful efforts at internal counterinsurgency, the Institute nevertheless has encountered resistance to "The Great Iranian Uranium Connection." In one of its best editorials in years, *The Tech*, the Institute's official student newspaper, noted M.I.T.'s refusal to entertain "discussion of the issues—nuclear proliferation, M.I.T.'s obligation to society, M.I.T.'s obligation to its own educational standards," and presented the moral argument against "Selling M.I.T.: Bombs for the Shah":

A resounding "No!" from the community to the Institute's plans to train nuclear engineers for the Shah could, if M.I.T. is as influential in the scientific world as M.I.T. likes to keep telling itself it is, be a leading factor in forcing deeper consideration of the issues involved everywhere. In the meantime, M.I.T. can try to think of other, less reprehensible ways to make ends meet which will not involve the moral abdication implied by this plan.

Opposition within the M.I.T. "community" also extends to political issues, many of which have been raised by the Science Action Coordinating Committee (SACC). SACC was actively opposed in the late 1960s to the Institute's role in the development of military technology—both hardware (helicopter stabilization, sophisticated sensing devices, moving target indicators) and software (social scientific research and theory)—for the suppression of guerrilla warfare. The U.S. Government was the consumer of this technology as well as that for raising the stakes in the nuclear race (the MIRVs of the 1960s and MARVs of today).

A small student-faculty vanguard is now leading resistance to the sale of 1970s military technology. And again the opposition must first educate an audience to understand the issues involved. Only a handful of faculty attended "The Great Iranian Uranium Connection." The reason may be traced back to the Institute's efforts to influence student and faculty opinion from the late 1960s to the present. The results—narrower and less gifted students ("more turkeys," to quote an administration official) and

fewer faculty (the Humanities Department, hotbed of resistance to the Second Pentagon, now bears a greater resemblance to the catacombs than to an academic department)—illustrate the administration's formula for dealing with political and budgetary problems in one stroke. The warriors who remain are weary; a decade of struggle, combined with the stifling atmosphere of alienation, has numbed critical sensitivity. Prominent spokesmen such as Noam Chomsky, Salvador Luria and Philip Morrison, who failed to attend "The Great Iranian Uranium" forum, are still active opponents of the new industrial state outside M.I.T.

In an academic leaflet, "Issues Raised by M.I.T. Training of Iranian Students in Nuclear Engineering," SACC objects that the Institute has been preparing in secret a deal which was only disclosed by *The Tech* on March 4 and presents the administration's "excuses" for its action: "It wasn't M.I.T.'s idea anyway so we have no responsibility for our actions"—"There is nothing sinister about providing a fanatic absolute dictator with uranium and engineers"—"They [the Iranians] are in desperate need for nuclear power despite being the second largest oil producers in the world."

SACC then rebuts each of the Institute's defenses: "The cause for alarm, of course, is the possibility of Iran using the materials and knowledge available to build nuclear arms—"Politically, the situation is ominous: Iran is under absolute dictatorship of the Shah"—"No government in the world is more repressive, less principled, than that of the Shah, who has admitted on U.S. TV to unquestioned use of immediate execution to quench internal dissent"—"As the second largest oil exporting nation Iran is rapidly becoming a world power, and the Shah is very happy with his position . . . working full-time to prepare for his rise."

Given the above, SACC concludes that discussion of the Shah's use of nuclear technology lies not in the realm of probability (which M.I.T. would concede) but in that of absolute certainty. The possibility of assisting a fanatical regime to create a weapon of incredible power is in itself unconscionable, but realistic assessment that such a result is probable makes the situation urgent. Iran will soon possess both of the prerequisites needed for membership in the nuclear club: technological expertise (courtesy of M.I.T. et al.) and the material (plutonium). A Boston television program (NOVA: Channel 2) recently featured a story of an M.I.T. undergraduate who had assembled a 37-page technical report demonstrating his ability to construct a nuclear bomb. The show's producer, John Angier, says the report "with instructions, forms, diagrams, everything," demonstrated "that it was frightfully easy to design such a bomb." Swedish scientists who evaluated the report concluded that there was a "fair chance" the model would work. Even a "fair chance" is frightening and the student, an undergraduate, is at present in hiding for fear of being kidnapped by "terrorists."

The plutonium issue raises one of the more interesting political relationships in nuclear technology. The technology of atomic weapons is more elementary than that of the hydrogen variety. Japan and a number of Western European nations have the requisite technological and material links to join the nuclear club, but have demonstrated no obvious political desire to do so. A number of



other nations, notable for extreme authoritarian rule (Iran, Brazil, Spain, Nationalist China), are now exhibiting signs of such interest. At the heart of elementary nuclear weapons technology is plutonium, a rare element accumulated through the processing of waste from nuclear reactors.

As a signatory to the Nuclear Non-Proliferation Treaty, the Shah has the right to process his own nuclear wastes from the ten reactors soon to be acquired. Iran will, therefore, technically achieve nuclear weapons capacity. An evaluation of this capability hinges on interpretations of the nature of the Iranian state from evidence of conduct and propaganda. The Shah, a self-admitted absolute dictator with a will to re-create the Persian Empire of his ancestors, stated on CBS's *Sixty Minutes* that he had executed two prominent writers, Khosrow Golsorkhti and Iaramat Daneshian, while adding confirmation to six more victims. He came to power in 1953 through one of the better known CIA coups, and rules with a tyrannical will (assisted by Ambassador Richard Helms). The country's village population today subsists on an average per capita income of \$200 (U.S.). Some 20,000 to 40,000 political prisoners (including Gholam Hussein Sa'edi, Iran's greatest modern playwright, and prominent social scientists and educators) are proof that Iran lacks democratic freedoms. The state's grandiose schemes for accretion of the Persian Empire are lost on the majority of the population (who as Kurds, et al., do not share the Shah's Persian chauvinism), but not on the Iraqi Kurds, or the Dhofar Liberation fighters, who face Iranian mercenaries and Omani troops.

Given the Shah's probability of obtaining nuclear weapons, as suggested by the evidence, SACC addressed the institute's "last defense . . . academic freedom." Of all the issues to be entertained in the Iranian Uranium debate, this is:

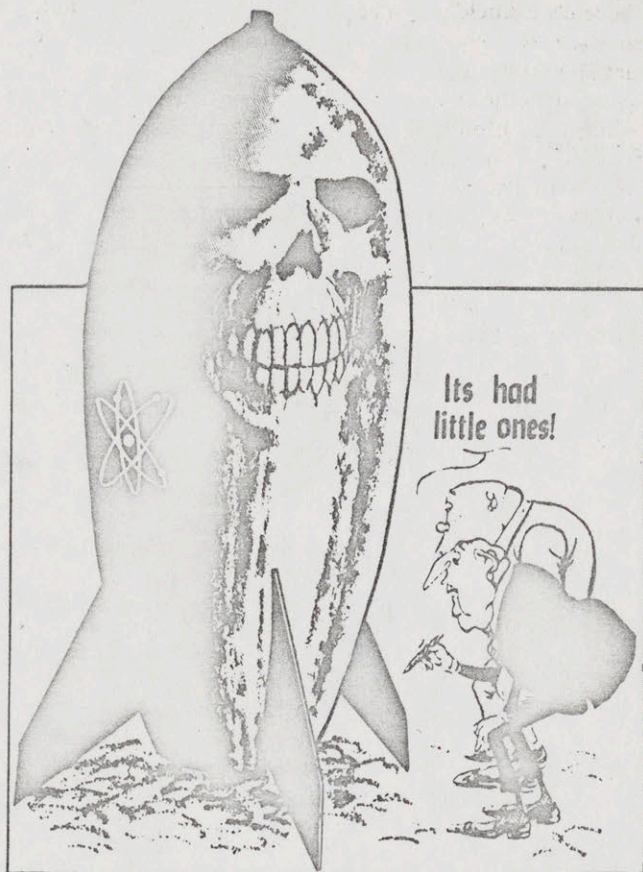
The most difficult, subtle and irrelevant, yet we must face it. It is to be faced sooner or later by science. In our world of books, ideas and problems that end at 5 P.M., the free interchange of ideas is regarded as an absolute value. We submit that the deal in question has nothing to do with the exchange of ideas—this is vocational training to prop up a repressive regime. Training of the nuclear technicians of an absolute dictator is quite opposed to the freedom to teach philosophical systems which differ from those prevailing (which people don't miss much), or the freedom of political or artistic expression. *The bearers of technology must censure themselves or eventually experience censure from without.* (SACC's emphasis).

Technology may indeed be too important to be left to technologists.

One recalls Kurt Vonnegut's *Player Piano* as Dr. Jerome Wiesner, president of M.I.T., former science adviser to John F. Kennedy and a moderate in Institute politics, responds to a question at "The Great Iranian Uranium Connection" regarding his role in this affair and his earlier role in developing the "electronic battlefield."

*Wiesner:* In the automated battlefield all we were doing was trying to end the Vietnam War, *my way* (emphasis his). The issue is whether we want to make a grand moral play and exclude the [Iranian] students.

*Vonnegut:* This book is not . . . about what is, but a book about what could be. The characters are molded after persons



Chuschk, Edmonton Journal (Canada)

as yet unborn, or, perhaps, at this writing, infants. It is mostly about managers and engineers. At this point in history, 1952 A.D., our lives and freedom depend largely upon the skill and imagination and courage of our managers and engineers, and I hope that God will help them help us all stay alive and free.

A student letter in *Thursday*, M.I.T.'s independent student newspaper, suggests that there is still hope. A junior engineering student writes of his "malaise" stemming from "this plan [which] borders on professional prostitution. . . . I have been taught and convinced that engineering and science are ultimately concerned with the needs of mankind." The letter is but a part of *Thursday*'s continued attack on the selling of the Institute which began in March with an exposé, "Iran Buys Course XXII" (Nuclear Engineering). *Thursday* then tried to wake the dead with a special issue, *Monday*, that featured coverage of a lecture by M.I.T.'s ex-student body president and ex-student revolutionary, Michael Albert, who had appeared to discuss "What Is To Be Undone" (from the title of his recent book). Albert had been expelled from the Institute for his militant politics and *Thursday* hoped he could spark some student interest in contemporary politics. Following issues of *Thursday*'s carefully choreographed opposition to the Iranian Uranium Connection included "Iran Sneak Attack," reporting the administration's attempt to rush faculty endorsement of the proposal, and "Faculty Comes Through," covering the news that a faculty coalition had successfully tabled discussion of the issue (for three weeks) and announcing the formation of a

"Coalition Against Nuclear Training for the Shah." President Wiesner, however, contends that the faculty's position "will have no effect on the implementation of the Iran deal."

"Flash rumor—The Shah of Iran has offered M.I.T. a \$2 million bribe to be made the Compton Lecturer!" (the Institute's prestigious annual faculty lectures), reports *Thursday's* Scott Batterman. Earlier in his column, "Venom," Batterman speculates: "With Iran trying to buy the Nuke E. department, I've heard rumbles through the corridors about the possibility of a competitive bid entered by Saudi Arabia, while Spain is interested in picking up some good Chem. E. tools." Perhaps it's true? Just the other day (February 25) *Nuclear Weekly* reported that Brazil is buying up to eight West German nuclear power plants from the European Consortium, URENCO-CENTRIC.

What seems clear is that democratization of the technology for nuclear destruction is being extended to the wealthier of the "modernizing" countries previously associated with the capitalist-Western bloc. The diplomatic phase in which the United States controlled the Western arms trade, along with other policies (e.g., defense of the Central Highlands in Vietnam) appears a failure. What we now witness is the move by sectors of the new industrial state to capitalize on this reality. At the university level this formula expresses itself as subversion of the traditional idea of the university as "free" and "open." Academic resources have always been the preserve of those wealthy enough to purchase them (indeed that is the linchpin in the radical critique of education), but now at M.I.T. and other universities the situation may be so extreme as to destroy the traditional concept of the university—for the worst principled case: "Bombs for the Shah." □

### ELK HILLS RIP-OFF

## STANDARD OIL KEEPS POPPING UP

**GEORGE L. BAKER**

*Washington*

A lot of strange things are happening in the name of Operation Independence, the attempt to make the United States self-sufficient in energy by 1985. And one of the oddest is a plan to tap four petroleum reserves held in trust by the Navy since the 1920s.

It is natural enough for interest to focus on the reserves, particularly on Elk Hills in California and Pet 4 in Alaska. Elk Hills contains a minimum of 1.3 billion barrels of oil, all ready to be pumped out with a minimum of effort or expense. Pet 4, 23 million acres, contains 10 billion to 33 billion barrels. If the estimate is accurate, this field would dwarf the commercial Prudhoe Bay, lying directly east of Pet 4. The Navy's two other reserves, Teapot Dome in Wyoming and Buena Vista close to Elk Hills, hold too little oil to warrant much excitement.

Last year, at the height of the Arab embargo, Congress was all set to turn the reserves over to the oil companies to do with as they saw fit. The move failed because of the intransigence of the House Armed Services Committee, which passionately resists anything that faintly smacks of an attack on national defense. When they found their way blocked in one committee, proponents of exploiting the reserves conceived an end run. Why not transfer control of the reserves from the Navy to the oil-industry-dominated Interior Department?

Brushing aside warnings that a similar transfer in the 1920s had precipitated the infamous Teapot Dome scandal, the pliable House Interior Committee a few weeks ago reported out a bill so weak and carelessly drawn that it would give the Interior Secretary virtual *carte blanche* to

decide how oil companies might make one of the richest land grabs in memory. Reposing control of the reserves in Interior would certainly assure production, for the department has one function—to give away the nation's natural resources—and it performs that admirably.

Yet, laudable as is the goal of increased domestic oil production, tapping the reserves for the purpose raises disturbing questions, some of which have hardly been given thorough scrutiny. For instance, given its record, how would the Interior Department structure bids to produce from Elk Hills? The normal government royalty for an unexplored field is from 10 to 16 per cent of the wellhead price of crude. But at Elk Hills the oil is spotted and ready to be produced. Navy witnesses testified that it costs less than \$1 to produce a barrel of that oil, which can be sold by commercial oil companies for at least \$10. How would Interior recapture what obviously is a huge public benefit? Various officials of Interior have said the department would ask for competitive bidding, but that doesn't mean much in the oil industry. Further, the bill, which is likely to be enacted soon, gives no guidelines as to how the bidding should be done.

Indeed, would Interior be able to get any competitive bids? There is a great deal of evidence to show that the major oil companies in California, led by the San Francisco-based Standard Oil Co., would continue to maintain their stranglehold on the access to and price of oil. Congress has paid scant attention to possible violations of antitrust law by some of the companies that would be either producing or purchasing oil from Elk Hills. The investigation, begun in 1970 by the U.S. Department of Justice, has only lately been revived after a dormant period that coincided with John Mitchell's reign. But those who are pushing for production at Elk Hills—including several otherwise knowledgeable Congressmen, such as Reps. John

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*George Baker is a free-lance journalist based in Washington, D.C.*

# Iranians accept program

By Mike McNamee

MIT's proposal to train 54 Iranian students in Nuclear Engineering during the next three years has been accepted by the Iranian government-MIT officials announced Friday.

Dean Alfred Keil of the School of Engineering told about 500 MIT students and faculty that the Iranian government had accepted MIT's final proposal, and that the new program would start in June.

Acting Head of Nuclear Engineering Kent Hansen, who had just returned from Iran, said he had interviewed about 50 Iranian students and had found 23 whom he felt met MIT's admissions standards. He said that the Iranian government might continue to submit applications to try to raise the number of students participating to 27.

Keil and Hansen spoke at a seminar sponsored by Chi Epsilon, an engineering honorary society, to discuss the Iranian program, which has been strongly criticized since it was first revealed two weeks ago.

The Iranian program provides for a total of up to 54 Iranian students to receive Masters Degrees in Nuclear Engineering over the next three years. MIT is charging a special tuition rate of about \$10,000 per student per year for the program, in addition to a number of overhead charges for modifications to be made in Nuclear Engineering Department facilities.

Under the terms of the accepted proposal, Iran will send up to 27 students to MIT in June to begin intensive training in English, with optional training in mathematics and physics being offered the students also. A second class of up to 27 students will be admitted in June, 1976, for the two-year program. The program might be renewed beyond its three-year initial stage.

## Background discussed

President Jerome B. Wiesner, speaking at the meeting, explained that the program was "in line with what we've been doing for many years now."

Addressing a mostly-critical audience of about 500 MIT faculty and students, Wiesner said, "We've long been educating students from underdeveloped countries. Iran can expand on a more rapid basis now, and so we are expanding their programs accordingly."

Negotiations on the program began last July after the Iranian government contacted MIT about a number of educational programs, Keil said. The choice to send almost 30 students, which necessitated setting up a special program, was also made by the Iranians, Keil said.

"We made it clear to them that their students would have to meet MIT's standards for admission and degrees," Hansen said, adding that the students he had interviewed were "highly qualified."

## Program attacked

The program came under attack, however, from many of the participants at the seminar, who condemned the government of Iran as dictatorial and repressive, and charged MIT with "complicity" in helping Iran get nuclear technology.

"The Shah (of Iran) wants to use the nuclear power he gets to stop liberation movements anywhere in the Gulf (of Persia) area," a member of the MIT Association of Iranian Students said. "While the conditions of Iranian peasants gets worse, the Shah is out buying reactors to improve his own power."

The student, who refused to give his name, said the Iranian government was "corrupt, dictatorial, repressive, and reactionary," adding that "every week there is a Kent State in Iran."

Another Iranian, Visiting Associate Professor of Mechanical Engineering Parviz Payvar, Dean of the Energy Division of Aryamehr University of Technology in Tehran, defended the program. "Sometime ago, Iran was receiving aid from America, and many Americans were arguing that instead of

giving away aid money, America should help countries to develop themselves," Payvar said. "Now we are in a position where we don't need aid. We need help in developing our technology, and this program will help."

Payvar said that Iran had never been an aggressor nation in world affairs, and that, as a signator to the Nuclear Non-Proliferation Treaty, Iran would not develop nuclear weapons with the technology they were getting.

"The program with MIT should be thought of as a short-term program to help another nation, not financially, but to help itself," Payvar said.



MIT President Jerome Wiesner

Tom Klimowicz

# Response Awaited on Proposal To Train Iranian Nuclear Engineers

Officials of MIT expect to receive within the next few days the response to a proposal, prepared at the request of the Atomic Energy Organization of Iran, for a special program at MIT to train up to 54 Iranian graduate students in nuclear engineering over the next three years.

Dr. Alfred H. Keil, dean of the MIT School of Engineering, said the proposal was transmitted to AEOI in Tehran with the suggestion that AEOI respond by mid-March if the program is to be started on June 1 as outlined in the proposal.

Dean Keil said a representative of the Iranian Embassy approached MIT last summer and asked if the university could train a significant number of Iranian graduate students in nuclear reactor engineering as part of Iran's efforts to become an industrialized nation using oil revenues and at the same time provide an alternate energy source to sustain industrialization after oil reserves are exhausted in 30 years.

Those who would be trained at MIT, Dean Keil said, would represent only a small fraction of the total pool of nuclear engineers Iran eventually will need. Most of Iran's nuclear engineers eventually will be trained in that country or elsewhere besides MIT.

Under the proposal prepared by MIT, up to 27 well-qualified Iranian graduate students would be admitted to MIT on June 1 to begin a two-year program of study and research leading to the degree of master of science in nuclear engineering and up to another 27 would

come in a second class starting the same program on June 1, 1976. The program would peak during the second year when there would be up to 54 Iranian students at MIT studying under the special program—27 in their second year and 27 in their first year.

Each Iranian student admitted to the program will have been individually selected by the MIT Department of Nuclear Engineering and MIT will not select Iranian students who do not meet all academic standards of performance and achievement required of regular MIT graduate students.

"The number of 27 per class is an upper limit," Dean Keil said. "If we find that, based on their credentials, fewer Iranian students than 27 qualify for admission, then the number of students in the program will be smaller. There will be no block admissions."

Dean Keil said Dr. Kent F. Hansen, acting head of the Department of Nuclear Engineering, is spending this week in Tehran examining the credentials of potential students and conducting interviews which will be part of the admissions process.

"We have seen some records," Dean Keil said, "and based on those we can see that there are Iranian students with impressive records of achievement and potential. What the numbers are, however, we will not know until Professor Hansen returns. Every applicant will be individually considered on his or her own merits."

Under the proposal, AEOI will be asked to pay all the costs of conducting a special program. This means that if a full complement of 27 are admitted to each of two

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classes, the total cost to AEOI will be \$1,397,000 over the full three years, not including travel and living expenses for the students.

Dean Keil said AEOI would be asked to pay the full-cost tuition of \$10,000 per year per student. In addition, AEOI would meet an estimated \$90,000 in space modifications necessary to provide the Iranian students with study space, \$38,000 for estimated computer costs the Iranian students will incur in carrying out required thesis research, \$54,000 in estimated faculty research time connected with the theses research programs, and \$15,000 for travel and other expenses of administering the program.

At MIT, Dean Keil said, the Iranian program would be administered through the School of Engineering's Center for Advanced Engineering Study while all academic activities would be the responsibility of the faculty in the Department of Nuclear Engineering. CAES, Dean Keil said, has long experience in administering special graduate student programs for engineers and scientists from US companies and industries whose mid-career study programs for advanced degrees are sponsored by their employers.

Dean Keil referred to Iran's stated national plan to sell its considerable oil reserves—the second largest in the Middle East—on the world market for several years and to use the revenues generated therefrom to build up industrial development. When oil reserves are exhausted—which Iranian planners estimate will happen in 30 years—the country will require alternate energy sources to sustain its industry. At the present time, Iranian planners consider nuclear power to be the most likely substitute, although other substitutes—solar power, geothermal power, etc.—are being investigated.

AEOI explained that the nation will require a corps of well-trained nuclear reactor engineers within the next few years in order to foster the growth of the nuclear power industry over the coming decades. Iran already has contracted with France and West Germany for the purchase of several nuclear reactors and negotiations are underway for the purchase of eight more from the United States.

MIT officials, Dean Keil said, including senior university officers and faculty members in the Department of Nuclear Engineering, satisfied themselves that the request was not part of an Iranian plan to use a nuclear reactor industry as the basis for developing nuclear weapons.

"Iran has earned a worldwide reputation for farsighted planning," Dean Keil said, "by using the considerable revenues generated from the current Middle Eastern oil boom to build an industrial base for the future. Iran also has chosen to develop a nuclear power industry in an orderly manner over the next two or three decades as a substitute energy source when the oil is gone."

At the same time, Dean Keil noted, Iran is a signatory to the 1970 Nuclear Non-proliferation Treaty which pledges that country not to develop atomic weapons. Under that treaty, spent fuel from Iranian reactors would be processed under international supervision to insure that plutonium generated in the reactors is not diverted to bomb making.

Moreover, Dean Keil said, nuclear reactor engineers of the type trained at MIT would not be the kinds of engineers and scientists Iran would require for the complicated materials processing necessary if Iran did want to reclaim plutonium.

"There is nothing in the nuclear engineering curriculum with respect to the analysis or design of plants for making nuclear weapons materials or the design of nuclear weapons," he said. "Plutonium separation plants are designed and operated by metallurgists, chemists and chemical engineers—not by nuclear reactor engineers. The physics of the fission process and the magnitudes of nuclear cross sections are well known and freely available to the world and training as a nuclear reactor engineer gives a person no special or unique ability to use this information for the design of weapons."

But MIT officials also faced the problem, Dean Keil said, of what impact a large Iranian training program would have on existing regular graduate student programs in nuclear reactor engineering. MIT's tuition of \$3,700 per academic year (two terms) covers only a part of the cost of teaching and the remainder for regular students comes from income on the university's endowment, from gifts and grants, and from sponsored research funding. Actual costs per student vary from department to department, Dean Keil said, and in the nuclear engineering department the true cost is \$10,000 per calendar year (three terms) per student.

"The Institute's resources already are stretched to the limit," Dean Keil said. "If a large number of Iranians were to be admitted as regular students, the only way the university could pay for it would be to allow them to replace present or potential regular students and this was clearly unacceptable."

"The only possible way MIT could assist Iran in fulfilling its goals was to develop a special program under which the AEOI would pay for all actual costs and not expect MIT to incur any financial loss. Conversely, under the program proposed to AEOI, MIT will not make money from the training of these engineers. This is purely a no gain-no loss proposal under which the university will not profit financially."

The principal embodied in the original AEOI request—that of helping a developing nation like Iran achieve industrialization through the education of its nationals at MIT—is one that has a long tradition at the university, Dean Keil said. More than 15 percent of all MIT students are from foreign countries and the proportion is even greater in the Department of Nuclear Engineering where this year 55 out of 139 full-time regular graduate students are from outside the United States, including three from Iran.

The final proposal forwarded to AEIOI, Dean Keil said, was evolved over a period of several months after extensive consultation within the central administration, with faculty, including faculty in the Department of Nuclear Engineering, and—most importantly—with students presently enrolled in nuclear reactor engineering studies.

“The conclusion was that there are advantages both to MIT and to Iran to proceed with such a program,” Dean Keil said.

“The advantage for Iran is the training of some of the corps of nuclear reactor engineers Iran will need to participate in building and operating a nuclear power industry in that country.

“The advantages to the Institute and, in particular, to the Department of Nuclear Engineering, are that the program will permit the size of the graduate student body to increase and make more effective use of the department’s facilities. It will also permit the engaging of a few young faculty members, thus providing a broader program for all students in the department. In doing this, the department’s student/faculty ratio will be maintained at its present level. Furthermore, there will be more student aid available in the form of teaching assistantships for other graduate students. And, in addition, the program will permit some changes to be made in the graduate student study space in the department—to the advantage of all students in the department.”

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## ***Irresponsible on Iran?***

*To the Editor:*

The Editorial in the March 7 issue of *The Tech* regarding the proposed special graduate program in Nuclear Engineering for well-qualified Iranian students was in error in those few statements which it contained that were alleged to be based on fact and irresponsible with respect to its allegations that the broader issues involved in this proposed program have not been carefully considered by many people at MIT including the senior officers.

The Institute will neither gain nor lose financially from the proposed program.

There is nothing in the proposed nuclear engineering curriculum which relates to the design of plants for making nuclear weapons material or to the design of nuclear weapons.

Alfred H. Keil  
*Dean of Engineering*  
William F. Pounds  
*Dean, Sloan School*

*(The Tech will stand behind the statements of its Editorial - Editor.)*



10-205

March 10, 1975

MEMORANDUM

To: Jerome B. Wiesner

From: Barbara Scott Nelson

I received a telephone call today from Irwin Shapiro (Professor, Earth and Planetary Sciences) currently on sabbatical at Harvard. He had heard about the agreement with Iran re: Nuclear Engineering and had a general concern which he wanted to voice. Frank Press suggested he call me.

Shapiro feels that admitting foreign students not solely as individual applicants but under the auspices of general agreements with foreign nations marks a significant departure from usual practice in an educational institution and merits thorough consideration by the faculty as a whole. He feels that a Faculty Committee should be established to discuss the matter and that it is, in fact, a far more significant educational policy issue than those considered by most faculty committees.

I told Professor Shapiro that my sense of the agreement re: Nuclear Engineering was that the numbers of students cited represented the maximum we could responsibly undertake to educate, not a quota of any sort, and that M.I.T. retained the prerogative of determining admissibility in specific cases. He reiterated that his point was one of principle -- that such arrangements should be a matter for discussion by the faculty as a whole and were not solely a matter of administrative prerogative coupled

with the desires of the particular department in question. I promised to relay his message to the relevant parties. (Shapiro's phone number at Harvard -- 495-3906.)

P.S. Coincidentally, I have heard rumblings from the Admissions Office while doing my folder-reading stint this year, that they too would like to be forewarned of such arrangements.

BSN/paw

cc: Walter A. Rosenblith  
Paul E. Gray  
William F. Pounds  
Alfred A.H. Keil  
Frank Press

International Programs - Iran

Deans Keil and Pounds reported the progress of discussions in Iran; as a result of these discussions, the Institute will accept no more than 27 graduate (Master's) students in Nuclear Engineering (two groups, two years each, over a period of three years) at the cost of \$10,000 per year per student.

Professor Hansen will go to Iran next week to interview applicants for the first group in this program.

Dean Pounds also reported on a proposal to Dr. Nasr, Chancellor of the Arya Mehr Technical University for support of the Institute's Energy Laboratory. This proposal has come as a result of an expression of interest by Dr. Nasr, endorsed by the Iranian government, to participate in the support of energy research at M. I. T.

According to preliminary discussions, the proposal will be in the vicinity of \$40-50,000,000, with about \$10,000,000 intended for endowment, \$10,000,000 for facilities, \$20-25,000,000 for a wasting program fund, and about \$5,000,000 to explore opportunities for international cooperation with other countries in energy. The proposal will be prepared for immediate submission to Dr. Nasr by mid-March, and it is expected that there will be a response in early April.

Dean Pounds reported also on discussions regarding possible assistance to the Iranian organization of Imperial Social Services. This organization supports many health care centers throughout the country and it supports also the establishment of vocational training schools. In connection with vocational training, the Institute representatives proposed a possible cooperation of the Iranian organization with the Wentworth Institute. The Wentworth Institute, which has extensive experience in vocational education, would assist in the building of the next vocational school in Iran. The M. I. T. group agreed to organize an advisory committee of two to four M. I. T. people, which would visit Iran once or twice a year to review the development of the school and provide advisory services of a general nature in the development of vocational education. This advisory program would be supported by a fund of about \$100,000 with additional provisions for a larger fund which might generate vocational research programs.

In connection with the various cooperative programs with Iran, there was extensive discussion at the Council centering on concerns that have been expressed on campus about the appropriateness of the Institute's cooperation with a government strongly dominated by a military regime. There has been a lot of thought given to this by the M. I. T. people who have participated in discussions to date. The needs for education and for improvement of the standard of living in Iran are enormous and there is some concern that the government is trying to proceed in too many directions at once. The question of strong state control in the plans for industrialization and for social improvements is a continuing source of concern to us. There is evidence, however, that such control is present in most cases, when dealing with developing countries. On balance, it was agreed that the Institute should proceed with the contemplated programs exercising caution and placing emphasis on the widening of the international scope of these programs to include other countries where the value of the programs would be relevant (even though there is no corresponding source of support from them).

# Iranians may double Nuc. Eng.

By Barb Moore

The addition of 25 to 27 Iranian graduate students will nearly double the size of the Nuclear Engineering Department next year if the Iranian government accepts certain conditions set by MIT.

Negotiations between MIT and Iran began informally last summer at the request of the Iranian government, according to Alred Keil, Dean of the School of Engineering. Most of the MIT officials involved in the negotiations expect Iran to accept by the end of March.

The major point of controversy between MIT and Iran is the tuition rate, according to Keil. Keil placed MIT's requested tuition "in the ballpark of \$10,000 per year," to cover the increased costs of expanding the department. In addition to higher tuition, the School's terms includes such costs as faculty travel to Iran, remodeling of the department for increased space and training use of the nuclear reactor.

Ken Hansen, Head of the Department of Nuclear Engineering, explained that the unusual tuition would be needed to support any program of that size — more faculty members will be hired and classes must be added. He stated that there was no way financially for MIT to shoulder these costs.

On the question of pricing, MIT President Jerome B. Wiesner said, "Generally MIT educational operations lose money. We lose money on all our students, and generally it's also true in our overseas operation — in Germany, India, and Latin America — where we've had other programs. We haven't broken even and, frankly, we haven't tried to."

Wiesner went on to explain that because of the current budget cutback, MIT cannot afford to give aid to students who can get the money elsewhere. "Our view," he said, "is that Iran is in a position to do something, and one shouldn't ask MIT, in its present financial condition, to subsidize Iranian students."

The Graduate School of Nuclear Engineering operates on a quota system, as do most graduate departments, Chancellor Paul E. Gray '54 added. "This simply amounts to an increase in the number of Iranians in the department," he said. "It's no big deal. It simply distorts the quotas."

Keil estimated the true cost of an MIT education at about \$10,000 per year. The difference between that cost and regular tuition is made up through research overhead which could not support the extra Iranians, he added.

The students involved in the program must apply for graduate study in the Department admitted as full-time MIT students to a two-year Master's Degree program. At the end of the two years, what will become of the new faculty members hired especially for the additional classes? Gray said that the program has been approved on a three-year trial basis, and may be extended at that time into an and will be evaluated by the same admissions criteria as any other applicant, according to Hansen. He emphasized that admissions standards will not be lowered. "If the Department only finds ten acceptable students, we will only take ten," he said. Hansen is leaving for Iran this week to personally interview all applicants.

Those accepted would be ongoing program. The details "have been worked out with the Dean's office," according to Gray, and the program met with no opposition from Gray or President Wiesner. Any faculty appointments made specifically for this program will be for just three-years, he added.

The original plans for the program were developed through the Center for Advanced Engineering Studies (CAES), according to Hansen. CAES is also sponsoring a summer course in English for the participants to begin in June, the cost of which is included in the \$10,000 tuition.

Hansen elaborated on MIT's conditions for participation in the program. Basically, MIT demands:

- Same admissions criteria.
- Increased tuition: approximately \$10,000 per year per student.
- Funds to create office space for the students.
- Funds for use of the reactor for training purposes.

There is also the possibility of increased research support from Iran as a future effect of the program, Hansen mentioned.

In many ways, this program will be unique at MIT. Keil explained that, "This is the first time someone was willing to look at a special program at this special price."

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# MIT appraising Iran programs

By Gerald Radack

Several proposed programs for training scientists and engineers from the Mideast nation of Iran are now under consideration by the MIT School of Engineering.

At least "four or five separate conversations" between MIT faculty and Iranian officials are currently underway, according to Associate Dean for Engineering James D. Bruce '60. The proposals, many of which were initiated by Iranian educators, include plans for expansion of

educational facilities in Iran, as well as programs that would bring Iranian students to MIT to study.

The MIT Center for Advanced Engineering Study (CAES), Bruce said, has been asked to aid the Iranians with expansion of Ayra-Mehr University of Teheran, the capital of Iran. Ayra-Mehr is planning to add a new campus that will increase its enrollment by 10,000 students.

MIT's involvement in the project would take place in both countries, according to CAES Assistant Director Paul E. Brown '56. "They will send some people over here as visiting engineers or visiting faculty members, and some of our faculty will visit Iran," Brown explained.

Iranian students who are being trained for faculty positions at the new university will also be

sent to MIT, Brown added. These students would be admitted on the same basis as any other foreign students, he said.

Another program involves a group of private citizens in Iran who would like to build an Iranian science university patterned after MIT. MIT's contribution to their effort, Brown said would "help in developing goals and objectives." Professor of Nuclear Engineering Edward A. Mason '48 is discussing with the Iranian Embassy a proposal that asks MIT to train a group of Iranians through the master's level in nuclear engineering, according to Bruce. "The Iranians have bought five nuclear reactors to be used for power generation, and need some experts who know how to operate them," Bruce explained.

Bruce said, however, that "we are prepared to accept and help Iranian students" in the same manner as other foreign students. There are currently students from ten foreign countries at CAES.

MIT would like to "help the lesser developed nations develop science and technology institutions," Bruce stated. As an example, he said that "one of the things that we would like to help Iran do is work on its food problem."

Bruce believes that MIT will benefit from these programs with Iran. "As we work with other countries to develop educational programs to meet their needs, we gain insights into programs that we are developing to meet our own needs. It gives us another way to evaluate our own programs."