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The Telexes: Whole Body Counters and the Physics Research Center

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In 2003, the International Atomic Energy Agency (IAEA) learned that the military-owned site in north Tehran called Lavisian Shian contained a sensitive whole body counter, used to measure radiation, mounted inside a mobile trailer. As inspectors monitored the site with commercial satellite imagery, the buildings started to be torn down. The site housed the Physics Research Center (PHRC) from 1989 to at least 1998, and the presence of at least one of two whole body counters procured by Iran at a military site was an anomaly the IAEA wanted to investigate. The razing of the site intensified suspicions of an Iranian concealment effort to hide these activities through the removal of all of the buildings at the site.¹ Although the whole body counters are clearly related to radiation protection and detection, their presence at what was viewed as a non-nuclear, military site aroused suspicions of hidden nuclear activities.

As the telexes show, the PHRC likely procured the whole body counters ([See the telex appendix here](#)). These procurements appear to be part of the activities of PHRC's Department 6, which is linked to radiation safety and health.

Sharif University, A Front for PHRC

The whole body counter in the mobile trailer at the PHRC was one of an order of two that Sharif University had bought in the early 1990s under a U.S. export license from Canberra Industries. The original order, however, was likely made by the PHRC, using Sharif University as a front to hide the intended military end user of the instruments. The U.S. government was unlikely to have granted a license for an export to an Iranian military entity. As it was, the United States denied an export for a multi-channel analyzer (MCA), which Sharif University concurrently sought from Canberra.

The original orders for the whole body counters and the multi-channel analyzer were in late 1990 to Canberra's agent in Vienna Austria, Packard Instruments, also listed as Canberra-Packard in the telexes (telexes 641 and 742). Although the enquiries came from Sharif University's telex number, the identifying numbers on these telexes match the typical form of message numbers created by the PHRC, namely 1149.606 and 1215.637 (see [The Physics Research Center and Iran's Parallel Military Nuclear Program](#)). These two enquiries appear to originate in Department 6, which ordered or attempted to order a range of goods related to health physics and radiation safety. In communications between Canberra and Iran regarding the whole body counters, the telex number is initially for Sharif University. However, by April 1992, the PHRC telex number is used, although the telexes remain addressed to Sharif University (telex 1240). The involvement of Dr. Sayyed Abbas Shahmoradi-Zavareh, the head of the PHRC, is also shown in the telexes.

¹ *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Report by the Director General, 1 September 2004: <http://www.iaea.org/Publications/Documents/Board/2004/gov2004-60.pdf>; and *ISIS Imagery Brief: Destruction at Iranian Site Raises New Questions About Iran's Nuclear Activities*, Institute for Science and International Security, June 17, 2004: <http://isis-online.org/isis-reports/detail/isis-imagery-brief-destruction-at-iranian-site-raises-new-questions-about-i/>

Canberra Industries twice submitted license applications for the whole body counters to the U.S. Bureau of Export Administration under the Commerce Department. In August 1991 and January 1992, it was informed that an individual validated license for the equipment was not required. The consignee was clearly stated as the Health Physics Department of Sharif University on Azadi Street in Tehran.

In January 1992, the Bureau of Export Administration denied the export of the multi-channel analyzer to Sharif University as an “inappropriate recipient of controlled U.S. origin commodities.”² Another telex could imply that the PHRC had earlier looked elsewhere for such instrumentation (telex 606).³ Likely, PHRC continued to try to obtain such equipment from other suppliers. Such efforts do not appear in the collection of telexes, though it is clear that the collection does not constitute a complete set of the communications by PHRC and its associated entities to supplier companies.

Ali Akbar Salehi?

Two telexes imply that the then head of Sharif University, Ali Akbar Salehi, knew of the procurement of the whole body counters and had a connection to Shahmoradi. In two telexes dated October 6, 1991, a person in Vienna, identified as Helga VIE TRC, appears to be discussing with Sandy THR, likely in Tehran, two undelivered DHL shipments from Packard Instruments to Dr. Shahmoradi. Helga was attempting to track the two packages with separate air waybill numbers, and in the second telex, she tells Sandy in abbreviated text to please deliver shipments again to the university to the attention of the Purchasing Manager or Mr. Dr. Ali Akbar Saeehi (telexes 286 and 299). Given the prevalence of typos in telexes, this person is undoubtedly Ali Akbar Salehi, then head of Sharif University and now Iran’s Foreign Minister. The telexes did not state the contents of this package from Packard Instrument to Shahmoradi, but an earlier telex implies that the package likely contained documents. The earlier telex shows that Packard used DHL to send Shahmoradi two U.S. export licensing documents that required his signature and return as soon as possible (telex 287).

Delivery of Whole Body Counters

In a telex from April 6, 1993, the Canberra representative after visiting Tehran wrote that “as agreed in my meeting with Dr. Shahmoradi in Tehran, the installation of the whole body counters is scheduled for (June/July 1993...”. He also confirmed for the stated customer in Iran, Sharif University, that the whole body counters had been shipped to Iran (telex 1262). The equipment for the whole body counters were shipped by various means, including by sea (telex 1240). Other equipment, ostensibly procured by Sharif University, perhaps including the whole body counters from Canberra, were possibly stored at Sharif University in Tehran. This is to be expected, as the listed consignee of Sharif University was likely included on shipping documents but the final intended location of the equipment was not provided in the telexes.

It is unclear if the whole body counters were installed in 1993 or 1994. A January 25, 1994 telex from a Canberra representative in Vienna and addressed to Sharif University asks, “Please advise next possible date which will be convenient for installation of above mentioned order.” (telex 1479) The order number listed in the telex is the same as in other telexes discussing the whole body counters.

Installation of Whole Body Counters

It is known from the IAEA investigation that whole body counters were not installed at Sharif University. They were actually installed by Canberra technicians at a remote site near the city of Karaj, approximately 45 minutes west of Tehran. The facility at the time was sparse with only a few garages and buildings that

² U.S. Department of Commerce, “Export License Application Denial Notice, Case number D144279,” January 23, 1992.

³ This 1989 telex, which has an older message numbering system was sent by Department 1 of Sharif University with a PHRC post office box number and a Sharif University fax number.

appeared for storage with a few tractors in the area—not a hospital or a university laboratory where whole body counters would be expected to be used. There were no signs or labels identifying the site.

The two whole body counters were installed inside two trailers located inside a non-descript garage. The trailers each contained a dressing room at the entry where the individuals would change before entering the whole body counting room in the trailer. The trailer looked like a normal truck trailer from the outside.

This site may have been part of the Karaj Nuclear Research Center for Medicine and Agriculture, but there were no indications that this was the case to those who installed the whole body counters. Moreover, the site did not look like a nuclear center of any type.

Approximately two years after installation, Iran informed Canberra that one of the two whole body counters did not work and attributed this to a failure of the multi-channel analyzer inside the unit. Iran requested that Canberra fix the whole body counter, but the company lacked a license from the Department of Commerce to do so. It is not clear when the whole body counter stopped working, if it ever operated successfully. It is also unclear if Iran was able to repair the counter itself.

False End User Declared

At least one of these trailers with a whole body counter ended up at the Lavizan site, the headquarters of the PHRC. By having the Canberra officials install the machines in mobile trailers, Iran was able to hide the ultimate end user of this equipment from both Canberra Industries and the U.S licensing authorities.

In June 2004, Iran allowed the IAEA to visit the recently razed Lavizan facility and also allowed access to two Canberra whole body counters as well as a trailer that Iran declared had been present at the Lavizan site and which contained one of the whole body counters.⁴

Despite the Iranian entities identifying themselves as associated with Sharif University in the telexes with Canberra representatives, the whole body counters were never intended for Sharif University. Instead, the telexes indicate that Sharif University procured the whole body counters under false pretenses for the PHRC. The IAEA was unable to fully identify the exact fate of the whole body counters, but the Lavizan site held at least one of them. Iran has stated to the IAEA that the Lavizan site housed efforts related to “nuclear defence” and that it was related to the military. Iran also told the IAEA that procurements that list PHRC as the entity in Iran were actually intended for Sharif University. But the Iranians communicating with Canberra identify themselves as being associated with Sharif University, not PHRC. As mentioned earlier, the telex number for these same communications, however, belonged to PHRC.

Department 6

As mentioned above, the message numbering implies that PHRC’s Department 6 bought the whole body counters and attempted to purchase the multi-channel analyzer. There are many telexes in Department 6 that reveal that many procurements or attempted procurements were related to radiation safety and health physics. But this effort was likely aimed at PHRC assembling its own capability.

A related purchase is contained in a June 30, 1996 telex from the Sepah Bank in Tehran to the Sepah Bank in Frankfurt, approving an irrevocable credit for “MIE Medical Imaging Electronics” in Seth, Germany by order of the PHRC (telex 1324). The amount is Deutsche Mark (DM) 334,500 for the purchase of a gamma camera, the Orbiter 7500/Saintron IV and accessories. This device is typically used to detect gamma rays emitted from a

⁴ *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Report by the Director General, 1 September 2004: <http://www.iaea.org/Publications/Documents/Board/2004/gov2004-60.pdf>

person's body after the administration of a radioactive drug in order to produce images of the organ under investigation. It could also be used to detect radiation from inhaled or ingested radionuclides. No other telex exists for this purchase, so it is unknown what department purchased it, or if it was ultimately delivered. But it is consistent with the view that PHRC's procurements were for an independent capability.

Iran's Declaration Inconsistent

After the IAEA presented Iran in 2004 with some of the evidence regarding the delivery of the whole body counters, it apparently told the IAEA that the equipment was procured for the Atomic Energy Organization of Iran (AEOI) and was installed at the Karaj Nuclear Research Center for Medicine and Agriculture which Iran said was associated with the AEOI. This explanation, however, warrants great skepticism. As discussed above, the installation site of the WBC was sparse and contained only a few garages. There did not appear to be any operation at the site requiring whole body counters. It is far more likely that Iran chose to have the counters installed by Canberra company technicians at or near the future Karaj site in order to obscure their ultimate destination. It is also more likely that the whole body counters were part of a broader procurement effort to obtain a range of equipment for a project independent of the AEOI. Iran needs to more fully explain to the IAEA the purpose of the PHRC and the intended use of all the equipment it procured or attempted to procure.