Expert says Burma planning nuclear bomb
By ROBERT KELLEY
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A five-year investigation by DVB has uncovered evidence that Burma is embarking on a programme to develop nuclear weaponry. At the centre of the investigation is Sai Thein Win, a former defense engineer and missile expert who worked in factories in Burma where he was tasked to make prototype components for missile and nuclear programs.

Sai contacted DVB after learning of its investigation into Burma's military programmes, and supplied various documents and colour photographs of the equipment built inside the factories. The investigation has also uncovered evidence of North Korean involvement in the development of Burmese missiles, as well as Russia's training of Burmese nuclear technicians.

In collaboration with DVB, American nuclear scientist and a former director in the International Atomic Energy Agency (IAEA), Robert Kelley, has spent months examining this material. Here he writes in an exclusive report for DVB that Burma is probably mining uranium and exploring nuclear technology that is only "useful only for weapons". For the full 30-page report, click here.

A remarkable individual has come out of Burma to describe nuclear-related activities in that secretive country. DVB has interviewed this man at length and is presenting his evidence here for all to see. His name is Sai Thein Win, and until recently he was a major in the Burmese army. He was trained in Burma as a defense engineer, and later in Russia as a missile expert. He returned to Burma to work in special factories, built to house modern European machining tools, to build prototypes for missile and nuclear activities.

Sai brought with him some documents and colour photographs of equipment built in these factories. DVB is publishing these photos and has arranged with experts to analyze what they have discovered. Some will no doubt want to weigh in and add their conclusions – no doubt there will be detractors who do not agree with the analysis and our conclusion that these objects are designed for use in a nuclear weapons development program. We invite their criticism and hope that any additional analysis will eventually reinforce our view that Burma is engaged in activities that are prohibited under international agreements.

DVB has hundreds of other photos taken in Burma inside closed facilities, as well as countless other information sources and documents. Background information is given for the very specific information Sai is providing.

In the last two years certain "laptop documents" have surfaced that purport to show that Iran is engaged in a clandestine nuclear program. The origin of these documents is not clear but they have generated a huge international debate over Iran's intentions. The Burmese documents and photographs brought by Sai are much closer to the original source materials and the route of their disclosure is perfectly clear. The debate over these documents should be interesting in the non-proliferation community.

Who is Sai Thein Win?

Sai was a major in the Burmese army. He saw a DVB documentary about special factories in Burma that had been built by the regime to make components for Weapons of Mass Destruction (WMD). He worked in two of these factories and felt there was more that needed to be conveyed outside Burma. Sai came out to Thailand

to tell the world what he has seen and what he was asked to do. What he has to say adds to the testimony of many other Burmese defectors, but he supplements it with many colour photographs of the buildings and what they are building inside them. In addition he can describe the special demonstrations he attended and can name the people and places associated with the Burmese nuclear program that he visited.

Sai Thein Win reminds us of Mordecai Vanunu, an Israeli technician at the Dimona nuclear site in the Negev desert. Vanunu took many photographs of activities in Israel that were allegedly related to nuclear fuel cycle and weapons development. These photos were published in the Sunday Times in London in 1986. They purportedly showed nuclear weapons activities in Israel at the time. Israel has never confirmed that the images were taken in their facilities; much less that Israel even has a nuclear weapons program. But Vanunu was abducted, tried in an Israeli court and sentenced to many years in prison for divulging state secrets. Sai is providing similar information.

Sai Thein Win holding an impeller for a ballistic missile engine. He designed the program to manufacture it on CNC machines from Europe (DVB)

What is the Program that Sai Describes?

Sai tells us that he was tasked to make prototype components for missile and nuclear programs. He is an experienced mechanical engineer and he is capable of describing machining operations very accurately.

Sai has very accurately described a missile fuel pump impeller he made because he is trained as a missile engineer. His information on nuclear programs is based upon many colour photographs and two visits to the nuclear battalion at Thabeikkyin, north of Mandalay. The Nuclear Battalion is the organization charged with building up a nuclear weapons capability in Burma. The Nuclear Battalion will try to do this by building a nuclear reactor and nuclear enrichment capabilities.

Buildings under construction at the Thabeikkyin Nuclear Battalion (DVB)

It is DVB consultants' firm belief that Burma is probably not capable of building the equipment they have been charged to build: to manufacture a nuclear weapon, to build a weapons material supply, and to do it in a professional way. But the information provided by Sai and other reporters from Burma clearly indicates that the regime has the intent to go nuclear and it is trying and expending huge resources along the way.

Factories filled with European equipment

Two companies in Singapore with German connections sold many machine tools to the Burmese government, notably the Department of Technical and Vocational Education (DTVE). DTVE is closely associated with the Department of Atomic Energy (DAE) which is subordinate to the Ministry of Science and Technology (MOST). A great deal of information is known about people and organizations in this chain. DTVE is probably a front for military purchasing for weapons of mass destruction; that is to say nuclear, chemical and biological weapons and the means to deliver them, largely missiles.

The German government did not have derogatory information about DTVE when the tools were sold and allowed the sale. Fortunately, although the machine tools were very expensive and capable, they were sold without all of the accessories to make the very precision parts required for many missile and nuclear applications. These factories are only making prototypes and first models of equipment for other research organizations. They are not making serial copies for a production program and they do not do research themselves.

The companies believed the machines were to be used for educational and vocational training, but the German government, suspicious about the end use, sent a diplomat and an expert to examine the machines that were installed in two special factories in Burma. The expert was suspicious that the machines would be used for uses other than training; there were no students and no universities nearby, and there were no women students. The expert noted that none of the male students wore military uniforms. DVB has examined the photos and some of the "students" who wore civilian clothes during the expert visit wear military uniforms when the Europeans are not there.

Sai provided recognizable photos of the equipment installers and the Germans during their site visit. This is one of many indications that he was at the factories and that his story is very credible. It is also fortunate that the German government was diligent and visited these factories to verify the end use. The Burmese were probably not telling the whole truth, but the visits allow serious verification of the facts.

A floor plan of the many machinery tools at Factory 2 near Myaing (DVB)

Sai describes equipment the Nuclear Battalion is building

Sai has provided DVB with many photos of material that the Nuclear Battalion at Thabeikkyin is requesting. One of the most obvious ones is requested in an accompanying secret memo from the No (1) Science and Technology Regiment at Thabeikkyin to the Special Factory Number One near Pyin Oo Lwin. It is for a "bomb reactor" for the "special substance production research department" and there are some sketches of what is wanted as well as pictures. A bomb reactor in a nuclear program is a special device for turning uranium compounds into uranium metal for use in nuclear fuel or a nuclear bomb. The pictures and sketches are of such a bomb reactor and one of the pictures has been subjected to high temperature. The paint is burned off and it has been used. It may be a design from a foreign country or a Burmese design. But the need for a bomb reactor in a Burmese Nuclear Battalion is a strong signal that the project is trying to make uranium metal. Whether the uranium metal is used in a plutonium production reactor or a nuclear device, Burma is exploring nuclear technology that is useful only for weapons.

These are 'bomb reactors' likely used to convert uranium compounds into uranium metal for bomb or reactor fuel (DVB)

Sai also provided photos of chemical engineering machinery that can be used for making uranium compounds such as uranium hexafluoride gas, used in uranium enrichment. He describes nozzles used in advanced lasers that separate uranium isotopes into materials used for bombs. He provides pictures of a glove box for mixing reactive materials and furnaces for making uranium compounds. All of these things could have other uses, but taken together, in the context of the Nuclear Battalion, they are for a nuclear weapons program.

A group of Burmese military and civilian workers pose with a glove box they built at Factory 1 near Pyin Oo Lwin (DVB)

Sai has been told that the regime is planning to build a nuclear reactor to make plutonium for a nuclear bomb. He has seen a demonstration of a reactor component called a "control rod" that fits this story. He has been told that the regime plans to enrich uranium for a bomb and he has seen a demonstration of a carbon monoxide laser that will be part of this enrichment process. He has named the individuals he met and heard from at Thabeikkyin and they can be correlated through open source information with their jobs for the Burmese Department of Atomic Energy. Many are frequent visitors to IAEA grant training projects. He himself was tasked to make nozzles for the carbon monoxide laser. He actually knows less about the chemical industrial equipment seen in his photos than we can judge, but his overall story is quite interesting. It is also clear that the demonstrations and explanations that he has seen are quite crude. If they are the best Burma can do they have a long way to go.

How does Sai fit into the overall Burma story?

Sai is a mechanical engineer with experience in machining parts on highly specialized and modern machine tools. These machine tools make items that are very precise and can be used in nuclear energy programs or to make missiles. Sai is not a nuclear expert and he has little to say about the things he made, or that his factory made other than what he was told about their uses. He does provide photos of items that would be used in the nuclear industry to process uranium compounds into forms used in the nuclear weapons development process. These photos or his descriptions could be faked, but they are highly consistent with the uses he suggests.

Sai received a degree as a defense engineer in Burma. He then went to Russia to train in missile technology at the prestigious Bauman Institute in Moscow. He can document all of this. His friends went to Russia as well and studied nuclear and chemical technology at the Moscow Institute of Engineering Physics (MIFI) and the Mendeleev Institute of Chemical Technology. MIFI was the main training institute for Soviet nuclear

weapons designers for many years. The ones who studied chemistry at Mendeleev are probably the ones who are most important in building the special equipment that Sai knew about.

Stories about a nuclear reactor in Burma

There have many wild stories about a nuclear reactor in Burma. It is clear that Burma and Russia considered building a 10 Megawatt (10 MW) research reactor in Burma in 2000. It is also clear that this deal was not closed and that Russia announced only intent to build a 10 MW reactor around 2008. This reactor has not been built and Russia is highly unlikely to approve such a deal unless Burma signs a new special agreement with the IAEA. This agreement is called an Additional Protocol and Burma is very unlikely to sign it because it would give the IAEA the access it needs to discover a clandestine nuclear program in Burma.

Furthermore, a 10 MW nuclear reactor is a very small concern for proliferation. Such reactors are common in the world and they are simply too small to be of serious proliferation concern. They can be used to teach students how to work in the nuclear area, but they are not appropriate to rapidly make any serious quantities of plutonium for bombs. IAEA has standards for which reactors are especially suitable for plutonium production and this proposed reactor is below that limit. It is appropriate only for nuclear technology training and the production of medical radioisotopes. Local production of medical isotopes is one of the main reasons for reactors in the 10 MW class around the world. Burma could use this reactor for training, but reports that it bought a 10 MW reactor from Russia are clearly untrue, and stories that they want to build one of their own for a bomb program are nonsense.

The idea that Burma is building a larger reactor, like the alleged one Israel destroyed in Syria, is more interesting. This could be a plutonium production reactor, like the 25 MW (thermal) one that North Korea operated in Yongbyon. The fact that North Korea would consider supporting nuclear programs outside its own borders, in client states like Syria, is of serious concern when evaluating Burma. North Korea does have a memorandum of understanding to help Burma build intermediate range ballistic missiles but their role in the nuclear program is only anecdotal.

Is Burma violating its international agreements?

The most important agreement that Burma must satisfy is its agreement with the IAEA. It signed an agreement with the IAEA in 1995 that it would not pursue nuclear weapons under a carefully defined standard international legal agreement. A supplement to this agreement, a so-called Small Quantities Protocol, said that Burma had no nuclear facilities and very small amounts of nuclear materials, which it did not even have to itemise. As a result of this declaration, which was accepted by the IAEA, there are no nuclear safeguards inspections in Burma. There are some IAEA visits to Burma, because Burma is a recipient of IAEA scientific grant money for humanitarian purposes. Some of these grants train Burmese scientists for nuclear activities that could enable them to produce nuclear materials, but these are not the majority of the grants.

Burma has certified that it has no nuclear facilities, has minimal nuclear materials, and has no plans to change this situation. The information brought by Sai suggests that Burma is mining uranium, converting it to uranium compounds for reactors and bombs, and is trying to build a reactor and or an enrichment plant that could only be useful for a bomb. There is no chance that these activities are directed at a reactor to produce electricity in Burma. This is beyond Burma's engineering capabilities. It is up to Burma to notify the IAEA if these conditions have changed. Clearly, if it is trying to secretly build a bomb and is breaking these rules it will not be voluntarily notifying the IAEA.

Burma has also purchased high quality machine tools from a German machine tool broker in Singapore that can be used for weapons of mass destruction manufacture. These tools could be used to make many things but they are of a size and quality that are not consistent with student training, the declared end use.

The Department of Technical and Vocational training is a front for weapons procurement and is associated with the DAE and MOST. All of these departments, programs, and people associated with them, should be sanctioned and prohibited from buying anything that could contribute to weapons programs.

What is the state of Burma's nuclear program?

We have examined the photos of the Burmese nuclear program very carefully and looked at Sai's evidence. The quality of the parts they are machining is poor. The mechanical drawings to produce these parts in a machine shop are unacceptably poor. If someone really plans to build a nuclear weapon, a very complex device made up of precision components, then Burma is not ready. This could be because the information brought by Sai is not complete or because Burma is playing in the field but is not ready to be serious. In any case, nothing we have seen suggests Burma will be successful with the materials and component we have seen.

What is significant is intent. Burma is trying to mine uranium and upgrade uranium compounds through chemical processing. The photos show several steps in this intent. Burma is reported to be planning and building a nuclear reactor to make plutonium and is trying to enrich uranium to make a bomb. These activities are inconsistent with their signed obligations with the IAEA.

Even if Burma is not able to succeed with their illegal program, they have set off alarm bells in the international community devoted to preventing weapons of mass destruction proliferation. The IAEA should ask Burma if its stated declarations are true. If these allegations appear real there should be follow-up questions and inspections of alleged activities. This effort will be hampered by Burma's failure to sign the Additional Protocol. Under the current Small Quantities Protocol Agreement, IAEA has no power to inspect in Burma.

Burma is also trying to build medium-range missiles such as SCUDs under a memorandum of understanding with North Korea. SCUDS are not likely to carry a Burmese nuclear warhead because first generation nuclear warheads are usually too heavy and large for the SCUD missile. But there is little reason to embark on SCUD missiles and nuclear weapons other than to threaten ones near-neighbours. Burma is ruled by a junta that has no real political philosophy other than greed. The junta rules for the purpose of enriching a small cadre with the rich resources of the country: teak, gold, jade, other minerals and the labour of the people. Like their model, North Korea, the junta hopes to remain safe from foreign interference by being too dangerous to invade. Nuclear weapons contribute to that immunity.

Conclusions

DVB has interviewed many sources from inside Burma's military programs. Many other researchers are interviewing former Burmese military people, for example Dictator Watch and Desmond Ball with Phil Thornton. They have provided anecdotal evidence pointing to a Burmese nuclear weapons program. Sai has clarified these reports and added to them with colour photos and personal descriptions of his visits to the Nuclear Battalion. He trained in Moscow in missile technology along with friends who trained in nuclear

technology who later vanished into the Nuclear Battalion of Thabeikkyin. All were trained in some of Russia's first quality institutes.

The total picture is very compelling. Burma is trying to build pieces of a nuclear program, specifically a nuclear reactor to make plutonium and a uranium enrichment program. Burma has a close partnership with North Korea. North Korea has recently been accused of trying to build a nuclear reactor inside Syria to make plutonium for a nuclear program in Syria or North Korea. The timeframe of North Korean assistance to Syria is roughly the same as Burma so the connection may not be coincidental.

If Burma is trying to develop nuclear weapons the international community needs to react. There needs to be a thorough investigation of well-founded reporting. If these reports prove compelling, then there need to be sanctions of known organizations in Burma and for equipment for any weapons of mass destruction.

Kelley, 63, a former Los Alamos weapons scientist, was an IAEA director from 1992 to 1993, and again from 2001 to 2005. Based in Vienna, Austria, he conducted weapons inspections in Libya, Iraq, and South Africa, and compliance inspections in Egypt, Turkey, South Korea, Taiwan, Syria, Tanzania, Pakistan, India, and Congo, among others.