

Jane's Defence Weekly

SSRC: Spectre at the table

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Despite international sanctions, the rocket and missile proliferation activities of the Syrian regime's SSRC continue unabated. *Robin Hughes reports*

Compliance with UN Security Council (UNSC) Resolution 2118, co-operation with the Joint UN Mission with the Organization for the Prohibition of Chemical Weapons (OPCW), and belated acquiescence to the 1997 Chemical Weapons Convention have, perhaps, gone some way to conciliate international outrage at Syria's al-Assad regime following its alleged deployment of chemical agents in the Ghouta area of Damascus on 21 August 2013.

However, while international focus has arguably shifted to the resolution potential (or not) of the Geneva II peace talks, the proliferation activities of Syria's Scientific Studies and Research Centre (SSRC) - the organisation responsible not only for the development, production, and munitions integration of chemical agents, but also the means of their battlefield and theatre delivery - remain largely unchecked.

This is largely due to the international community's failure to apply sufficiently resilient proliferations-based sanctions against the SSRC. The SSRC has not featured prominently among specific concerns raised by the international community and indeed is not even referred to in the latest UNSC resolution or in the new disarmament agreement. Syrian President Bashar al-Assad committed to the destruction of all of his regime's chemical weapons in the disarmament agreement reached on 14 September 2013 in Geneva: a deal now being overseen by the OPCW. The agreement was followed by UNSC Resolution 2118, adopted unanimously on 27 September 2013.

The OPCW programme to demolish the regime's chemical weapons inventory and dismantle the SSRC's Institute 3000 (chemistry and biology) facilities at Dumayr, Khan Abou, Shamat, and Furklus and all declared related storage infrastructure has doubtless been effective. Infrastructure destroyed includes Branch 450: the production division of Institute 3000 that integrates chemical agents with munitions and provides security for chemical agent storage facilities. The first consignment of Syrian chemical weapon materials left the northern Syrian port of Latakia on 7 January.

Despite these outward signs of co-operation from the Assad regime, however, it remains unclear whether all of Syria's chemical stockpile - estimated by regional and Western intelligence agencies to be in excess of 1,000 tonnes - will be successfully eliminated or the SSRC's intrinsic knowledge base disbanded.

UN security sources acknowledge that information disclosed by the regime about its weapon inventory would be difficult to verify even under normal circumstances. "In the short term, yes, the

[Syrian regime] might not be able to deliver a chemical capability; however, the technical know-how, accrued since the 1980s, in the design and development of chemical agents - including Yperite, VX, and Sarin - remains intact within the SSRC and can easily be resurrected with the co-operation of 'friendly foreign governments' at some later stage," one of the sources noted.

Chemical weapons development notwithstanding, neither the UN/OPWC inspection programmes nor existing US and EU sanction regimes (see Box 3) have significantly affected or succeeded in deterring the SSRC from pursuing and escalating its other core activities - most notably the continued development and evolution of surface-to-surface missile (SSM) and surface-to-surface rocket (SSR) systems and technologies under the aegis of the SSRC's Institute 4000.

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Consolidation

Syrian defence sources have confirmed to *IHS Jane's* that to avoid the possibility of its critical SSM and SSR capabilities falling into the hands of opposition groups, the Assad regime has directed that Branches 340 (SSM and SSR research and development [R&D], currently located in Aleppo), 702 (SSM solid-propellant production), and 350 (missile and rocket production) should be relocated to Masyaf. SSRC Projects 991 ('Scud' development), 794 (armour), and 111 (surface-to-air missile development) are already based in Masyaf, along with the SSRC's aluminium powder factory and Section 4 (ballistic missile and rocket oversight) administrative offices. Project 99 (main 'Scud' production) will remain at Jabal Taqsis: a mountain area between Homs and Hama considered to be firmly under regime control.

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Proliferation, co-operation, and circumvention

In the interim the SSRC is driving the development and production of SSRs and SSMs to the capacity levels that existed prior to the onset of the uprising in March 2011. This is determined, argue the Syrian sources, by "the fact that the [regime] has depleted its own inventory of rockets and missiles and that Hizbullah is seeking to bolster its current SSR stockpile".

The new Syrian SSRs are standard artillery rocket motors with outsized warheads: a development that increases the payload but reduces range and accuracy. According to the sources, short-range 107 mm rocket motors are being fitted with 130 mm- and 140 mm-calibre warheads to make the Barkan series and 220 mm warheads to make the Tofal series. Larger 122 mm rocket motors are being fitted with 330 mm warheads and stabilising fins to produce the Zilzal system (not to be confused with the Iranian-built 200 km-range Zelzal rocket) for pro-government forces.

The sources confirmed that the Barkan and Zilzal SSRs were used to deliver chemical agents in the 21 August 2013 attack, although these are now being produced with only a standard explosive warhead. The SSRC's Iranian-established Project 702 is also understood to be producing an improved variant of the current 100 km-range 302 mm M302/Khaibar 1 SSR for Hizbullah, along with the M600 'Tishreen': a Syrian version of the Iranian Fateh 110.

Two distinct drivers have emerged that underpin the SSRC's perceived SSR/SSM evolution: a requirement for improved accuracy (partly borne of SSRC observations, according to the Syrian sources, that the number of missiles/rockets fired at rebels groups during the uprising outweighs the expected effects, making these more statistical weapons - weapons for disruption or damage - than strategic or battlefield force multipliers) and a requirement to move from liquid- to solid-fuelled SSMs (which is currently being driven with Iranian expertise under Branch 702).

In support of these programmes - and in violation of international sanctions - the SSRC continues with extensive procurement activities principally focused on electronics componentry, manufacturing and computer numerical control (CNC), and raw materials, sometimes from unwitting Western businesses and through international trading markets via middlemen in the Far East and Eastern Europe.

In general the modus operandi deployed by the SSRC to bypass the sanctions involves transferring funds from the SSRC commercial department to local and overseas brokers who in turn attempt to procure supplies from third-party countries. In support of this endeavour the SSRC has also set up various 'straw companies' in Syria, although it is important to note that these companies do not exist in any real sense - not even to the extent of genuine companies engaged in legitimate business activities that provide extracurricular services for the SSRC. The 'straw companies' merely provide interchangeable names for the SSRC, the objective being to evade sanctions. This is not widely understood in the public domain. As such, the equipment procured is the same in the case of all the 'companies' involved: components and raw materials required for military R&D and manufacturing. Beyond names and addresses, these entities do not really exist (see Box 3).

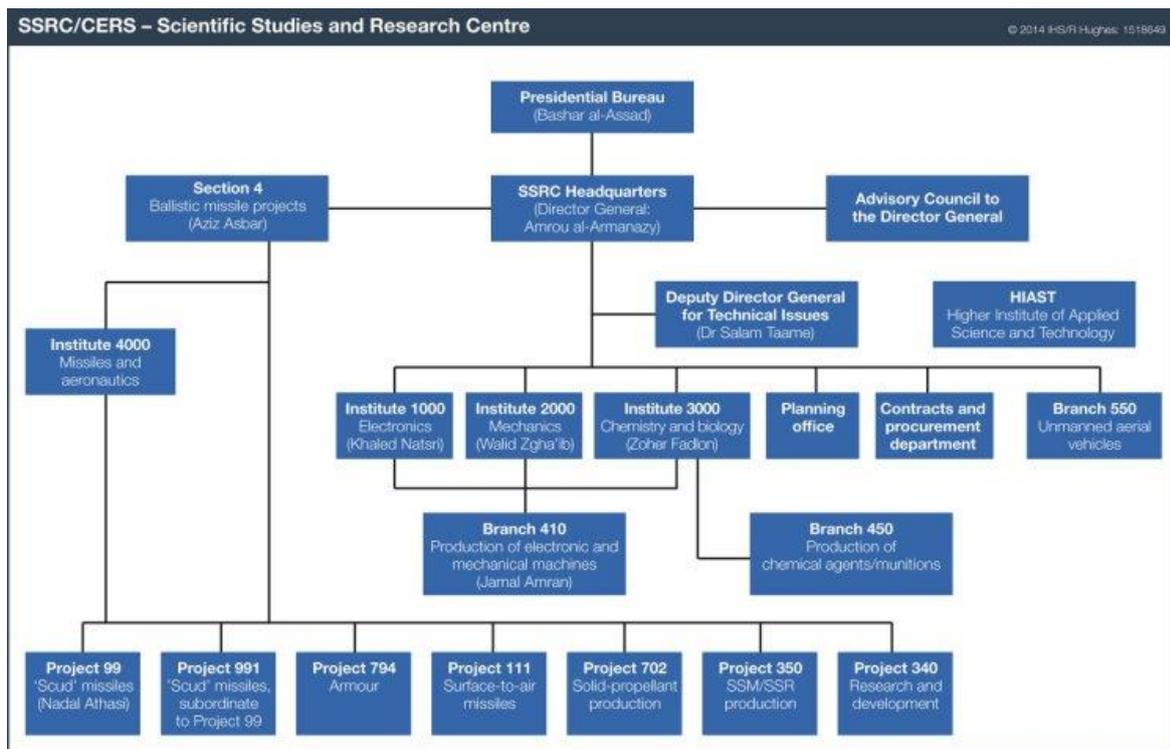
In cases where SSRC procurement runs into difficulties, it engages the assistance of third-party countries with extensive experience in the acquisition of prohibited or dual-use materiel or technologies. Indeed, it is fair to say that the SSRC's current and future missile development is now irrefutably dependent on external support - particularly, although not solely, through direct technical co-operation and technology acquisition with Iran and North Korea, despite the fact that the import of parts and technologies for non-conventional weapons is internationally sanctioned and constitute a clear violation of multiple UNSC resolutions imposed on Iran and North Korea. Systematic violations of these sanctions have been exposed by the UN Panel of Experts set up to assess compliance with the resolutions.

The SSRC has also turned to Belarus to advance its SSM capabilities. EU Foreign and Security Policy sources confirmed to *IHS Jane's* that Belarus' state-owned weapon development and production corporation, Belvneshpromservice, and Syria's Organization of Technological Industries (OTI) - a front company used by the SSRC to procure dual-use technologies - were in advanced negotiations to construct and develop an industrial unit in Syria for the manufacture and development of fibre-optic gyroscopes. The main beneficiary from this development will be the SSRC's SSM inventory, including the M600 SSM and 'Scud D'-variant SSMs, and it could potentially develop essentially tactical assets into an accurate strategic capability. Belvneshpromservice declined to comment on co-operation with the SSRC.

According to Syrian and EU Foreign and Security Policy sources, the SSRC is also returning to a deferred co-operative missile development programme with North Korea to upgrade Syrian 'Scud D'-variant SSMs with a manoeuvring re-entry vehicle (MaRV) capability (essentially bringing them closer in capability to the original Russian 'Scud D' standard). In disregard of UN sanctions - Resolutions

1718 (2006) and 1874 (2009), both of which prohibit North Korea from conducting security-related exports - engineers from North Korea's Tangun Trading Corporation are supplying technology and expertise to the SSRC's Project 99 at Jabal Taqsis to upgrade Syrian 'Scud D' variants with a MaRV and global navigation satellite system. This variant is designated 'Scud MD' (Manoeuvring D). The upgrade, which incorporates a bespoke canard system, will enable the MaRV of the 'Scud' to alter its original planned trajectory when it re-enters the atmosphere, significantly improving its accuracy and increasing warhead survivability by making its flight path problematical to assess for missile-defence interceptors.

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SSRC/CERS - Scientific Studies and Research Centre (IHS Jane's/Robin Hughes)

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Cause for concern?

Despite the existing range of sanctions against the organisation (see Box 4), the SSRC remains largely intact. Even if the current international effort to dismantle Syria's chemical agent development and storage activities are completed effectively, the SSRC has accrued and established a sizeable knowledge base and technical expertise. Aided by its enduring external support network, this capability could easily be resurrected some time in the future.

The most recent co-operative international opportunity to curtail the SSRC's activities were measures adopted by the EU on 29 November 2012 (Designation 1117/2012). However, these focus not on the SSRC's proliferation activities or breach of international, US, and European law in pursuit

of materiel or technologies to support its proliferation ambitions, but on human rights violations, namely providing "support to the Syrian army for the acquisition of equipment used directly for the surveillance and repression of demonstrators". Undeterred by the existing international sanctions and aided by concerted procurement activities, the SSRC's missile and rocket development has been secured and consolidated, and its proliferation momentum continues unabated.

The Syrian uprising has signalled the end of an era, in which stability and regional power delivered by the Assad dynasty nurtured the growth of an effective military-industrial complex, manifest under the SSRC.

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BOX 1: SSRC STRUCTURE (SEE ALSO SSRC ORGANOGRAM)The SSRC (aka Centre d'Études et de Recherches Syrien [CERS]; Centre d'Etude et de Recherche Scientifique [CERS]; and Centre de Recherche de Kaboun) was proposed in 1969 in accordance with Syrian Presidential Edict 1193 and established in 1971, initially as a civilian scientific body. An additional presidential edict in 1973 provided for the SSRC's amalgamation with the Syrian defence establishment.

As such, the SSRC lies at the heart of the regime's drive to develop and distribute weapons of mass destruction, including an abortive programme to pursue a nuclear weapon capability, curtailed following the destruction of its nuclear reactor at Al Kabir in September 2007.

The SSRC is directly subordinate to the regime. Its management always includes an Alawite personal representative of President Assad whose role is to ensure the organisation conforms to regime policy.

The SSRC has a number of special-purpose divisions, of which the principal ones are as follows:

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BOX 2: SSRC KEY FIGURESDirector-General: Amrou al-Armanazy

Deputy Director-General: Dr Salam Taame

Head of Defence Division: Col Abed al-Halim Suleiman

Head of Institute 1000: Khaled Natsri

Head of Institute 2000: Walid Zgha'ib

Head of Institute 3000: Zoher Fadlon

Head of Section 4:

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BOX 3: 'STRAW COMPANIES' (COMPANIES ESTABLISHED BY THE SSRC THAT FALL UNDER EU AND US SANCTIONS)Business Lab: Maysat Square, Al Rasafi Street, Building 9, PO Box 7155, Damascus.

Handasieh (Engineering Industries): multiple addresses - PO Box 21120, Baramkeh, Damascus; PO



Box 2849, Al Moutanabi Street, Damascus; PO Box 5966, Abou Bakr Al Seddeq Street, Damascus.
Industrial Solutions: 5 Baghdad Street, PO Box 6394, Damascus.

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BOX 4: SANCTIONS AGAINST THE SSRC (NOT SUBJECT TO ANY UN SANCTIONS) The SSRC and entities operating on its behalf have appeared on the US list of Specially Designated Nationals (SDNs) since 2005 under Presidential Executive Order 13382, 'Blocking Property of Weapons of Mass Destruction Proliferators and their Supporters', which prohibited US citizens and residents from doing business with the SSRC.

In 2007 the US Treasury banned trade with three subsidiaries of the SSRC: the Higher Institute of Applied Science and Technology (HIAST), the Electronics Institute, and the National Standards and Calibration Laboratory (NSCL).

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