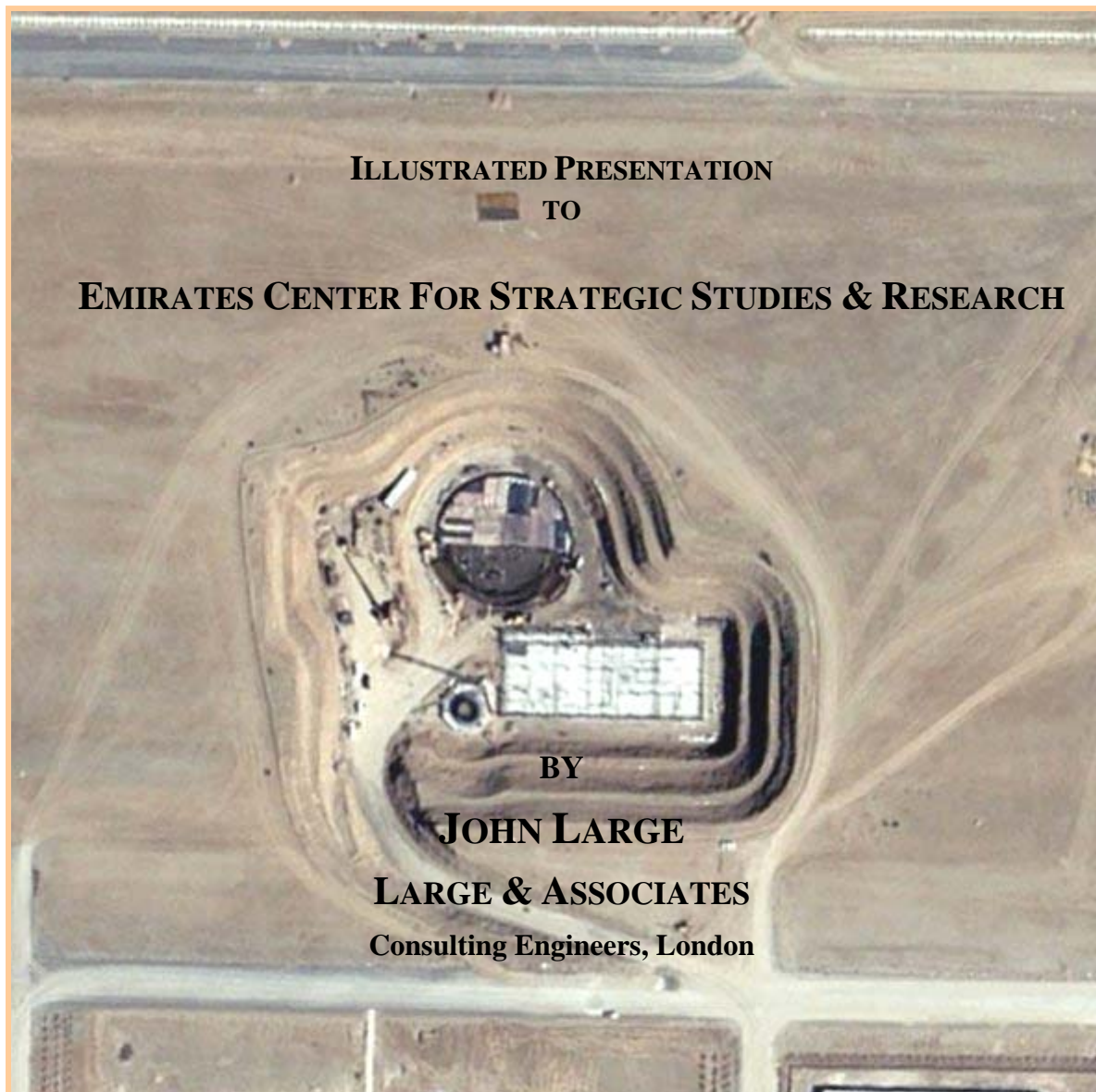


NUCLEAR ACTIVITIES AND ASPIRATIONS OF IRAN



1 ST ISSUE	REVISION NO	APPROVED	CURRENT ISSUE DATE
30 AUGUST 2005	M1016-Q17-4		4 OCTOBER 2006

NUCLEAR ACTIVITIES AND ASPIRATIONS OF IRAN

Until recently nuclear activities the Near and Middle East region has been dominated by the undeclared activities of Israel with its clandestine nuclear weapons capability and established nuclear arsenal. Israel has not shown any leaning to develop civil nuclear power and, with its non-participation with the International Atomic Energy Agency (IAEA) and refusal to sign the Non-Proliferation Treaty, it is reckoned to be the source of much tension in the region.

Other states within and nearby the region have not until lately, developed or shown aspirations for nuclear activities, either and/or civil or military: Egypt has never developed its nuclear interests much beyond its fledgling radio-pharmaceutical industry and Iraq's earlier claims of nuclear development proved to be little more than a confused activity that remained at laboratory scale. To the South East of the region both Pakistan and India are declared nuclear weapons states with India operating an established civil nuclear programme centred around an expanding number of heavy water reactors along a broadly based nuclear weapons programme, whereas Pakistan with its civil nuclear generation sector in its infancy is believed to have developed its nuclear warhead capability with the assistance of China. Both of these recently declared nuclear weapons states have lately ventured into agreements with the United States and committed to limited inspections by the IAEA of a few designated safeguarded nuclear facilities.

Iran maintained nuclear links with the United States and Britain from the mid-1960s through to the overthrow of the Shah. There followed a period of dormancy but in the late 1990s Iran made moves to set it along what many have interpreted to be a nuclear weapons path with, what some believed, to have been considerable assistance from both Pakistan and the Russian Federation. Within the last decade Iran has developed and near-commissioned nuclear facilities with the nuclear power reactors at Bushehr originally abandoned by Krafwerk-Union in 1979 but now being completed by the Russian Federation; the uranium enrichment factory at Natanz at which recently a multiple centrifuge cascade was successfully tested; and, amongst other facilities scattered across Iran, a commissioned heavy water plant

at Arak necessary to produce neutron moderator for the plutonium breeding reactor now under construction alongside the heavy water plant. Iran's approach towards the IAEA Nuclear Non-Proliferation Treaty has not been that dissimilar to the somewhat bellicose strategy pursued by North Korea – Iran remains a signatory of the NPT but has withdrawn from the NPT special protocol permitting snap IAEA inspections.

The sleeping giant in the region is Turkey. Until very recently Turkey has not vigorously pursued even a civil nuclear power programme although a number of attempts to acquire research and development nuclear technology, particularly in the form of R&D nuclear reactors have floundered or, indeed, as at Akkuyu Bay as recent as 1998, have been quite actively discouraged by both the United States and the European Union (EU3). However, presently moves are afoot in Turkey for it to develop a programme of civil nuclear power stations in line with its aspirations to become a member state of the European Union.

The EU3-Iran negotiations have proven that neither international treaties such as the Non-Proliferation Treaty (NPT) nor economic incentives have been sufficiently effective to convince Iran (and more so North Korea) to halt its dual-capable nuclear programme. Moreover, the willingness of the United States not only to tolerate but also to assist the long-time NPT rebel India in its civil nuclear programme and, at the same time, allow India to maintain and expand its now declared military and dual-capable nuclear sites, whilst turning a blind eye to the nuclear militarisation of Pakistan undermined the credibility of the NPT. Importantly, in openly blessing the NPT's most persistent rebel India, the United States might be seen to be establishing the requirements for its vision of a *new world order*, that is juggling a crude balance of nuclear capability amongst neighbouring states effectively, in this global region with the India-Pakistan counterpoise, lessening the dominance of China. On this supposed basis, it might be that Turkey will be encouraged to move along the path that goes beyond its present plans for civil nuclear power, that is building up a dual-capability placing it, like Iran, on the path towards nuclear weapons acquisition with the outcome of some form of crude regional WMD balance between Israel, Turkey and Iran.

ILLUSTRATED LECTURE

In his illustrated presentation, John Large^{1,2} will first and briefly consider the basic political and militaristic elements that seed and motivate both civil and military nuclear developments in developing nuclear states, how this is viewed in terms of regional and global instability and, the threats that are perceived to homeland security in the West, particularly via application of nuclear materials and/or nuclear explosive devices by sub-national terrorist groups.

The presentation will explain the basics of nuclear weapons technology, identifying the warhead types and designs most likely to be adopted for development by an emerging nuclear weapons state and the extent and diversity of the military-industrial infrastructure necessary to procure the prerequisite nuclear materials and weapons technologies. The presentation will fit together the known existing nuclear facilities of Iran, its technological and scientific capabilities, assess the nuclear materials production capability, and identify some of its international trading connections, all leading to a conclusion of how and when Iran might be in possession of a fledgling nuclear weapons arsenal.

John Large's presentation will be supplemented with a paper dealing with the issues raised.


JOHN H LARGE
LARGE & ASSOCIATES
CONSULTING ENGINEERS, LONDON

¹ John Large is a Chartered Engineer, a Consulting Engineer, a Fellow of the Institution of Mechanical Engineers, Graduate Member of the Institution of Civil Engineers, Member of the British Nuclear Engineering Society, and Fellow of the Royal Society of Arts. From the mid-1960s through to the late 1980s, John Large was a full-time member of the Academic Staff at Brunel University being involved in research into nuclear systems in conjunction with the United Kingdom Atomic Energy Authority (UKAEA) and, transferring his academic interests, he founded Large & Associates in 1986 specialising in the nuclear and hazard analysis fields. With Large & Associates, John Large has prepared and given evidence to the Court of Human Rights at Strasbourg, to a number of UK parliament House of Commons Select Committees, quite frequently he provides expert evidence on aspects of system failure and technical issues in the UK Crown and Civil courts. He has given evidence to overseas governments and agencies, including the governments of New Zealand, the Russian Federation, Finland, Bulgaria and to the US Nuclear Regulatory Commission on the risk of nuclear terrorism. Through Large & Associates, John Large has been involved in a number of national and international risk and hazard assessment projects, including overall responsibility for the nuclear reactor and weaponry hazard assessments for the recovery of the nuclear powered submarine *Kursk* and the repairs to the Royal Navy nuclear powered submarine HMS *Tireless* at Gibraltar. John Large was awarded a commemorative medal for his contribution to the *Kursk* salvage by the Russian authorities. Specifically relating to developing nuclear weapons states, John Large has conducted and reported upon a number of developing systems, including comprehensive work in Taiwan and, more recently, on the North Korea nuclear weapons programme.

² For further information go to <http://www.largeassociates.com>