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IRAN: THE SIGNIFICANCE OF FORDO

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Summary

The ongoing development work at the heavily protected Fordo nuclear fuel enrichment site near Qom in Iran is highly significant in changing the terms of the evolving crisis over the Iranian nuclear programme. Open source intelligence now suggests that Fordo is a core part of the Iranian post-attack recovery capability. This has major implications for policy formulation for the longer-term resolution of the crisis, as it could potentially change the diplomatic balance.

Introduction

The Oxford Research Group briefing on *The Potential for Israeli Military Action against Iran's Nuclear Facilities* (March 2012) took issue with the view that the Israeli defence forces could not do much to disrupt Iranian nuclear potential. It pointed to the modernisation of the Israeli Air Force with F-15I and F-16I strike aircraft and additional tankers, it looked at the potential for forward basing, not least in Azerbaijan, and it analysed targeting options. In this last regard, it made the point that an assault would be based on a target set that would go well beyond immediate nuclear facilities to encompass missile bases, specialist manufacturing plant, research and development centres and even Universities.

While accepting that damage to the Iranian nuclear potential would be far from total, it saw a significant possibility that Israel would decide to act against Iran and that it was in the interest of European states to work to discourage this.

Recent Developments

In the past six months, the E3+3 talks have made very little progress and there has been much attack-orientated rhetoric from Israeli Government figures, and some from Republicans in the United States. The issue of US/Israeli relations over Iran has not so far figured large in the Presidential campaign, but Mitt Romney's problems in other aspects of campaigning may make the Republicans concentrate more on this issue. There is a strong Israeli Government view that Iran may have reached a point of achieving nuclear capability within months rather than years and that the time for action is imminent.

As of now (early October) elements of the Israeli leadership have continued with this rhetoric but others have not, and there is abundant evidence that some senior military and intelligence chiefs, both serving and retired, are arguing against an attack. Israeli media have interpreted Prime Minister Netanyahu's UN speech as signalling that any attack would be delayed beyond the November US Presidential Election into 2013. While the Obama administration has voiced support for Israel, there have been many voices calling for restraint, and some of the most senior US military leaders have pointed to the thoroughly uncertain and potentially disastrous aftermath of a war. At the same time, US military forces in the Persian Gulf region are being strengthened by the deployment of a third aircraft carrier battle group, although this is seen as a precautionary measure.

Indeed, the Obama administration does not want any kind of conflict with Iran before the Presidential Election, and it even has the direct capability to make an attack significantly more risky for Israel. This is because the United States deploys an advanced X-band radar system, serviced by around a hundred US military personnel, on Mount Keren in the southern Negev Desert. This very powerful long-range system forms a key provider of early warning against missile and air attack and is fully integrated into Israel's defence architecture. If the United States was privately to threaten to stand down the system, even if there was an element of bluff, it could have a potentially deleterious effect on Israel's home defences.

Six months ago there was a degree of consensus in western intelligence and security circles that the risk of an Israeli unilateral strike on Iran during 2012 was 25-30%, a very high risk for such a potential event. That level of risk has fallen in spite of the stagnant negotiations and it is well-nigh certain that the Obama administration is putting considerable pressure on the Netanyahu government to exercise restraint. The continuation of such restraint is not guaranteed.

A range of technical factors mostly related to the purpose of the Fordo plant mean that even if war is avoided, the longer term balance of diplomatic advantage is likely to be much more in Iran's favour. This has major considerations which this analysis will now explore firstly by examining the technical issues.

Fordo

The core issue is the construction of a substantial new heavily protected nuclear-related facility at Fordo in Central Iran. According to the IAEA (GOV/2012/23, 25/5/12) the Fordo Fuel Enrichment Plant (FFEP) is a 16-cascade uranium enrichment facility intended to have 3,000 gas centrifuges with the purpose of enriching uranium to a low-enriched level of 5% uranium-235 (for power reactors) and to a medium-enriched level of 20% (for isotope production by the Tehran Research Reactor [TRR]).

Both are allowed under the NPT, though Israeli and US sources see the 20% enrichment as a move towards "break-out". Iran repeatedly denies this and remains engaged with the IAEA in the inspection process, although there are still issues of contention between Iran and the IAEA over aspects of the inspection process.

The FFEP is actually a small facility relative to the much larger enrichment plant at Natanz, with numerous other nuclear-related facilities elsewhere. Recent reports of an acceleration of work at the FFEP may be accurate, but it is important also to note that the amount of uranium enriched to 20% U-235 available for "break-out" has actually decreased in the past three months as more of it has been converted into fuel plates for the Tehran Research Reactor. This does not suggest a determination rapidly to develop a weapon capability.

Vulnerability

From intelligence available in the public domain, the FFEP is sufficiently hardened to make it invulnerable to irreversible serious damage from conventional munitions, including earth-penetrating bombs currently in the Israeli arsenal. It would be vulnerable to the US B61-11 earth-penetrating nuclear warhead and to an Israeli equivalent (almost certainly available in the Israeli nuclear stockpile). However, nuclear use would be extremely "dirty" in terms of contamination, would break the 67-year nuclear pause and would be a highly unlikely development, even by a future government in Israel or the US.

If the FFEP has a serious vulnerability, it will be to the new US Massive Ordnance Penetrator (MOP), a 13.6-tonne air-dropped bomb with a 2.4-tonne explosive charge in a ferro-cobalt penetrating jacket (also termed the GBU-57A/B). The first of an initial tranche of thirty has recently entered USAF service. It is deployed on the B-2 stealth bomber and can also be deployed on the B-52. In contested airspace the B-2 would be the preferred delivery platform. The MOP is reported to be capable of penetrating nearly 20 metres of reinforced concrete before detonating. In comparison with smaller earth penetrators this would imply an earth penetrating capability of 100 metres. Fordo is reported to be 60 to 90 metres underground but how much of this includes reinforced concrete is not in the public domain. What is clear, though, is that the new MOP is the only conventional weapon currently capable of putting the Fordo facility at serious risk and, furthermore, more robust versions are likely to be under development.

Given that Israel cannot, on its own, destroy or irreversibly damage the FFEP, any current Israel attack would necessarily be as wide-ranging as possible in order to damage the entire Iranian nuclear and missile programme as much as is feasible. Given that this would be tantamount to a major war - with many civilian casualties - the repercussions would be extreme, hence the recent warnings from the recent major bipartisan US report, *Weighing the Benefits and Costs of Military Action against Iran*.

The Purpose of the Fordo Facility

The FFEP is most commonly seen as a heavily protected plant that enables Iran to proceed to develop nuclear warheads. The thinking is that at any time Iran could give 90-days notice to withdraw from the NPT and then rapidly “break-out” to a small nuclear arsenal.

While this is possible, it is far more plausible to see the FFEP as a core part of the Iranian post-attack recovery capability and part of a much longer-term strategy. From this perspective, Iran may not yet have decided to develop a nuclear weapon, but is absolutely intent on further developing its nuclear industry, especially nuclear power. This is part of a deeply embedded culture that nuclear power is a symbol of modernity for Iran and goes right back to the major civil nuclear programme initiated by the Shah in the 1970s (ironically in association with the United States) before his ousting.

But if there was an Israeli attack, the Iranians would expect very widespread damage but would hope for/anticipate the substantial survival of the FFEP. It should therefore be assumed that FFEP is constructed in such a way that it could be used - if the Iranian regime decided - to provide capability to undertake rapidly other elements of a nuclear weapon programme, with further elements widely dispersed across the country. There will also be complex “shadow” IT facilities with multiple independent back-ups to survive concentrated cyber-attacks as well as the further development of the indigenous web system that has recently been reported.

Implications

What is important to recognise is that Iranian strategists and planners will have thought through the possible impacts of Israeli military action and have been acting accordingly, with the FFEP central to this. There are some significant implications:

- Since it cannot be certain it can disrupt the FFEP, a unitary Israeli attack would be as wide-ranging as Israel could manage, with disastrous consequences, and for this reason is becoming less likely.
- Israel may seek to bring the US into a war, not least since Israel alone cannot mount an effective attack on the FFEP.
- If a war does not happen in the next six months, the diplomatic advantage will lie increasingly with Iran, as Fordo and other facilities are further developed.

Much will depend on the result of the US Presidential Election, but a re-elected Obama administration will have an opportunity to engage positively for its first two years, and may well do so. This would be wise since the FFEP and other Iranian developments mean that the US and its allies will have no option but to accept a substantial Iranian nuclear power programme, always allowing the option of weapons development. The more time passes, the more the Iranian programme moves towards much decreased vulnerability to attack unless there was to be an all-out assault by the United States, probably over many days and weeks, with huge regional consequences. This will even apply, to an extent, to an incoming Romney administration.

Policy

To put it bluntly, Iran has already succeeded in altering the balance of advantage. It would therefore be wise to envisage much more modest and sustained engagement in the coming months and years, with more limited expectations of agreement. This has major implications for governments involved in negotiations with Iran, as well as non-government organisations involved in informal discussions. If war is avoided in the coming weeks, there will then need to be some fundamental re-thinking as to the best ways forward.

Risk

It has to be said that the analysis outlined here is almost certainly shared by Israeli policy makers and is likely to be a source of intense frustration. In spite of current divisions within Israel, this could still lead to precipitate action in the short term. Every effort needs to be made, through any channel available, to discourage this. In this respect the recent discussions between EU representatives and Iranian officials is a welcome move.

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