



## A Pre-Mortem Assessment: The Case of Iraq's Aluminum Tubes<sup>1</sup>

### Scene Setter

In the Fall of 2002 the Intelligence Community produced a National Intelligence Estimate on the status of Iraq's Weapons of Mass Destruction program. The NIE concluded that Iraq was reconstituting its nuclear program, a judgment that rested largely on the analysis of aluminum tubes that Iraq purchased from China.

A question that was not asked at the time was: What if this assessment is wrong? Have we as analysts carefully examined the key assumptions and the most critical evidence that provide the foundation for this intelligence assessment? This case study demonstrates how such a process, which we call a Pre-Mortem Assessment, would have caused analysts to reevaluate their bottom line.

### Background

The Intelligence Community's judgment that Saddam Hussein was reconstituting his nuclear program was based on several key assumptions:

- Saddam Hussein was committed to a robust nuclear weapons program.
- He had a history of employing denial and deception.
- He had access to sufficient illicit funds.

Many analysts (and policymakers) believed that Saddam Hussein was a master at deception and denial. The relatively advanced nuclear program discovered at the end of the first Gulf War was judged possible only because of a massive and successful program of deception by the Iraqis. Saddam cemented the belief that he was deceptive during the 1990s by routinely resisting complete disclosure of pre-1991 capabilities.

Saddam's denial of information led analysts to assume that he was hiding even more. Despite the long campaign of the United Nations inspectors to dismantle

---

<sup>1</sup> This case study was written by Pherson Associates, LLC, in 2008. It is designed to illustrate a new structured analytic technique developed by Pherson Associates called the Pre-Mortem Assessment. This study is copyrighted and cannot be duplicated without permission from Pherson Associates, LLC ([library@pherson.org](mailto:library@pherson.org)).

Saddam's WMD programs during the 1990s, analysts believed that Saddam had covertly worked to reinvigorate a nuclear program while the inspectors were in Iraq. Furthermore, after the inspectors left Iraq in 1998 (to avoid a US bombing campaign) analysts postulated that Saddam's attempts to reconstitute the program went into high gear.

Analysts thought that Saddam would not mislead his own people into believing that he had a robust WMD defense if he could not deliver on the promise. While Saddam denied to the UN Inspectors and to the Western press that he had a nuclear program, he led Iraqis—including his own military—to believe that he had the ultimate means to protect them. Hussein exhorted his “nuclear Mujaheddin” to safeguard the country against Western attacks.

Finally, analysts believed that Saddam had the financial means to pursue a costly clandestine program. The kickbacks received from the oil for food program and the illicit, but condoned, sale of oil through Syria were assessed to generate sufficient monies to fund the program.

## The Evidentiary Trail

Accounts of the success of UN destruction of Iraqi capabilities were mixed. In 1994, Khadir Hamza, a nuclear scientist, defected to the West with reports that the WMD programs continued unabated. In 1995, Hassan Kamal, Saddam's son-in-law and head of the WMD programs, defected to Jordan with files and records that had long been denied to the weapons inspectors. Kamal reported that he ordered the complete destruction of the nuclear program to comply with the inspectors.

- After his defection, Khadir Hamza worked for the IAEA where he was judged to be “over the edge” and a “liar”.
- Kamal's defection was seen by some analysts as Saddam's attempt to counter Hamza's story. When Kamal returned to Iraq in the mid-1990s, he was killed.

The UN weapons inspectors' final report in 1998 concluded that Iraq no longer retained the physical ability to produce nuclear materials. After Kamal's defection Saddam's government released information it had previously withheld to the inspectors enabling them to be more comprehensive in their investigations and destruction. Some inspectors concluded that up to 95% of facilities and capabilities had been destroyed.

Approaching the drafting of the 2002 NIE, analysts had very little hard evidence to indicate that the Iraq nuclear program was being reconstituted. Saddam's attempt to purchase aluminum tubes from China in 2000, however, looked suspicious and deserved further analysis.

- In April 2001, the CIA concluded that the aluminum tubes were well suited for a 1950s type of rotor for centrifuges in a uranium enrichment facility.
- DOE disagreed and assessed that the technical specifications did not support nuclear use. If they were for that purpose, DOE argued, it would suggest that Iraq was taking a technological step backwards. There was no evidence Iraq was pursuing other ancillary purchases necessary for centrifuge enrichment. Moreover, the process the Iraqis followed for purchasing the tubes was similar to how conventional weapons are purchased and not particularly clandestine.

In the Spring and Summer of 2001, DOE's technical experts assessed the tubes were better suited to rocket casings for an 81 mm rocket. State Department's INR agreed with DOE's analysis. In private meetings, foreign experts also sided with DOE and State Department.

- The British concurred with the DOE assessment and added that the Iraqis had attempted to purchase identical tubes from Switzerland. The IAEA also agreed with DOE's assessment that rocket use was more suited to the tubes.
- In 1996 the IAEA reported that Iraq used aluminum tubes with the exact same specification for its Nasser 81 rockets and that they had a dwindling supply.

In the Fall of 2001, the Defense Intelligence Agency and the National Ground Intelligence Center (NGIC) agreed with CIA. NGIC, specializing in ground forces, concluded that the aluminum tubes did not meet specifications for use in rockets.

## **Conducting a Pre-Mortem Assessment**

In the Fall of 2002 CIA analysts concluded that the aluminum tubes that Iraq was procuring were destined for a gas centrifuge assembly that would produce highly enriched uranium for nuclear weapons. Prior to including this assessment in the NIE, the analysts could have conducted a Pre-Mortem Assessment. The technique would have prompted them to ask themselves five questions:

- Are my key assumptions valid?
- Is there evidence contradicting my lead hypothesis that I have ignored?
- Have I considered the implications of the absence of evidence?
- How credible is my key evidence?
- Could some of the information been provided by someone with an intent to deceive me?