

The timer fragment evidence

Background

Megrahi's conviction rested on a single piece of forensic evidence, a tiny fragment of green printed circuit board (PCB) found within a blast damaged shirt collar. Known by its police reference number PT/35b, it became the golden thread that linked Megrahi and Libya to the bombing.

In 1990 forensic experts established that the PCB originated from a distinctive timing device, called an MST-13. With the help of the US and UK intelligence services, the police established that the timers were made by a small Swiss company, Mebo, whose Zurich offices were shared by a Libyan company called ABH, in which Megrahi was a partner.

Mebo's co-owner, Edwin Bollier, told the police that the timers were built to order for the Libyan intelligence service, the JSO, in 1985. The PCBs were specifically designed by Mebo for that purpose and were ordered from a Swiss manufacturer Thüring. Records from Thüring confirmed that the PCBs were made and delivered to Mebo in 1985. Crucially, only 20 of the timers were built and delivered to the Libyans. There were some spare PCBs left over from the Thüring order, all of which were handed to the Scottish police. Some years later, Bollier admitted that he had also supplied two further MST-13s to the East German security service, the Stasi, however, this would prove to be a red herring.

The position at Megrahi's trial

It was the Crown case that PT/35b originated from one of the 20 MST-13 timers that was supplied to Libya by Mebo. If true, this of course, meant that it must have been from one of the Thüring-manufactured PCBs. The backbone of the Crown forensic case was a report by forensic experts Allen Feraday and Dr Thomas Hayes from the Royal Armaments Research and Development Establishment (RARDE). Dated December 1991, the report stated that it had been 'conclusively established' that PT/35b's 'materials and tracking pattern are similar in all respects' to the MST-13 circuit boards. Feraday repeated this when giving evidence at the trial.

The defence attempted to adduce evidence that the fragment was in fact from one of the Stasi timers, but this was undermined by Bollier's claim that those timers contained brown/grey prototype PCBs, rather than the green Thüring ones used in the Libyan timers. The defence did not challenge the Crown evidence that the fragment was from a Thüring PCB. (Mebo technician, Ulrich Lumpert, who built the timers, testified that the Stasi devices contained Thüring PCBs, but subsequently claimed his evidence was wrong and that they contained the brown/grey prototypes).

Prior to the trial the Crown disclosed to the defence a number of technical reports that the police had commissioned from various circuit board industry and academic experts in 1990 and 1992. The 1990 reports analysed the material

composition of PT/35b and the 1992 ones detailed similar analysis that had been conducted on one of the unused Thüring PCBs, known as DP/347a. The purpose of the 1992 tests was obviously to see if the control sample DP/347a matched PT/35b. It seemed that they did match.

There was, however, one, apparently minor, difference, which was noted in the reports of two scientists who were tasked with analysing the boards' metallic components. This difference related to the thin coating of tin on the PCBs' copper circuitry. (This tin coating, also known as tinning, is added in order to make it easy to attach electronic components to the circuitry). The tests on PT/35b indicated that the coating was of pure tin, whereas those on the control sample DP/347a also gave quite high readings for lead as well as tin. Both scientists speculated that the difference might be due to the fact that PT/35b had been exposed to the extreme heat of the explosion.

There, it seems, the matter rested. The Scottish Criminal Cases Review Commission reviewed the PT/35b evidence during its 4-year investigation of Megrahi's case and concluded that there was nothing to indicate that the fragment was not from one of the PCBs used in the 20 Libyan timers.

The new evidence

While preparing Megrahi's second appeal, we learned a crucial fact, which appears to have eluded both the defence and the SCCRC: in PCB manufacture 'tin' is a generic term that can mean two things; either pure tin, or a tin/lead alloy. Some PCBs are coated with pure tin and others with tin/lead alloy, moreover the manufacturing processes required to produce each type of coating are entirely different.

We then learned something even more important: Thüring used only the tin/lead method. The company's former production manager, who had been responsible for the manufacture of the MST-13 circuit board, swore an affidavit for us confirming that the company had never used pure tin coatings. So, any pure tin coated PCB could not have come from the board supplied by Thüring to Mebo and subsequently used by Mebo in the 20 timers supplied to Libya.

It was clear that the only way that the Lockerbie fragment, PT/35b, could have originated from one of the Thüring-made PCBs, and therefore from one of the 20 Libyan timers, was if – as the two scientists had speculated – the heat of the explosion had changed its coating from a tin/lead alloy to pure tin. We instructed a metallurgist, Dr Jess Cawley, to test this hypothesis. He subjected replica fragments, coated with a tin/lead alloy, to far greater heat energy than PT/35b could have been exposed to during the momentary flash of a Semtex explosion. He then analysed them with a scanning electron microscope to see if the lead had disappeared. It hadn't: in other words a Thüring PCB exposed to an explosion would not have changed its coating from tin/lead to pure tin.

Taken together, all this meant that the PT/35b could not have originated from a

Thüring PCB, which in turn meant it could not have come from one of the 20 Libyan timers. Its origin is therefore a mystery. (Remember, it could not have been from one of the two timers supplied to the Stasi, as those contained either Thüring boards or grey/brown prototypes.)

One question remained outstanding: was the RARDE forensic expert Allen Feraday aware of the dissimilarity between PT/35b and the control sample DP/347a when he signed off on the forensic report in December 1991? The fact that the comparative tests were not conducted on DP/347a by the independent scientists until 1992 suggested that he might not have been. However, a month before Megrahi's return to Libya we received from the Crown previously undisclosed RARDE documents that demonstrated that similar comparative tests were conducted at RARDE on 1 August 1991, four months before he completed the report. The documents included hand written notes by Feraday that proved he was aware of the difference. Why then did his report state that PT/35b was 'similar in all respects' to the MST-13 circuit boards?

Please note

1. Libya and East Germany were not the only countries that had MST-13 timers.

Evidence disclosed by the Crown revealed that the following governments and organisations had access to the timers before Lockerbie:

- The government of Togo, where two of the timers were supposedly among an arms cache seized from anti-government rebels in 1986.
- The government of Senegal, which supposedly seized a timer from two alleged Libyan agents in February 1988. This timer was subsequently unaccounted for.
- The French intelligence service, the DGSE, which took possession of one of the Togo timers and probably also had access to the Senegal device.
- The US Bureau of Alcohol Firearms and Tobacco, which took possession of the other Togo timer in 1986.
- The CIA, which received the Togo timer from the BATF in 1986 and which also had access to the Senegal timer.

2. The 'senior intelligence agent claim'

It has been repeatedly stated that Megrahi was a senior intelligence agent and that ABH was a JSO front company. The sole basis this claim was the evidence of Majid Gaika, an acquaintance of Megrahi's, who was formerly a low level JSO agent and LAA's deputy station chief at Malta's Luqa airport. Gaika also claimed that Colonel Gaddafi was a freemason. At Megrahi's trial it was revealed that Gaika had been a paid CIA informant since four months before Lockerbie and that the CIA considered him so unreliable that it had threatened to stop paying him. It was not until three years later, when desperate for asylum in the US, that he finally implicated Megrahi in the bomb plot. In their judgment the trial judges described much of his evidence as 'at best grossly exaggerated, at worst simply

untrue', and noted: 'Information provided by a paid informer is always open to the criticism that it may be invented in order to justify payment, and in our view this is a case where such criticism is more than usually justified.' Yet, perversely, the judges accepted Gaika's unsubstantiated claim that Megrahi was a JSO agent.

It cannot, of course, be proven that Megrahi was not an agent, however, in the 20 years since he was first charged with the bombing no credible evidence has emerged to support the allegation. Indeed, at the end of his trial the Crown amended the indictment, dropping all mention of ABH and other alleged JSO front companies. There is ample documentary evidence to substantiate Megrahi's claim that ABH was a legitimate trading company, dealing mainly in aircraft spares for Libyan Arab Airlines (LAA). Megrahi admits that he sometimes travelled on a false passport, but insists that it was issued to give him cover when he was buying spare parts for US made aircraft owned by LAA, which was then subject to US sanctions (in contrast to his original passport, which gave his occupation as flight dispatcher, the false one gave it simply as 'employee'). Crucially, he kept it for 11 years after the bombing and handed it over to the police prior to the trial - hardly the actions of an intelligence agent, let alone a terrorist.

3. Libya's 'admission of guilt'

In 2004 Libya formally accepted responsibility for the bombing and agreed to pay \$2.7 billion in compensation to the victims' relatives. Although this is often cited as proof of Megrahi's and Colonel Gaddafi's guilt, it was, in fact, anything but. Libya had by then suffered 12 years of UN sanctions, which were imposed after Megrahi and his co-accused Lamin Fhimah were first charged in 1991. The corresponding UN Security Council resolutions allowed the sanctions to be lifted only if country admitted responsibility and paid compensation. In February 2004 the Libyan Prime Minister, Shukri Ghanem, told the BBC that his government continued to protest its innocence, adding 'We feel that we bought peace. After the sanctions and after the problems we faced because of the sanctions, the loss of money, we thought it was easier for us to buy peace and this is why we agreed on compensation.' Gaddafi's son Saif al-Islam later said: 'we wrote a letter to the Security Council saying we are responsible for the acts of our employees ... but it doesn't mean that we did it in fact. I admit that we played with words - we had to. What can you do? Without writing that letter we would not be able to get rid of sanctions.'

4. Previous reports about the circuit fragment are wrong

On 6 January 2010 BBC *Newsnight* broadcast an item that suggested that explosive tests commissioned by Megrahi's appeal team had established that a circuit board fragment could not have survived a Lockerbie-type bomb. The assertion was based on an interview with Dr John Wyatt, who had conducted the tests. The story was incorrect. No doubt Wyatt believed what he was saying was true, however, he did not undertake a systematic forensic examination of the test debris. The forensic scientist who did, Dr Roger King, found that a circuit board fragment did survive one of the tests, as did fragments of far less robust materials, including paper.