Centre for Air Power Studies

ACCESSING THE INACCESSIBLE

PART VI – NSA'S DIGITAL RADARS FOR AUDIO & VISUAL SURVEILLANCE

E. Dilipraj
Research Associate, CAPS

The NSA's ANT department's digital tools which were exposed in the German weekly *Der Spiegel* in December 2013, have exhibited the superiority of this agency in digital surveillance. These tools are explained in detail in this series titled "Accessing the Inaccessible" and so far the series has covered wide range of issues and aspects related to the tools that operate on Keyboards, USBs and VGAs, CPUs, W-Lan & Router and Firewalls & Servers.

In continuation of the series, this paper aims to elucidate five tools which are used as digital Radars for Audio and Visual surveillance in the target's space. These tools are CTX4000, LOUDAUTO, NIGHTWATCH, PHOTOANGLO and TAWDRYYARD. According to the exposed documents, CTX4000 and NIGHTWATCH are obsolete tools which already possess advanced replacements. Moreover LOUDAUTO and TAWDRYYARD are part of the ANGRYNEIGHBOR family of Retro-reflectors.

While RADAR by definition is an equipment used for detecting distant objects and determining their position, velocity, or other characteristics by analysis of very high frequency radio waves reflected from their surfaces, the above mentioned digital tools of NSA also act as radars for detecting devices and surveying the visuals and audio of the

target's operating space. Based on the design of these tools, it can be inferred that these tools are meant for strategic and military purposes to target sensitive locations.

CTX4000

CTX4000 is used as a potable continuous wave radar unit which would illuminate the target system from which off net data can be retrieved. This tool has the capacity to collect signals which otherwise is extremely difficult to collect and process. It works in a frequency range of 1 to 2 GHz and on a bandwidth upto 45 MHz. This tool was primarily used in VAGRANT and DROPMIRE collections which can only be inferred as some clandestine information gathering operations. This tool was operational till August 2008 after which it was replaced with another tool called PHOTOANGLO since September 2008.[1]

PHOTOANGLO

PHOTOANGLO is a radar tool which was developed as the replacement for CTX4000, and it was jointly developed by NSA and Government Communications Headquarters (GCHQ) of UK. Unlike CTX4000, this tool is smaller in size which can fit inside a small briefcase and has a frequency range of 1 to 4 GHz and functions at a bandwidth of 450 MHz. The un-modulated continuous wave (CW) signal generated from the radar unit is amplified and sent to a radio frequency connector, emitted out through an antenna. When the signal is re-radiated from the target system, the receiver antenna captures the signal and is amplified, filtered and mixed with transmit antenna. The resulting RF signal is connected to processing systems like NIGHTWATCH, LFS-2 or VIEWPLATE using an external Bayonet Neill–Concelman (BNC) connector for visual intelligence.[2]

NIGHTWATCH

NIGHTWATCH is specially designed portable computer shielded in a case and used for video reconstruction for surveillance. The video output from collecting tools like CTX4000, PHOTOANGLO or any other general purpose receiver is connected to the NIGHTWATCH. The user can adjust the horizontal and vertical sync of the output video of the target's screen. When the sync matches the desired readable quality, 'Sync Lock' is activated which enables the user to view all that is displayed on the target's computer screen. The user also has an option to forward all the frames from NIGHTWATCH to NSAW for further intelligence gathering by expert analysts. Like CTX4000, this tool was on its verge of getting obsolete in 2008 and according to the exposed documents, a new tool called VIEWPLATE was slated to replace the functioning of NIGHTWATCH.[3]

LOUDAUTO

LOUDAUTO is the conventional audio bugging tool which is used to gather audio from the target space to a remote location. This tool picks up the room audio and can pick up speech at a standard volume from a distance of 20 feet. The tool is powered by a battery and it uses very minimal battery charge for its operations. The audio picked up by the microphone in this tool, is converted into analog signal which is used to pulse position modulate (PPM) a square wave signal running at a pre-set frequency. The square wave is in turn used to turn a field effect transistor (FET) on and off. When the FET is illuminated, the signal is amplitude modulated and it is re-radiated and then finally processed to recover the room audio. This tool is also part of ANGRYNEIGHBOR family. The cost of one unit of this tool is $30.[4]
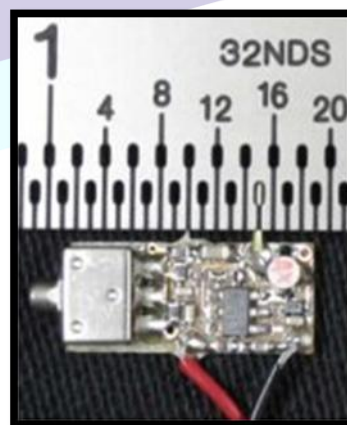
TAWDRYYARD

TAWDRYYARD is a simple detection radar unit used to detect the deployed RAGEMASTER tool of NSA ANT. The tool functions with the simple radar functioning model and it is part of the ANGRYNEIGHBOR family of retro-reflectors. The cost of one unit of this toll is $30.[5]
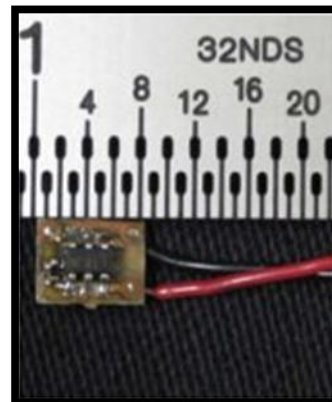
More information about the working and functionality of many more tools of NSA ANT would be available in subsequent parts in the series titled "Accessing the Inaccessible".

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

End Notes

[1] "Product Data – CTX4000", NSA ANT Catalogue, USA.

[2] "Product Data - PHOTOANGLO", NSA ANT Catalogue, USA.

[3] "Product Data - NIGHTWATCH", NSA ANT Catalogue, USA.

[4] "Product Data - LOUDAUTO", NSA ANT Catalogue, USA.

[5] "Product Data - TAWDRYYARD", NSA ANT Catalogue, USA.

--**xxx**--