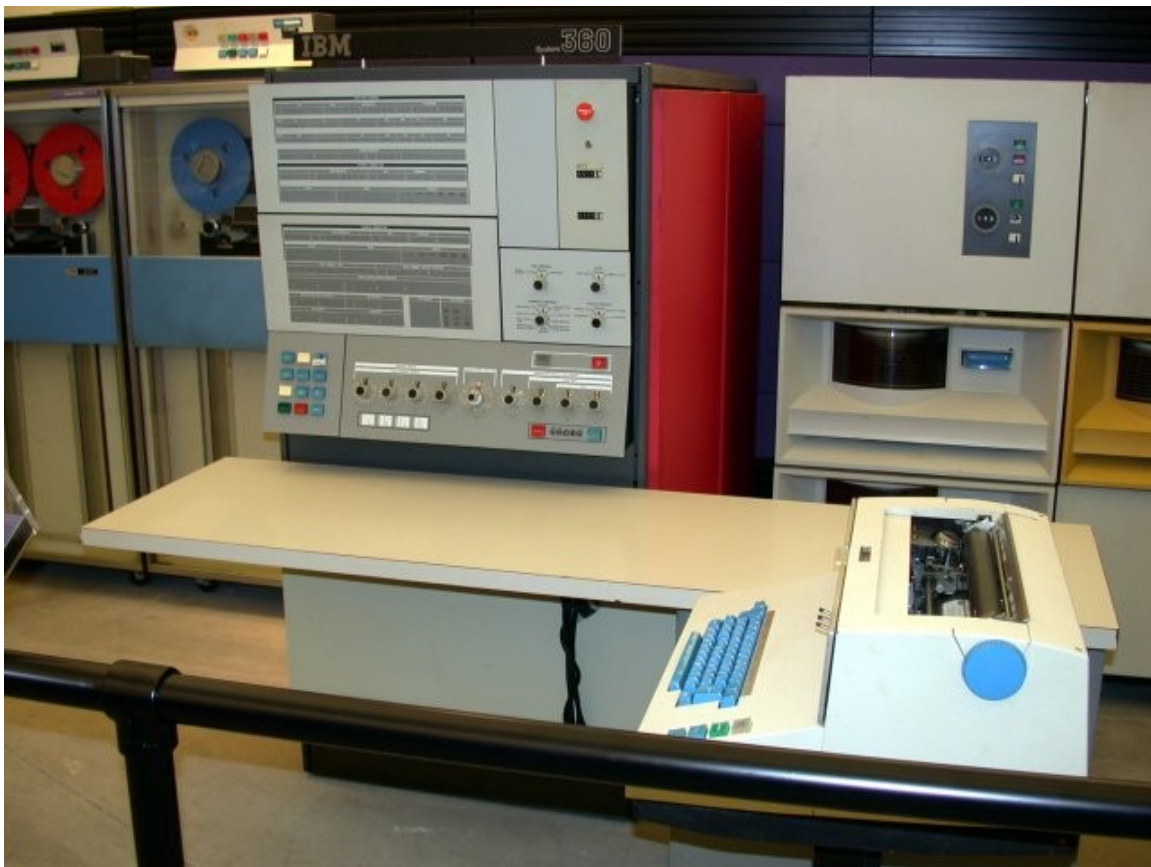


**“ACHTUNG! ALLES LOOKENSPEEPERS!”**

*“Das computermachine ist nicht fuer gefingerpoken und mittengrabben. Ist easy schnappen der springenwerk, blowenfusen und poppencorken mit spitzensparken. Ist nicht fuer gewerken bei das dumpkopfen. Das rubberneckn sichtseeren keepen das cotten-pickenen hans in das pockets muss; relaxen und watchen das blinkenlichten.”*

That sign was to be found in computing centers all over the world, back in the days of large mainframe computers which filled entire rooms with cabinets covered with blinking lights and toggle switches. I even remember seeing one at Penn State's “Comp Center” (the current Computer Building) in the early '70s, outside the window filled room which housed the IBM 360 computer. Mere mortals, even programmers, were not allowed inside the machine room, and had to submit their programs on punched cards to the Dispatcher, who loaded your deck into the card reader and then returned your cards and the program's output on fanfold paper. If you were lucky, your program ran without error and returned the expected output. Otherwise, it was back to the keypunch room to fix your mistakes, and repeat the process.



*IBM 360/91 at the Computer History Museum*

During my stint in the Air Force, I had the opportunity to work on one of the all time greatest “blinkenlights” machines, and the largest computer system ever built. The system was the AN/FSQ-7 computer built by IBM for the Air Force's SAGE (Semi Automatic Ground Environment) program in the 1950s. SAGE was designed to monitor planes passing through our airspace, using information provided by numerous radar installations. The first SAGE installation at McGuire AFB in New Jersey became operational in 1958, followed by 23 other installations. I worked on the AN/FSQ-7 computer at McChord AFB in Tacoma, WA in 1983, shortly before it was finally turned off after 25 years of operation.

There were actually two redundant computers in each SAGE installation, with some common equipment connecting them. Between them, the computers used 50,000 vacuum tubes and 24 magnetic drums (not disks). Each system had approximately 68K of RAM (core memory), only slightly more than the first personal computers! A SAGE installation used 3,000KW of power, and had its own generating and air conditioning plant. With that many tubes, air conditioning was a critical service.

The operation and maintenance consoles for the SAGE computers had hundreds of neon lamps to monitor the flow of data through the system, along with dozens of incandescent lamps and hundreds of switches. In maintenance mode, you could literally follow the progress of a program through the computer by “single stepping” the instructions and watching the neon lights.



*Duplex Maintenance Console at the Computer History Museum*

The first SAGE installation was retired in 1964, and parts of one of the early retirees found their way to a prop department in Hollywood. Let's face it, the SAGE computers were a special effects dream, with all the lights and switches. If you're a science fiction fan, chances are you've seen parts of the SAGE system and didn't know it! Irwin Allen, the "Master of Disaster", produced several TV series in the '60s, along with big budget disaster films. Many of his TV shows and movies used parts of SAGE as props, along with frequently seen Burroughs and IBM systems, and other retired military hardware.

I used to watch all of the Irwin Allen shows as a kid, including *Lost in Space*, *Voyage to the Bottom of the Sea*, *Land of the Giants*, and *The Time Tunnel*. It wasn't until I had left the Air Force and had seen some old pictures from *The Time Tunnel* that I realized that the main computer in the tunnel complex was comprised of sections of the AN/FSQ-7! Since that time, I've been looking for other appearances of SAGE equipment on TV and in the movies, and have created a web site with pictures of the equipment I've found:

<http://sturgeon.css.psu.edu/~mloewen/Q7/>

The programs start with *The Man From U.N.C.L.E.* and *Voyage to the Bottom of the Sea* in 1964/65, and continue through ABC's *Lost* from 2006. Yes, pieces of SAGE are **still** being used, 40 years after retirement! Sections of the maintenance consoles have been rearranged, and the neon lamps were replaced by brighter incandescent lamps, but many of the same pieces show up.



*The Time Tunnel*

A particular favorite of the prop masters is the section of the Simplex Maintenance Console (SMC) which houses the long, narrow panels which (on the original system) dealt with radar information and communications between SAGE complexes. In the *Time Tunnel* picture, you can see them immediately behind and to the right of Robert Duvall. These Long-range Radar Input (LRI) panels show up in almost every show which uses SAGE props. In *Lost in Space* you can find them (individually) in various places on the Jupiter 2, the Space Pod and the Android Machine. Later seasons of *Voyage to the Bottom of the Sea* used a large section of the SMC on the submarine Seaview, and the communications complex in *The Man From U.N.C.L.E.* was sections of both the SMC and the DMC.

For the 1996 presidential election, ABC brought in some large sections of the maintenance consoles for their election night coverage, to dress up the set. It's amusing to think that they had to resort to 1958 technology to impress the viewers with their supposed computing power! ABC is again using SAGE equipment on the set of their current series, *Lost*, inside of Dharma Station. In the station, we find the same mix of LRI panels, a Manual Drum Tester panel, power control panels and other SAGE bits that have appeared on other recent shows. To point out another bit of vintage computer technology, an Apple II+ is used as the terminal which communicates with the system.

When McChord's SAGE system was decommissioned, I was given a couple of pieces during the disassembly: a core memory plane and an indicator and switch assembly from the DMC. I've also acquired some additional parts from the system over the years, and you can see them on my Old Technology web site:

<http://sturgeon.css.psu.edu/~mloewen/Oldtech/SAGE>

Also included are links to other sites with information about SAGE, and some documentation about the system. If you have any information to pass along about SAGE, or have spotted pieces of it in another TV show or movie, please sign the guest book on my SAGE movie site.

Mike Loewen, Senior Research Programmer, ITS/CSS/User Services