

Nixon Bug System Simple

Expert Calls Them Hardly Professional

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Like the Watergate break-in itself, President Nixon's latest crisis—publication of his recorded conversations—began with the deft work of men trained in the dark art of wiretapping and bugging.

They moved in some time before February 6, 1971, working first in the historic Oval Office where they placed a tap on the President's telephone—extension 500—and planting seven hidden microphones around the room.

Next the team of Secret Service personnel under Raymond C. Zumwalt moved on to the President's other office in the Executive Office Building, bugging the room and tapping the phone, extension 504. The Cabinet Room was bugged with a different system and another tap was placed on the phone in the Lincoln Sitting Room in the White House's family quarters.

The systems, three in number, incorporated a lexicon of exotic terms—mixer, voice activator relay, automatic gain—and worked along principles seemingly lifted from a spy thriller. The telephone tap, for instance, was triggered when the President lifted the receiver, reducing the voltage from 49 to 12 volts.

Yet for all the electronic hocus-pocus, the technicians—Zumwalt, Charles Bretz and Roger Schwalm—turn out to be suburbanites who are technicians—not agents—for the Secret Service, and the equipment they used was of the type that might be found in the den of a hi-fi buff of modest means.

At its heart was a Sony 800B tape recorder that retailed at the time for a modest \$199 and was taken from the White House stock. Along with the Uher 4000,

the one used by Rosemary Woods to transcribe the tape with the 18½ minute gap, the Sony was the basic White House tape recorder at the time.

The Sony, the machine that recorded the presidential conversations until the system was disconnected July 18, 1973, was described by one Washington-area acoustical expert as a "middle quality device—not a professional machine."

"It is hardly the type of equipment one would have expected the President of the United States to use," said Ed Myers, president of Myer-Emco and a member of the Acoustical Society of America.

Similarly, another sound specialist—and a sometime surreptitious eavesdropper himself—San Francisco private detective Harold Lipset, characterized what is known of the system as "adequate, but not professional." Lipset, the onetime chief investigator for the Senate Watergate committee and a technical consultant for the film on bugging, called "The Conversation," blamed the presidential buggers, their equipment, their

technique and their apparent attempt to economize on tape.

While both Myer and Lipset said the system should have functioned well, neither man has had the chance to examine it and therefore is in no position to dispute any of the White House explanations for the "inaudibles" or "unintelligibles."

In all respects, Lipset said, the presidentially authorized system to bug the White House in no way compared to the bugging devices found at the Watergate. Lipset called that a fine, professional job which used the most advanced equipment.

Both Myer and Lipset agreed, however, that based on what is known about the system in use at the White House compound, virtually all that was said—especially in the Oval Office—should have been recorded.

In a way, they agree with Zumwalt, the designer of the system, who told a hearing before U.S. Circuit Court Judge John Sirica last fall that the system worked well. "It was very sensitive," he said. "We ran tests . . . Anyone talking in a low voice, it would pick it up." Zumwalt would not vouch for whispers, having never tested for anything softer than a low, conversational voice.

Similarly, Alexander Butterfield, once a deputy assistant to the President and one of the few persons to know of the eavesdropping system, also had praise for its performance.

"The result (of the tests he conducted) was (that) the voices, conversations, were picked up very well, very clearly," he told the Senate Watergate committee last July 17.

Yet, the 33 hours of recorded conversations released by the White House recently in the form of edited transcripts labeled about 1,670 portions of conversations as either "unintelligible" or "inaudible."

James D. St. Clair, special counsel to the President, has said that most of the "unintelligibles" were caused by two or more persons speaking at once. Othby such noise interference as someone placing a coffee cup on a table near a microphone.

Those explanations, offered at a May 1 White House briefing, are about all the White House will say concerning the technology of the system. St. Clair admitted at the time that the White House did not use the latest in audio technology to

attempt to enhance the sound quality of the tapes — "No, we don't have such technology available to us," he said.

White House Counsel J. Fred Buzhardt offered some more explanations: The President's deep voice was harder for the tape to pick up and the inability of the system to function the second someone spoke accounted for some of the unintelligibles.

Since then, the White House has turned away all questions about the system's technology, or even what tape machines were used to transcribe the tapes. Here, though, is what is known about the White House taping and bugging system:

The three presidential telephones were tapped off the White House switchboard. When the President lifted a receiver, the telephone's voltage dropped from 49 to 12 volts, activating the taping system.

All three telephones were recorded by a single Sony 800B tape recorder that was located in a small room in the White House. The tapes, which could record six hours of conversation, were changed daily by the Secret Service, except on weekends.

The bugging system was more complex. Five microphones were installed in the President's desk and two on a lighting fixture to the rear of the office. Informed sources said they were planted under the trim of the desk and were located to pick up sound from a speaker sitting on either side, or at the corners.

The microphones fed sound to a mixer, a device that took the sound from each microphone and ran it to a central output—the voice-activated relay that turned on the tape machines whenever someone started speaking.

The system was triggered by a device called the "family locator," which kept track of Mr. Nixon's position in the White House compound and powered the bugging system in his locale.

The Sony recorders would only operate, however, with

a signal from the voice-operated relay. According to Myer, the Sony recorder would require anywhere from one-quarter to one-half a second before it would reach its recording speed, which is when 15/16th of an inch of tape passed over the recording head every second.

That speed, according to Myers, is not the best for the highest fidelity, but adequate for recording voices. That speed on a Sony 800B would probably result in a loss of high frequency sounds, which help determine what words have been spoken.

Another weakness in the system, according to sound experts, was the use of monaural or single-track tape. Had a more sophisticated tape recorder been used along with four-track tape, every voice could have been recorded on a different track, and conversations would not have been as jumbled or unintelligible.

Sound from the Oval Office was fed to two Sony 800Bs that were kept in a

small room in the West Wing of the White House. There was another recorder there for the telephone system, one for the bugging system in the Cabinet room and one spare. The two Oval Office machines were controlled by a timer, which automatically switched the system from one machine to another some time between 11 p.m. and midnight.

The President's Executive Office Building office, which was not as frequently used as the Oval Office, was not as thoroughly bugged. There, according to sources, only two microphones were

planted—one in Mr. Nixon's desk and the other on a couch or chair to the rear of the room.

A different system was used in the Cabinet room. No voice activator was employed, and the system had to be manually turned on. Of the three, that system reportedly functioned the poorest.

In the case of the Oval and EOB offices, prolonged use of the equipment over a weekend would run the system out of tape. The automatic timer would then switch back to a machine which already had done its six hours worth of recording and start over, erasing what it had already recorded.

According to Zumwalt's testimony before Judge Sirica, the system was tested about once a week. The tapes, once removed, were labeled and stored in a locked cabinet-safe in Room 175½ of the Executive Office Building. The room was kept locked and secured by an alarm.

It is not known what sort of microphones were used or what the quality of the voice activator was. But assuming that they were of similar quality to the heart of the system—the Sony 800B—the system appeared adequate to its task, in the view of sound experts, and may not have cost the taxpayer more than \$2,000 in equipment to install.

"It should have worked fine," said Lipset, the West Coast private detective who developed the now-famous martini olive bug.

He said he would have done away with the voice activator and just let the tape recorders run. "Tape is cheap," he said. "I would have let the tapes run and I would have used eight-hour tapes."

"I would have used a minimum of four mikes with each mike going to a separate (tape) track," he said. "One track would be a continuous time signal." It would not be cheap, he said.

"If you were really going to do it all the way, maybe 10 to 15 grand," he said. "I'd want to go first cabin all the way."