

CANDOER News



A quarterly Newsletter dedicated to Communicators AND Others Enjoying Retirement

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Welcome to the latest issue of a Newsletter dedicated to the **CANDOERS** (Communicators **AND** Others Enjoying Retirement). This newsletter will be distributed quarterly. New issues will be posted on the Web for viewing on or about, January 15, April 15, July 15, and October 15.

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The ATS Story

By Ray Wolf, Bernie Weinstein and Denis Combs

Part I of II

Mr. Raymond L. Wolf was the Supervisory Programmer, Department of State. Born on February 25, 1929 at St. Mary's, PA. Mr. Wolf received a Bachelors of Science Degree in Business Administration from Penn State in 1957. He was employed by the Department of State since 1963. (Ray died on April 1, 1999 of a heart attack.)

Bernard Weinstein was a consultant systems analyst who has been involved in data processing activities since 1954. Mr. Weinstein has been associated with the State Department ATS from its inception. He holds a Bachelors Degree in Business Administration from the College of the City of New York. (Bernie is now retired and lives in Las Vegas.)

Denis F. Combs was the Manager-Field Operations, Logistics, for ITT Defense Communications Division, Nutley, NJ. He has been involved with real time data processing systems since 1956. Mr. Combs has been involved in project management and field operations for ten ITT message/data switching systems and also has been associated with the State Department's ATS system from its inception. He attended the University of Michigan, Flint Campus, from 1955 to 1957, and GM Technical Institute, Flint, Michigan from 1951 to 1952. (Denis is now retired and lives in Charles County, Maryland.)

In the early part of 1963, the Department of State decided to automate its communication switching and terminal functions through the use of high-speed computer equipment. The Department of State had its initial exposure to computer-based message switching when the Paris Embassy torn-

tape system was automated, thus becoming the first switch of its kind. A study group of the most experienced communicators available was formed to devise and contract for a total system which could meet all contemporary requirements and be flexible enough to operate under a variety of conditions that might be expected to occur in the following ten years.

The problems that existed at the time were numerous and each had to be considered and resolved by the study group. The system would have to perform the function of a message switch in combination with all the features required of a terminal. It would be required to operate under a specific traffic rate but had to be able to continue to effectively operate whenever a world crisis situation occurred; a crisis would double or even triple traffic flow for extended periods of time. Due to the vital and sensitive nature of the messages, close accountability of each telegram was essential along with extensive checks to maintain security control. Furthermore, the system would be required to operate seven days per week, twenty-four hours per day, and had to contain fully switchable components to guarantee continuous operation with minimum disruption.

Contract Awarded

During the next two years the Department of State operation was studied in great detail and a resulting statement of work was prepared which specified the precise functions required by the equipment to be installed. The contract to install the Automated Terminal Station (ATS) was awarded to the Defense Communications Division, of International Telephone and Telegraph Corporation (ITT/DCD). The system was to be built using the ITT 7300 ADX

computer complemented by existing peripherals. The system was installed in July 1967 and initially processed message traffic between the main State Department Building and 300 diplomatic posts throughout the world. In addition, most of the time-consuming, error-prone functions performed as a terminal function were automated as part of the ATS.

The basic 1967 ATS system used the ITT 7300 ADX, as its central processor. This processor is an 18-bit computer with a four microsecond basic cycle time and 52K of core storage. Two processors, identical in all ways, were provided so that a secondary backup system could be configured in the event of a catastrophic hardware failure in one of the processors. The peripheral devices were also duplexed through the installation of identical controllers for each type of peripheral device used by the system.

Input to the ATS from remote locations was received through low-speed teleprinter lines capable of handling a multiplicity of baud rates. Traffic that originated within the Department of State was punched onto paper tape and entered into the system through the use of a set of 1050 baud paper tape readers. Messages that were rejected by the ATS due to format errors were corrected and re-punched by the traffic supervisors. The corrected messages could then be re-entered using these higher speed readers. Shortly after cutover, an optical character reader, Control Data Corporation 915 scanner driven by an 8090 computer, was interfaced with the ATS. This set the stage for message preparation at the source within various departments through the use of specially equipped typewriters. The documents could then

be directly read into the computer through the optical character readers, thereby eliminating the need for punching paper tape for this traffic in the message preparation section.

State-originated traffic is prepared by each department in a non-military type format for entry into the ATS. A portion of the ATS program interprets this type of format and prepares a message header in ACP-127 so that traffic can be routed throughout the remainder of the network. This facility remained available when the optical character readers were installed. In keeping with the nature of the system, all messages received in this manner are strictly accounted for by the system routines through duplex processing and traffic numbering techniques.

To provide intermediate storage for ATS traffic, the initial system contained four drums, manufactured by General Instruments, individually switchable between processors. Any data placed on the drums is written to alternate drums to insure data retention in the event a single drum becomes inoperative. Furthermore, the drums are set up to retain a great deal of system history information so that recovery of the system can be performed solely from data reconstructed from the drums. The drums used are extremely flexible, combining excellent reliability with extremely fast access time. Each drum contains the equivalent of 262,144 words of "message characters."

As each message is received by the ATS, whether through local or remote lines, the ACP-127 version is stored on the drums prior to validation by the ATS programs. The validation routines, through "reading the message," route the message according to its content. Traffic transmitted to remote stations is

sent via various baud rate lines in ACP-127 format. Where a message is routed to more than one addressee, only the routing indicators relating to that addressee are transmitted to each location. If any of the routings are for the Department of State, the message is queued to the display subsystem for further processing by the analyst operators. The validation routines, upon detection of a security-type error, or any other type of error which make the message unreadable, routes the message to a spill out position. The operator may then re-punch the message and re-enter it into the system.

Whenever a message contains a routing within the Department of State, or to one of its subscribers, it is queued to the message analyst section. This consists of a display room which contains ten desktop 21-inch cathode ray tube display devices, manufactured by Laboratory for Electronics, with input keyboards. Department of State analyst operators can call up, edit and direct messages to local positions within the Department or to other subscribing agencies through operation of the input keyboard in combination with various function request buttons. Presentation of traffic to the screens is in order of precedence and time of receipt into the ATS.

Message Distribution

After being processed by the analyst operator, the edited version of the message is reformatted into another version acceptable to local subscribers within or outside of the Department. If the distribution is to subscribers which receive traffic through electrical circuits, the message is queued directly to the line. Where the distribution requires many copies, or the subscriber does not have electrical distribution, the message

is queued to a high speed printer where it is printed on offset master mats, complete with instructions for distribution. A complement of offset printing presses, collating and sorting equipment, mailroom facilities and pneumatic tubes facilitates distribution of telegrams either manually or semi-automatically to all local destinations.

In the original system, after a message was transmitted to all of its destinations, it was preserved on duplex mass storage devices-magnetic card units manufactured by RCA. These devices were capable of storing approximately three hundred million characters each and were duplexed to provide redundancy in the event that one of the units failed. Initially, up to 75 days of ATS traffic was stored on the devices, with the last 30 days available through on-line retrievals. Retrievals could be performed by the traffic supervisor where the retrieved message was either spilled to a printer punch position, or retransmitted to the line where it was originally destined. The analyst operator also had the ability to retrieve messages. Analyst retrievals were performed for reference purposes whereby the operator could view an older message at his screen to determine the disposition of a current message.

Within the present ATS, one out of every three telegrams is retrieved at some time. An average retrieval is performed within ten seconds. In addition, there are eight references by which messages can be recalled and any of these could be used by the operator. To avoid excessive scans when performing a retrieval, the ATS programs built a series of indexes (one per reference), each of which points to the specific areas where the message is stored. The indexes were separated by

day and stored in areas based upon a modulo-divide of the bits in the reference key. The routines which store the indexes and the retrieval routines perform a similar divide function so both operate in the same index area for the same reference.

Baghdad Dreams—A Christmas Tale

By David Smith

It was the night before Christmas and here I was in the closely guarded Embassy compound not to mention a hostile country. In normal places and normal times we would be celebrating with our families. So the mood was not what I would call festive, unless you take into consideration those people who would be just as happy counting coconuts on a beach in the South Pacific. Weariness was the name of the day, so I found solace in going to bed early, but not after having a few libations with friends. After all, it was Christmas Eve.

I drifted off to sleep quickly but in the middle of the night I was suddenly awakened by what I thought was low sonic booms and with muffled noises. Increasing pounding shocks followed. "Oh my God", I thought, "its reigning mortars and rockets". Having had a late night trying to set a cheery face along with all my friends, that had included quantities of Christmas cheer, I could hardly lift my body. The "Oh God" feeling came back again as the noise got louder; this time with a clamoring of what sounded like hoof beats. Ok God, I guess it is my time. Suddenly the sounds grew fainter until all was silent again. My container stopped rocking and shaking and all I heard was the barking of the guard dogs. They had been disturbed as well. It must have been a dream.

Oh well, since it was Christmas Eve, the next best thing was to turn over and go back to sleep. After all, tomorrow was a holiday.

This was harder to do than I thought. First I tried to think of nice things, the warmth of a Florida, my wife and my son off in distant lands. But then my mind began to fade. Back to la la time. But as much as I wanted, I just couldn't get back to sleep. Oh well, I will turn on the TV to see what was on, I thought. But all I got was a blank screen and dots.

Then I heard the strangest thing. It sounded like chuckling with a ho ho thrown in for good measure. Damn, those party animals, they were still celebrating Christmas. They would pay for it tomorrow! Then along with the chuckling I heard a soft intake of breath that sounded like a nay. Something similar to what a horse makes when he wants something. This better not be a joke I thought. Life in Baghdad was difficult enough. Didn't we have to slug everywhere in the cold damp air every night. I real chore I can tell you.

Well then, I decided, I'll put a stop to all these shenanigans. So I opened the door of my container and peered out into the dark. I was greeted with a freezing mist that drifted in and promptly filled every pore in my room space. I've done it now I said I will never get back to sleep. What a way to spend Christmas Eve.

Suddenly I saw a glow, dim at first but getting brighter as I looked. Be damned if it didn't look like a large cigar shape vehicle, and it was headed right for the front of my container. I bet my friends were trying to play a joke. Great, that's all I need, I thought! Continuous puffs of steam arose from the center of this unsightly receptacle into the

midnight sky. I peered again, and suddenly the figure of a small fat man emerged from the vehicle. Damn, some people eat a lot of food here; another person out too late and probably couldn't find his way home in his transport of choice.

Suddenly I heard my named being called. "Come here" the voice called. I quickly took stock of myself. No, I hadn't drunk too much, and yes I heard the voice calling me. What next?

As I got closer, I noticed the vehicle had a string of smaller shapes all in a line. That's where the naying was coming from. By gosh, it looked like small horses. But what were horses doing here in the housing compound? Further still, why did they have those funny shapes on their heads? They looked like antlers. This woke me up! Ok I know where I am, in Baghdad, and I am having another one of my dreams. But why was I so cold, and why was the jolly little man calling my name? Suddenly all was revealed.

"I bet you thought Ali Baba would arrive on a carpet. No such luck, I sent him down to the Southern Hemisphere. Boy was I lucky to get here. I must have had a half a dozen helicopters buzzing my sled as I came in for a landing. But I remember that I told my wife about a special trip scheduled for tonight to Baghdad; she said," but you can't go. That's where all the bad people are. They have many explosives. You won't be safe". "Listen my dear", not only do I have a special trip and want to make certain all the children get their gifts, but there is this guy down there, all by himself, and really feeling out of it. I neglected to take care of him years ago when he was a little boy. I wanted to make up for that oversight." Oh my", said my wife. "You really have to make

amends even after all these year." "I knew you understand, I said, so it's off to freezing Baghdad. I can make a lot of kids happy, not to mention a certain big kid."

Ok, enough is enough. I said. I'll prove this is all a dream. Gingerly, I put my hand out to touch the visitor. Instead of brushing the frozen night air, I felt smooth silk, like material. Damned he was real.

He turned to me and said, "I may have overlooked you years ago but thought I would make it up to you by paying you visit this Christmas. Then he turned his back to me and reached down into the cavernous depths of the sled to extract something. "So to make amends", he continued, "I have brought you a box of cigars and some rare French cognac. Oh, and I almost forgot, I am giving you something I have never given anybody else. You'll see later."

As he pressed my gifts into my hand he said: "Take care David, your family and friends are thinking of you. Rest safely and pleasant dreams." And suddenly he jumped back into his vehicle, and with a wave and a ho ho ho followed by a loud WOSH, his chariot disappeared towards the full moon that had emerged from the clouds.

Nobody will believe me I thought. If I said anything, they would all think I had drunk too much. So closing the door, I climbed back into my bed. I put the gifts beside me on the small table next to the bed.

As I put my head on the pillow my mind faded into a slumber. Oh bliss, I can go back to sleep I thought. The next thing I knew I heard a voice. It was a woman's this time. It was my wife and she was next to me. "This strange little man arrived at the house tonight and said he wanted to give you a gift for

Christmas. He asked where you were and when I told him Baghdad he looked very surprised. I asked him if I could help, but he replied don't worry he would take care of getting me his gifts. Curiously enough he said he had another present for you, and you would really be surprised. I don't know how I got here but let's be content and not ask questions." I put my hand out, and for the second time that night I felt flesh. Thank you Mr. Clause, you have made me very happy I murmured.

I don't remember anything else that happened that night. The next thing I knew, I was awake, the sunlight shining through the open window. I started to raise myself from the bed. Curious, there was no rumbling and the building wasn't shaking like it did each morning when the helicopters flew over. What had happened was it all a dream? What's wrong with me? Maybe I can go back to sleep I thought. Then I turned and looked at the table, and there I saw the box of cigars and cognac. I knew it wasn't a dream I had actually had a visit from the man from the north. Was I the biggest kid on the block? Thank you Sir for thinking of me, I hope you brought happiness to many us who are so far away from our families.

Just then I heard a voice. "You were very restless last night after your long trip. I didn't want to wake you", said the speaker. "Merry Christmas David, I am so happy that you are home". It was my wife, and she was next to me, and yes, I was at home. My dream had become a reality. What a wonderful Christmas present.

So if you think Christmas is for the children, remember we are all kids at heart. Mr. Clause certainly made certain of that.

Enjoy and be safe!