# Model 6/26 Puts Out the Fires In Jet City



To achieve maximum effectiveness, a fire alerting system must be well-integrated into a fire department's communications infrastructure. It must also have some built-in redundancy as a protection against equipment failures or damage resulting from large scale incidents such as natural disasters. Bearing these criteria in mind, the City of Seattle Fire Department has put together a fire station alerting system that has demonstrated tremendous reliability since it was installed in 1991, and which has recently had a level of redundancy added to it through the use of paging technology.

**Boom times in jet city:**

Seattle's economy once boomed or declined with the fortunes of local industry giant Boeing. While the plane maker is still an important factor, Seattle's economy is currently thriving because it is home to a large number of software companies, including industry giant Microsoft. As a result of this fevered business climate, Seattle and its surrounding communities have undergone explosive growth during the latter half of the nineties. Seattle's population is currently around 600,000, although that number swells to 1.5 million with the daily influx of commuters. Not surprisingly, growth has placed increasing demands on the city's fire department.

"The Seattle fire Department covers 92 square miles," said Battalion Chief of Communications Dan Jacoby, "Last year we had a total of 68,648 EMS and fire-related calls."

**AVL can't make it up the hills:**

Originally the Fire Department's alerting system consisted of nothing more than an old style two-tone radio receiver that would trip a relay to set off the station's bells and lights. In the early nineties the Fire Department updated their CAD system and added status reporting and other capabilities.

"In 1991 we added an AVL (Automatic Vehicle Location) system," said Doug King, Senior Communications Technician with the Seattle Fire Department. The system was supposed to tell us the position of the engines within the city and allow us remote status messaging from those vehicles through our CAD system. Back then, however, there weren't enough geosynchronous satellites for a reliable satellite based AVL system, so a dead reckoning system was purchased."

Problems with the AVL system soon became apparent. While the AVL worked adequately in flat Florida (where the system's manufacturer was based) because of the hills in Seattle, the dead reckoning system was usually dead wrong. The AVL portion is no longer used, but the equipment was retained because it also supports remote status messaging from the vehicle into the CAD system. Now, for example, when firefighters log onto the system in the morning, the CAD system associates the signal from that AVL unit every time it receives that ID.

> *"When CAD receives a remote status message from an engine, aid car, or medic unit, it processes that, updates the database, then sends that status change over the Model 6/26 system."*

**A real-live fire alerting system:**

In 1991, the Seattle Fire Department also acquired a Zetron Model 6/26 Fire Station Alerting system. The Model 6/26 system consists of one or more Model 26 Control/StatusPanels and Expansion Panels (to provide more buttons) located in the central fire dispatch. Multiple Model 6 Station Transponders located at fire stations and other locations communicate with the Model 26 units to provide on-site notification and acknowledgement of emergency alerts.

When a dispatcher sends an alert message via CAD using the Model 26, the Model 6 at the fire station automatically sends back a signal acknowledging receipt of the message and sets off the station's bells and lights. Station personnel can quickly inform dispatch that they are responding to the alert by pressing the status button in their vehicle. When the vehicle returns to quarters, or goes out of the station on routine business, firefighters can update their status using the buttons on the Model 6. The Model 6 also boasts a number of advanced features such as selectable alert tones that allow firefighters to distinguish for which crew the alarm is intended. In addition, an attached printer gives responding crews valuable information they can access on the way out the station door.

"Our Medical Aid people go out on more responses than our fire crews," King said. "The Model 6 has three relays that can be programmed for unique applications. We can dedicate a relay to turning on the bunkroom lights of the aid crew without setting off the fire station bells. They can grab their print out and take off without waking everyone else up."

Each of Seattle's 33 fire stations has a Model 6 transponder on the wall. Alongside each is a switch box used to control auxiliary functions, such as traffic light control, manual door opening, alarm bell deactivation (to avoid waking neighbors during night calls), etc.

**Rip and run:**

The Model 6/26 is configured so that it is connected to the public address system at each of the fire stations. This allows dispatchers to send out voice alerts through the PA system without triggering the stations alarm bells. The system also allows general announcements to be sent out over the PA system to the entire fire department every morning. The fire station Model 6s are also connected to a printer to provide firefighters with a print out that so they can "rip and run" as they head out to answer a call. The print out contains the destination, incident number, pertinent information such as warnings about building structural safety or presence of hazardous chemicals.
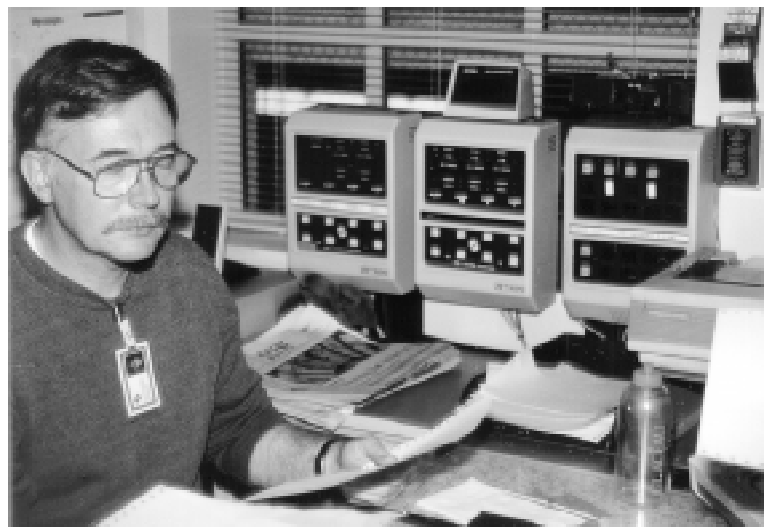
**How the 6/26 talks to CAD:**

Zetron included a CAD interface port on the Model 26 so that it could talk to the DEC VAX being used to call.

"When CAD processes a call or status message for an engine, aid car, or medic unit, it sends that status change over the Model 6/26 system," explained Doug King. "At the fire station the LED's on the Model 6 change appropriately to reflect the current status of the engine, and the reverse is true. When the firefighters pull their engine back into the stall and return to the watch office, they can punch 'in service' or 'in stall' into the Model 6 and that information goes right back to update the CAD system."

**Polling for dollars:**

The Model 26 continuously polls each of the Model 6 transponders in turn. This allows the Model 6/26 system to check the integrity of the connections from the fire department dispatch center all the way out to the most distant fire station.

"The Model 26 polls each of the Model 6s continuously in chronological order," King said, " If it fails to receive an answer, the Model 26 recognizes a 'comm error' and immediately notes it by turning on a red light on the expansion panel.  The dispatcher can tell right away that there is a 'comm error' out at fire station Number 2, which means the model 6 can't hear the Model 26 anymore."

**Model 640 provides a paging back up:**

To provide a backup alerting system, the Model 6/26 system is paralleled by a Zetron Model 25 and Model 640 Paging terminal that comprises part of the department's digital paging system. In the event of such a "comm error", the CAD talks to the backup paging system which sends out a special numeric page over the Fire Department's digital paging system. At each of the fire stations, a Motorola digital paging receiver reacts to the special code and sets off the station's bells and lights.

"The CAD system also talks directly to the Model 640 to send out alphanumeric pages to the fire fighters," King added. "This isn't a backup system, rather it is the primary method by which firefighters get their responses."



The paging system also incorporates two dial-in phone lines to the Model 640 so department personnel can use traditional paging software to send personal alphanumeric messages to any belt pager on a non-emergency basis. A maintenance port also allows users to dial-in remotely to edit and enter paging records.

"The Model 640 uses a three site UHF simulcast paging system," King added. "It uses a Motorola Nucleus base station set up to simulcast from three sites. Running at 1200 baud on the 450 MHz band, it provides excellent coverage for all of downtown Seattle and even beyond."

Originally, the Seattle Fire Dispatch had four Model 26 panels. That changed a year ago when each of the six dispatch positions was reconfigured around three flat screen monitors that display CAD, radio console, and PSAP telephone information. A single Model 26 has been retained at one dispatch position as a backup.

**Unmatched reliability:** Although it is fully backed up by the digital paging system, the Model 6/26 has proven to be a highly reliable system since it was put in place in 1991.

"In all that time we've only had three failures," King said. " And one was due to a lightning strike. That was within the first five years of the system's life. Since then we haven't had any failures other than phone line problems. None that required visiting a site to replace a chip or a board. The reliability has been great."

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