

## **Strategy for Using a 289H LSS Monitoring System to Convert an Office from 6,000 to 3,000 Foot Manifold Spacing**

This document describes the advantages of using the 289H LSS monitor as a time-saving tool when changing air pipe manifold spacing in a wire center. The 289H LSS, with its diagnostic and tone generation capabilities, provides important realtime monitoring pair information that can streamline the process of updating a cable pressurization system design to 3,000 foot manifold spacing.

In order to utilize this capability, a System Studies 289H LSS monitor equipped with a Tone Utility Card and one or more Dedicated Relay Cards would be placed in the wire center scheduled for conversion. All monitoring devices used with the new manifold spacing design would be wired to the 289H monitor using dedicated conductor pairs, thus eliminating any reading problems and customer usage issues associated with subscriber pairs. The 289H LSS would be running parallel to the existing Sparton monitoring system during the conversion. Before the flow transducers at the manifold locations are installed or cut over, the designated pairs for the new system would be pre-wired to the 289H monitor. Also, the required device data for these new transducers would be entered into the PressureMAP database before the actual field work begins.

With the 289H equipment in place, the technician visiting a site (manhole) to install an air pipe manifold and flow transducer would call the center and request that the 289H put a locator tone on the pair that is to be used for monitoring. The technician would then use a conductive tone locating probe to positively identify the designated pair. After the transducer is installed, the technician would call the monitoring center again and ask that a realtime reading be taken. If the transducer reads correctly, the technician could leave the sight knowing that a revisit for troubleshooting any installation problems will be unnecessary.

### Advantages of Using a 289H LSS for the Cutover Procedure:

- 1) **Reduced labor and improved monitoring system performance.** By using the unique pair diagnostic capabilities of the 289H LSS monitor during the cutover from 6,000 foot manifold spacing to 3,000 foot spacing, it is possible to significantly reduce the time and expense associated with the conversion. This reduction in labor hours will help to offset the investment in the new monitoring equipment by reducing the buyback time associated with the purchase.

For example, in a wire center with 75 manifold/transducer locations, the savings associated with using the 289H LSS monitor's tone capability is estimated to be approximately \$4500. This figure is based on a loaded hourly labor rate of \$80.00, 75 manifold/transducer installations, and an average labor savings of 45 minutes per installation. A new 289H LSS monitor equipped with a LAN Controller Card, a Tone Utility Card, two 50-point Dedicated Relay Cards, a dedicated connector block, and four connector cables is priced at approximately \$6450. Based on these estimates and the new equipment costs, the buyback on the 289H monitor is almost immediate, with the remaining \$1950 more than offset by

the continuing monitoring improvements and diagnostic capabilities of the 289H equipment.

- 2) **The cutover progress can be monitored.** Transducers that are not installed in the 289H will show up as OPEN. As stated previously, all transducers required for the new design will be entered into the PressureMAP office database before the actual field work is begun.
- 3) **Pair trouble evaluation.** The new monitoring pairs in the 289H wire center can be checked for pair trouble and corrected, if necessary, before installation of the transducer. This capability eliminates potential post-installation troubleshooting of installed devices.
- 4) **Tone capability.** As describe above, the 289H's tone capability will help to significantly reduce the time required to install and test the monitoring devices in the field.

#### Additional Advantages of Using a 289H LSS:

- 1) **Monitoring Device Improvements.** Because the 289H LSS can read both resistive transducers and the newer high resolution devices, the monitoring limitations of older resistive transducers is no longer an issue. A variety of solid-state, 4 to 20 milliamperes devices, designed for use with the 289H monitor, offers extended reading accuracy and versatility.

For example, the High Resolution Flow Transducer provides guaranteed flow accuracy for four Flow Finder ranges: 9.5 SCFH, 19.0 SCFH, 47.5 SCFH, 95.0 SCFH and 475.0 SCFH. It also provides an extended reading range for each of these Flow Finders which is equal to twice the designated flow range. The High Resolution Pressure Transducer reads from 0-30 psi in 0.1 psi increments. This reading resolution makes it possible to accurately monitor subtle differences in delivery pressure that can result in a high incidence of "nuisance" alarms. There are numerous other 4–20 mA devices available (temperature/humidity, water level, AC voltage, barometric pressure, etc.) that can dramatically improve the capabilities of the monitoring system.

- 2) **Pseudo-data tone.** As a counterpart to the locator tone used during the installation of devices, the 289H can also place a simulated data tone on all the dedicated pairs that it is monitoring. This capability will dramatically reduce both the chances of a pair be "stolen" for service and the labor required to make the repair.
- 3) **Future monitoring pair diagnostics.** Improvements are constantly being made to the 289H LSS monitor which result in expanded pair diagnostic capabilities. Among some of the more useful features currently available are: realtime readings, capacitance test (identifies if an OPEN is inside or outside of the CO), leakage test, and the AC and DC voltage tests.
- 4) **Direct LAN connectivity.** The 289H contains a LAN Controller Card that enables the monitor to be used on a company LAN, eliminating the need for slower, most costly modem communications.
- 5) **Proven reliability.** The 289H LSS monitor, with its proven performance and dependability, will improve overall air pressure monitoring and dispatching.