A day in the life of an . . .

Instrument calibration technician

Zephyr sent its usual interviewer to learn something about the work of an instrument calibration technician. Here's how Nellie Rochacewich of AES Downsview answered the questions.

Z: What's the major event on your work schedule this week?

Nellie: Tomorrow, I'm going to calibrate those temperature sensors over there. They are new and have to be checked before being sent out to the field.

Z: What is calibration?

Nellie: Calibration is checking and/or adjusting an instrument's reading against a standard which is traceable to first principles. The World Meteorological Organization sets the accuracies and we make sure the instruments will measure these parameters to that accuracy. In this case calibrations will occur at five degree intervals from -60 to +60 degrees celsius. Over a 120 degree range we obtain 24 calibrating events, each one lasting 15 minutes.

Nellie Rochacewich

Z: Fifteen times twenty-four . . that means a six hour job, I suppose.

Nellie: Actually it's a full day, but more about that later. In the lab I have three temperature environments — air, oil, and alcohol. The one you see hooked up to a computer there is an air environment, fully automated and digitalized.

Nellie puts a sensor inside the air oven (something like a microwave oven) and activates the computer. The sensor is hooked up to an external gadget like a digital clock that spins red numbers as the sensor's temperature reading rises. Another gadget spinning red numbers shows the difference between the computer's programmed thermal settings and the sensor's.

Nellie: The tolerable difference between this field sensor and the temperature standard should be 0.5 degrees.

Z: When you ship them out to weather stations, how carefully are they packed?

Nellie: You can never be too careful.

Z: Do instruments *ever* become uncalibrated during transit?

Nellie: It *can* happen. If it does, the instrument comes back and I recalibrate it.

Z: Where do all these instruments come from?

Nellie: From all over Canada, wherever there's an AES station. Some come from AES stations in Germany too. Others like these new sensors, come straight from the manufacturer.

Z: How long can a flawed instrument go undetected? For example, could one possibly be the cause of inaccurate forecasts going out over the airwaves?

Nellie: I suppose they could malfunction indefinitely, until someone notices the error. We have field inspectors who routinely inspect the instruments. If they or other station personnel detect a fault they will have it corrected. The error of one particular instrument would have to be quite significant though. Many parameters are used in forecasting the weather.

Z: Do you keep a record of all calibrations?

Nellie: Every calibrated instrument goes out with my acknowledged endorsement of its accuracy.

Z: Do you index calibrations?

Nellie: In my files, I keep the calibration history of most instruments used by AES. These histories are useful for future reference as to how a particular instrument aged.

Z: Tell me more about the calibration of these new sensors.

Nellie: The sensors I will calibrate tomorrow have to be set as low as -60 degrees Celsius. This means I'll use an alcohol environment. Here's the alcohol bath. Now I just dip the sensors into the alcohol-filled bath. Reminds you a bit of a soda bar container for maraschino cherries, doesn't it?

Z: If a full 15 minutes are needed to change the temperature by five degrees, how do you get away for your coffee breaks?

Nellie: Well, its no breaks for me tomorrow! Once I start calibrating, I stick to my 15 minute readings. The temperatures have to be watched fairly constantly so that you don't overshoot the one you're aiming for. I don't mind this routine. It goes with the territory.

Z: Must you watch the alcohol bath right now?

Nellie: No, I can do anything that doesn't interfere with my calibration tour. To be a good calibration technician you need to be "patience compatible" — that is possess the dogged patience to face any situation. On the whole though my job offers lots of variety.

Z: Do you get out and around?

Nellie: Some calibration work for the AES is now being done in private sector. I have to go out periodically and check the company's set up for calibration and also make sure that the equipment they are using for calibration is in good operating condition.

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Z: How's your lab space here? Are you a bit crowded?

Nellie: I lost some space to the day care centre, actually over half the space. But, I'm comfortable. I don't feel crowded.

Z: What about safety and health hazards?

Nellie: I do a little work with mercury. I get regular physical checkups for that. Nothing to get excited about. I feel quite safe.

Z: Can you calibrate tomorrow's sensors either way — say, from +60 down or from -60 up?

Nellie: No, only from -60 up. If I started at +60, I wouldn't obtain those 15 minute intervals. At minus temperatures, refrigeration is slower and I couldn't do the whole test in one day. Before I go home tonight, I'll turn on the refrigeration and cool the alcohol. Tomorrow I'll need just an hour to reach -60. And that's where the full day comes in, remember? One hour for the final descent to -60, six hours for calibrating and the rest for shut down. Total: 7.5 hours!

During the interview Nellie revealed that she has also written or co-authored detailed test reports such as the Evaluation of the Aero Mechanism Altimeter Setting Indicator or The Evaluation of the OTA Tokyo Aneroid Barometer. The drawings were all done by Nellie herself who before assuming her present occupation was a blueprint draughtsperson.