

# Michael J. Gooding

## H. W. Sweatt Award

### From Honeywell Inc

Honeywell's H. W. Sweatt Engineering-Scientist Award was presented to Mike in recognition of his outstanding ability and his contribution to a technical accomplishment of unusual significance for Honeywell and his profession.



## Mike's - Sweatt Award

After helping Honeywell write the proposal and win the F-15 Aircraft Tactical Electronic Warfare System (TEWS) Intermediate Test Equipment (TITE) Program, I was tasked with writing control and language processing software for several of the more complex test instruments, including the completely custom Bi-Phase Serial Data Communications Instrument, and a new Tektronix Digital Processing Oscilloscope (DPO), shown above. Both required a lot of creativity since neither had ever been used in an Automatic Test System before. This meant that I had to create new high level language processing that the test application programmers could use to make important measurements on the performance of the TEWS avionics hardware. So I created new syntax for the ATLAS (Avionics Test Language for All Systems) programming language. The ATLAS language is an IEEE (Institute of Electrical and Electronics Engineering) standard, so I also had to prepare proposals to the international ATLAS language committee to allow these new constructs as legal extensions to that language. I then had to create control software to implement the higher level language function calls within the test executive software.

The DPO was selected for TITE in order to make several measurements of TEWS avionics performance that were very critical to making sure the TEWS avionics would defend the F-15 Fighter Aircraft in battle. Controlling the DPO to make these measurements turned out to be far more challenging than anyone imagined. Tektronix did not design the DPO with sufficient stability to consistently make the reliable measurements we needed. I really struggled with this deficiency for months. I tried all sorts of fancy algorithms to get around these issues, but none could be demonstrated to work time-after-time. It finally occurred to me that signals can only change with a certain maximum rate. So I created a set of very unique custom software algorithms that literally threw out those DPO acquired data points that were physically impossible, and declared them invalid. I then also made this more robust by averaging signal measurements for hundreds of cycles before declaring a successful measurement result. These techniques were unique and allowed the TITE to meet its objectives in verifying the technical performance of TEWS avionics that were vital to the success of the F-15 Fighter Aircraft.

What I didn't know at the time was that Honeywell Management was fully aware of this challenging DPO measurement issue and my determination to solve it. My supervisor, Dave Hendrickson, along with the other managers submitted my project as a candidate for the annual Honeywell Corporate technical achievement recognition program.

I was selected as one of the 26 people in the corporation to receive the Honeywell H. W. Sweatt Engineer-Scientist Award. The award was presented to me by the President of Honeywell at a special awards ceremony that Rena attended with me. I was presented with the above award with an embedded medallion and inscription to commemorate the event. I was further recognized on stage at the company's annual Engineer's Week gathering. Rena and I, along with the other awardees were given a special tour of the Honeywell Corporate headquarters and the famous Honeywell Thermostat production line. As part of the award, I was allowed to select any technical conference in the world to attend and bring Rena along. I selected a Systems Conference held in Honolulu. I did register at the conference (which was required), but then we went enjoying ourselves for a week on Oahu.

It was a true honor to be recognized for this technical achievement with this prestigious award.