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COMSAT Labs has a unique place in the satellite industry for many engineering and forward thinking processes, including satellite propulsion, power/solar panel efficiency, to name a few. Around 1974 the satellite transponder service department requested a meeting with various departments within COMSAT to address the need to increase transmit carrier performance, whereby to increase service channels to all three of the operating regions. This was a plan that needed to be implemented eight to twelve months from that meeting, and could not require a major funding expense, and with minimal service downtime.

To achieve the stated goal of the project a team was formed and given the task to, hopefully, meet the technical requirements of the project. Laurie Grey published a book on High Power Amplifiers used in Satellite Communication/TT&C ground stations), and Cal Cotner of the Labs RF Systems group, and Bill Young and myself of the Earth Station Engineering group at Comsat Headquarters. We solicited Ken Slocum of Varian Associates (Palo Alto), the guru of coupled cavity Klystron and TWT tubes and power supplies used in our earth stations, and most stations worldwide.

Meeting at the labs twice a week, with Ken on the phone until we reached a point where we needed to do beta testing, which required Ken's presence at the labs. We were able to come to a design upgraded package after five months, and Ken developed a new higher powered TWT for our upgrade package.

Next, we had to test the new package at an earth station to fully document the improved carrier performance per the original requirements. So with our redesign of the HPA (transmitter) power supply to provide higher voltage and current to support a new 12 KW TWT (replacing the 8KW Tube), we were able to use a spare HPA System located at our Andover Maine facility (the old Radom Folded Antenna System). A series of tests were conducted using a AOR Satellite spare channel that proved the performance upgrade requested by the transponder service department.

Procurement of the upgrade component parts was completed and a Modification Kit was developed for each of the earth stations involved (Brewster, Paumalu, Jamesburg, Etam, Andover (Cayey PR was not included in this project). I teamed up with a technician at each site and performed the re-design work on the HPA units over a two month period.

The upgrade project was completed 9.5 months after the original project meeting with all stations, and the requested performance improvement was delivered as planned.

I know this is a lengthy accounting of a key project supported by the COMSAT Labs and the headquarters staff, but this is just another in a list of successful activities at Comsat.