Project Report
Alaska Public Broadcasting, Inc.
Project Number 0117-DC-2004-15
July 1, 2009 – September 30, 2009

Alaska Rural Communications Service & Satellite Interconnection Revitalization

Project Summary: the ARCS revitalization project is nearing completion and continues to make good progress. The project objective is the restoration of television broadcast programming to bush and rural communities by either repairing or replacing non operational equipment. This includes transmitters, antennas, satellite dishes, receiver/decoders, or towers.

Restoration of service: reliable ARCS service has been restored to more than 100 bush and rural communities where it had been completely off or seriously degraded.

Acquisition and refurbishment of equipment: refurbishing original transmitters saves approximately $5000 per unit compared to purchase of new systems. We continue to cycle rebuilt units to the villages and bring the failed units back from those communities and send them off to the factory for rebuilding. We have rights to use some new receivers to decrease our response time when existing units fail in the villages.

Provision of timely customer support: with a system that includes more than 200 sites, technical staff is kept busy each day with myriad general service and trouble calls involving unique factors and circumstances to analyze and address. The range of work can run from a simple reset to a complex set of problems which have resulted in the complete failure of a village's local service.

Establishment of community partnerships: the majority of the service restoration work is attained through partnership, technical staff working with dedicated community volunteers. Some sites and projects require staff travel in order to deal with the extraordinary circumstances.

Phases two and three are complete: modern technology based systems have been designed and implemented allowing for consolidation of a delivery system and central point of control for multiple content streams. A new method of controlling the ARCS program schedule is fully operational, allowing for remote operation. Equipment purchase and installation of the new State of Alaska satellite uplink system became operational on January 25, 2007.

The overall project is on schedule and within budget. We have not encountered any serious unanticipated problems or set backs requiring significant changes to the work scope. Restoration or upgrading of service presents a different challenge in each community. In partnership with our community liaisons, we continue to identify and solve these problems.

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- ARCS Technical Support handled 139 calls for assistance from 31 different bush and rural communities serviced by ARCS. As email has become more readily available in the villages we see on average around two dozen email contacts per month that in the past would have been phone calls.
- Aniak: transmitter breaker failed, so we replaced it with a rebuild and restored service to the village.

- Arctic Village: Frequent power outages killed the transmitter and the receiver was also suspect. Both units were sent to APBI for exchange with rebuilds. Once the units were exchanged and installed, service was restored.
- Chignik Lake: The satellite dish was successfully re-aimed by local volunteers, and service was restored. The original ARCS transmitter included an aging modulator and would only make a small percentage of the licensed power, so a replacement transmitter was sent to improve service to viewers.
- Dot Lake: Satellite receiver failed and was replaced with a rebuild; service was restored.
- Services in Grayling, Gustavus, Ketchikan, Kokhanok, were successfully restored by coordinating with local volunteers to perform a number of procedures from dish alignment to receiver retuning to cleaning accumulated dust from a cooling duct that had a transmitter in thermal shutdown mode.
- Mekoryuk had been off the air for much of the last year; their satellite dish had settled on the tundra enough to push their dish out of alignment, and adjusting it was proving near impossible. We replaced the satellite receiver with a proven unit, then sent replacement parts for the satellite dish including the feed horn, LNB and receiver cable, all to no avail. Many hours of coaching the local crew to align the dish were unsuccessful and frustration was in good supply. Over the course of several weeks this summer many emails, phone calls and digital photos were exchanged. Finally the local volunteer hit upon a new approach; he asked that I measure and send a template with the proper elevation look angle for the satellite. I faxed a page with the proper angle drawn in black marker. He used that template to fashion a replica made from wood that he took to the site and used it as a guide in setting the dish's elevation. He also used a long piece of lumber laid in front of the dish aimed at the proper azimuth as a guide for that setting. That did the trick and they locked up the receiver on our signal, and restored service to the residents of Mekoryuk out on Nunivak Island, just in time for AFN.
- A similar situation had developed in Newtok and the community was without ARCS service. Roman Tediente with the local Tribal Commission asked for help and over the course of a month worked with our office to replace all the electronics and some of the satellite dish parts, eventually restoring service to a grateful community.
- Port Alsworth's transmitter failed; a replacement was sent out, installed and service restored. Port Heiden's satellite receiver and Port Lion's modulator were also replaced, restoring services there. It was a good quarter for Ports.
- The satellite dish in Saint Paul in the Pribilof Islands had suffered a complete failure due to its long service in one of the most hostile climates on earth. Through a cooperative agreement with the local public radio station a new dish was purchased and constructed upon the foundation of the old dish, restoring service to both the ARCS community and radio station's link for news and emergency information from the outside world.
- We currently have eight transmitters, eleven modulators and eight satellite receivers out at various factories undergoing rebuild/refurbishment. Once these units come back to us they will go a long way to help keep the ARCS system alive in Alaska's most remote villages.

Alaska Public Broadcasting Digital Distribution Network

Project Summary: project objective is interconnection of public broadcasting system facilities by means of the internet or constructed intranet. Upon completion of the network, delivery of content - programming, data and voice - and access to advanced networking options will be available to the system, enhancing service to local, regional and statewide audiences. The project

is based on a network design developed under a previous federal grant from the US Department of Commerce. The project began in March 2004 and milestones include:

Review of network design and work scope: a thorough review of the original design and work scope was completed to determine if the selected equipment was still the best choice.

University of Alaska partnership agreement: entered into a multi year agreement with the UA statewide office of information technology for provision of connectivity between the hubs via the UA data backbone; and operational oversight of the network on a twenty-four hour basis. This oversight provides rapid reporting of problems so system maintenance and repair can be provided with minimal down time for network users.

Equipment bids, purchase and deployment: the core equipment for the hub and control locations was installed in August, 2005. Since then, data network equipment for 26 stations has been installed. Competitive bidding has yielded average discount of 31% saving $465,000.

The overall project is on schedule and within budget. There continues to be local technical issues to resolve but we have made good progress and we have not encountered any serious unanticipated problems or set backs requiring significant changes to the work scope.

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All sites have been installed and efforts are focused on operations and maintenance. Current activity is occasional technical assistance being provided to personnel at various sites.