

Lincoln and Holland Tunnels

New York

COBHAM

Case Study

The most important thing will build is trust

Overview

Cobham Wireless was involved in providing coverage for the PCS cellular services which later had to be upgraded to support the new requirements that would allow the 3rd generation Advanced Wireless Services (AWS) band to be added.

Challenge

The Lincoln tunnel (measuring 2.6 km) and the Holland tunnel (also 2.6 km) both run under the Hudson River, linking Manhattan Island in New York with New Jersey. These two tunnels carry an extreme amount of traffic at all hours, which adds a complexity in terms of the deployment.



The Challenge

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In 2000, Cobham Wireless was involved in providing coverage for the PCS cellular services. This was achieved using multi operator Point-Of-Interface (POI) to directly feed radiating cables in each bore and to feed mid-tunnel remotes via Fibre Optics.

The need to provide PCS coverage for additional operators arose in 2007. The existing solution needed to be upgraded in order to meet new requirements that would also allow the 3rd generation Advanced Wireless Services (AWS) band to be added.

Due to access restrictions in the tunnel bores the new system had to be installed and commissioned with the shortest possible downtime in order to keep cellular coverage disruption to a minimum. The upgrade required the incorporation of all existing monitoring and control into the new system which would result in full redundancy and alarm reporting for both cellular bands.

The size of the POI was a key consideration as it had to provide additional individual downlink and uplink interfaces for 8 PCS operators and 6 AWS operators, and still keep within a predetermined size dictated by the old equipment.

The Solution

Through a careful evaluation of suppliers that could possibly deliver a solution that took the above requirements into account; Cobham Wireless was selected because of its capability to provide equipment that could be custom designed to the specific requirements. The basis of the final design was the large range of passive and active modules found in the Cobham Wireless portfolio.

The design of the POI was an interesting challenge because of the complicated filtering involved and the requirement to fit the completed combining system into a very limited space. Cobham Wireless successfully achieved this through careful design and planning, 3D CAD modelling and the skill of production and test staff who have experience of building many such unique and complicated one-off solutions.

The AWS fibre fed amplifiers were designed so they could easily be connected in parallel with the existing PCS amplifiers using new fibre optic transmitters and receivers to feed both amplifiers and take over all the alarm monitoring and reporting.

"I think our overall impression of the equipment was more like 'How was this done?'. We were extremely impressed with the equipment combiners and amplifiers as well as your production facility. We were quite impressed that all the components that were able to fit into the combiners as well as they did."

Frank Weldon
Field Operations Manager
Concourse communications/
New York Telecom Partners

The Benefit

The solution was designed in such a way that enabled a quick swap on-site during the installation and commissioning phase. The design includes redundant power supplies and battery back-ups for the equipment ensuring that even in times of complete mains power failure the system continues to function.

