



Bapco South East Region Resilient Telecommunications seminar

Resilience was the theme of the South East Region Seminar held on the 26th of November at Maldon in Essex. The venue and refreshments were kindly provided by Andy Fleet and his team at Samdale, and around 40 delegates attended what proved to be a fascinating series of presentations, writes Alan Lindfield, Acting Chair, SE Region.

Our keynote speaker was Jeanette Innes, Assistant Director and Programme Manager for Resilient Telecommunications at the Cabinet Office. Jeanette started by explaining where the programme sits within the Civil Contingencies Secretariat and continued by describing the programme objectives and key areas of work. We heard that progress to date included developments in privileged access schemes, satellite communications and Telecommunications Sub-Groups. Jeanette then spoke in more detail about the National Resilience Extranet (NRE) and the High Integrity Telecoms System (HITS) projects.

It was explained that the Cabinet Office mission is to make the UK more resilient, and to improve the nation's capacity to absorb, respond and to recover from disruptive challenges of all kinds. The Capabilities Programme is the core framework through which the Government is seeking to build resilience across all parts of the UK

Jeanette made an interesting comparison between the Cold War threats that some of us used to consider from our underground bunkers in the 1970s and the very different threats that we face today, and went on to explain the main areas of activity. These include providing information, providing support and guidance to Local Resilience Forums (LRF) and Telecoms Sub-Groups (TSGs), and working with the

Electronic Communications Resilience and Response Group (EC-RRG) and the wider responder community.

We were reminded that the Mobile Telecommunications Privileged Access Scheme (MTPAS) has replaced ACCOLC as the name of the scheme (although ACCOLC as a facility is still used by the network providers) and that Telecommunications Sub-Groups will manage the new scheme locally.

It was explained that progress on the Government Telephone Preference Scheme (GTPS)/Fixed Telecomms Privileged Access Scheme (FTPAS) has been hampered through being closely aligned to the rollout of Next Generation Networks, but the work to de-couple from the mass-changeout and to define services is now under way.

Finally, Jeanette summarised progress on the Satellite Catalogue scheme, the Telecommunications Sub-Groups which have been set up in all but two LRFs, and the National Resilient Extranet and High Integrity Telecommunications projects. The vision for the NRE is that it will facilitate multi-agency communication and easy access to a range of documents up to restricted level.

Having heard about the organisation of resilience at national level, we were then told about the Telecommunication Sub Groups at local and regional

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resilience forum levels. Our speaker for this session was Tony Morris, Chair of the Sussex LRF TSG & Southeast Regional TSG, who had also done an excellent job of designing the programme for the event and arranging the speakers.

Tony began by describing the situation before TSGs and the need for coordination. He explained the aims and objectives of a TSG, focussing, not unnaturally, on the Sussex Group and Southeast Regional TSG. He showed a fascinating diagram setting out the organisations that could communicate with each other. Given that many connections were possible only through satellite, the need for more interworking was very graphically illustrated.

Tony explained the role of TSG's in bringing responders together, promoting contacts between users and specialists and sharing knowledge and resources. He went on to cover the need for agreed protocols for managing limited resources and capacity, and highlighted some of the issues around mutual aid, and the need for PMR spectrum.

The programme continued with a presentation by Keith Wallis, Emergency Planning Manager of Cable and Wireless, and Chairman of the Electronic Communications Resilience and Response Group. Keith was to focus on how communications systems can be protected and he started by reminding us that 2000/2001 was "a bad time for telecoms".

Keith outlined the history of planning for the infrastructure and services critical to the UK National infrastructure, from its early stages when OFTEL was tasked with producing a national emergency plans for telecoms. He described the role of the Telecoms Industry Emergency Planning Forum, established early in 2002 to co-ordinate the industry response to a crisis. This was a tripartite arrangement, with industry, regulator and government representation. The scope included resilience and response planning and the real-time national process for industry.

Keith described NEAT, the National Emergency Alert for Telecoms, which issues alerts and establishes conference calls if a situation involves more than one service provider. This can be invoked by any member and operates around a central national control supported by BT and Cable & Wireless.

He continued by describing the six-year development of the TI-EPF into EC-RRG, during which time Chairmanship passed from OfTel to the Cabinet Office. He listed some of the incidents that have been managed, including 7/7, the Buncefield Oil depot fire and the Cumbria train crash. Regulatory Reform in the shape of the Civil Contingencies Act had also occurred during this time and the Chairmanship of the Group had now passed to industry.

Keith concluded by outlining the main work items for 2009, including a review of the NEAT process, EMPEX 2009, Civil Contingencies Act enhancement and planning for pandemic flu and the London Olympics in 2012. Following an excellent lunch, the resilience theme was taken up by Fred Micklewright, Head of Business Continuity & Emergency Planning for Airwave Solutions Ltd.

Fred's subject was the resilience issues that providers need to consider and he went on to give an excellent insight into the Airwave network. He started by listing the main issues to be considered, starting with risk assessment and the identification of mission critical systems and services and single points of failure with others grouped into levels of toleration. Decisions then have to be made about the level of

required resilience to mitigate the risk and to maintain an agreed level of service. He stressed the importance of focussing on the required services and not the technologies.

Keith finished by summarising the changes that have occurred since the original PFI contract for Airwave, in the light of additional drivers and the changing face and significance of threats. The original DR timescales were no longer appropriate for the 21st century. He explained the major infrastructure changes that have been introduced to improve resilience, in the duplication and separation of the main arterial connecting transmission and the switch sites.

Digital ping pong

The final session was delivered by our host, Andy Fleet, of Samdale. Andy had chosen as the intriguing title of his presentation, "Resilience – knowing when it's needed".

He started by describing situations in which it might not immediately be apparent to users exactly what was occurring to degrade service on a network such as Airwave. He noted that LRF's are preparing for major threats to critical infrastructure, many of which have an immediate and obvious impact and are therefore readily detected. More subtle threats, whether accidental or malicious, often go undetected until they impact in a big way on the service delivered to users.

Andy then introduced the audience to an effect he called "digital ping-ponging" which causes excessive handover activity, and went on to explain why this is very bad for networks. This can evidently lead to an increased likelihood of call setup failure, and results from the requirements of the TETRA Standard which states that intra-handover call setup requests must be rejected. Every handover means two to eight messages exchanged between radio and base station and this obviously causes increased load on base stations and switches. Every handover results in database updates and sometimes authentication and call restoration tasks.

He explained that in a situation where radio has a high RSSI from the serving cell but signal quality is poor, if there is a neighbour cell with better signal quality the TETRA standard allows the radio to move cell even if the RSSI from the neighbour is weaker. Having moved to the weaker cell the radio will begin neighbour monitoring of the cell it has just left and will find a very strong RSSI – at this stage signal quality is not assessed (this happens only when the radio is on the cell) and this cycle can continue indefinitely.

Similar problems can occur when there is a strong in-band non-TETRA signal. Because most TETRA radios perform neighbour cell "monitoring" which measure only the RSSI – the radio doesn't know whether a "neighbour cell" signal is from its own network or a foreign one. The radio will only discover the identity of the network for the cell it has moved to when it decodes the system information on the control channel – if the cell has a country or network code that the radio is not allowed to access then the radio will discard the cell and try the next ranked neighbour. Eventually it will find a neighbour cell for its own network but if the original cell it left appears as a neighbour of the new cell it may well move back and the cycle may begin again.

Andy concluded his fascinating talk by emphasising that you need to know about the problem before you can fix it!

On behalf of all who attended, I would like to thank Andy Fleet, Tony Morris and Tracey Mott for an excellent event.

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