



Alberta Wireless 9-1-1 Trial Report

A Collaborative Effort to Enhance 9-1-1 Call
Handling & Delivery from Wireless Phones

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Trial History

In June of 1997, the CRTC CISC Emergency Services (9-1-1) Working Group recognized the need for a national wireless working group to be formed to address concerns with the lack of information provided on wireless 9-1-1 calls. As a result, the Canadian Wireless Telephone Association (CWTA) stepped forward and in September of 1997 convened the first full Wireless Working Group (National) meeting. The original group consisted of numerous industry representatives from the wireless carriers, Public Safety Answering Points (PSAPs), Provincial E9-1-1 Service Providers, and wireless solution companies.

Over the next year, the national group met on several occasions to review technical, operational, and regulatory implications surrounding how to best address the challenges presented with more fully integrating wireless 9-1-1 into the existing wireline 9-1-1 infrastructure. In September 1998, the Alberta E9-1-1 Advisory Association (AEAA) tabled a letter (see Appendix 1) offering to host an Alberta Wireless Trial (the 'Trial'). In late October 1998, participants from the Calgary PSAP, the provincial E9-1-1 service provider (TELUS Communications Inc. [TCI]), and the four wireless carriers (TELUS Mobility, Rogers Wireless [formerly Rogers Cantel], Microcell, and Clearnet) agreed to participate in the Trial (see Appendix 2 for a complete listing of Trial participants).

From November 1998, through to September 1999 the Alberta Wireless Trial Team held eleven meetings: three full-day face-to-face meetings, one half-day face-to-face meeting, and seven conference calls. These meetings primarily focused on the logistical aspects of successfully hosting a live wireless Trial. The single most difficult aspect of moving to the operational phase of the Trial was successfully negotiating a memorandum of understanding (MOU). The MOU and Schedules (see the 'Summary of Trial Documentation' section of this report, and Appendix 3 for details) were an exercise in compromise that took the efforts of all participants to reach successful and amicable solutions.

Once the MOU was in place, the operational Trial provided important additional information. See the 'Further Observations & Recommendations of Trial Participants' section of this report for a list of some of the major challenges that were faced during the Trial and that we recommend be considered when pursuing trials in other jurisdictions.

The net result of this collective effort was a Trial that started in October of 1999, and had a scheduled end date of January 31, 2000. In the end, the participants agreed to extend the completion date of the Trial until April 30, 2000.

Technical Overview

Before the Trial, wireless carriers transported their wireless subscribers' 9-1-1 calls to the TCI provincial E9-1-1 network using line-side connections. The call routing and information delivered with the wireless 9-1-1 voice call reflected the location of the TCI wireline central office to which the line side connection was made, not the wireless caller's location, and did not include the wireless caller's Call Back Number (CBN).

Originally, the AEAA trial offer letter proposed to facilitate the proper routing of wireless 9-1-1 calls, using Emergency Service Routing Digits (ESRD). However, during the initial planning stages of the Trial, TCI tabled a technical proposal to expand the scope of the Trial to include ESRD routing, the display of cell site/sector location information and a wireless CBN. This development meant that the Alberta Trial would be able to test functionality equivalent to what the U.S. FCC defined in its Docket 94-102 as 'Wireless E9-1-1 Phase 1'.

This technical Trial specifically verified the suitability of using Feature Group 'D', ISUP 9-1-1 interconnection trunking between the wireless carriers and the TCI provincial E9-1-1 network. (See Schedule B to the Trial MOU, included at Appendix 3 of this Report, for a network diagram of the interconnection arrangement employed in the Trial.) This trunking arrangement provided the ability to pass routing information (i.e. the ESRD associated with the cell site/sector that originated the wireless 9-1-1 call) and the 10-digit CBN of the wireless subscriber placing the call, from the wireless carrier's switch through the TCI provincial E9-1-1 network to the PSAP and ultimately to the PSAP operator's ANI/ALI and MBS displays.

During the preparation and technical stages of the Trial, a number of decisions (i.e. Trial area size, presentation of information at the PSAP, handling of calls from unsubscribed handsets) were made that had an impact during the live stage of the Trial. These experiences are covered in the 'Detailed Assessment' section of this report, and have resulted in several of the specific recommendations included in the 'Observations & Recommendations of Trial Participants' section of this report.

Summary of Trial Documentation

Attached at Appendix 3 is a copy of the actual Trial MOU dated September 27, 1999, as well as a subsequent amendment to the MOU dated January 31, 2000. Below is an explanation of each of the components of the MOU:

- Body of the MOU – defines limits of liability, and provides approval of the Trial participants.
- Trial Area (Schedule ‘A’) – details the agreed upon Trial area at a macro level. Each of the wireless carriers has coverage areas that are specific to their respective cell site deployments. The Trial Area provided the opportunity for call processing in both rural and urban settings.
- Trial Architecture (Schedule ‘B’) – is a high-level block diagram of the physical architecture of the Trial. It includes trunking arrangements, emergency services routing digits (ESRD), call flow, and network data element flows. Certain engineering level interconnection information that appears in the actual MOU is considered proprietary and therefore is not included in this appendix.
- Data Elements & Presentation (Schedule ‘C’) – is a complete package of information that was used to create an ALI (automatic location information) record to be associated to an ESRD for the Trial. The provincial 9-1-1 service provider, TCI, manually inserted a unique record into the ALI database for each cell site/sector according to data provided by the wireless carrier. This record provided cell site/sector location information and the azimuth of each sector. Wireless carriers also provided commercial confidential maps of cell site and sector coverage to the PSAP, to allow them to better judge the area from which 9-1-1 calls originated.
- Trial Plan (Schedule ‘D’) – the Trial plan is a complete list of technical and operational activities necessary to proceed with the Trial. The dates listed in this Schedule were only targets; a working version of the Trial plan was kept to track the actual dates for each of the participants.
- Preliminary Assessment Factors for the Trial Report (Schedule ‘E’) – in anticipation of quantifying the results of the Trial, the participants drafted a list of preliminary assessment factors.

Evaluation of Initial Trial Goals and Considerations

Early in the process, the Trial team agreed to a series of Trial goals & considerations. The following is a brief evaluation of the Trial results with respect to these goals and considerations.

Goals

- 1) To validate the delivery of cell site and sector information (Emergency Services Routing Digits [ESRD], formerly known as pseudo-ANI) to the City of Calgary PSAP.

ACHIEVED. The cell site/sector information was associated with an ESRD in the 9-1-1 ALI database. This information was delivered on-screen to the primary 9-1-1 operator (primary PSAP) and subsequently to the downstream emergency response agency (secondary PSAP) during the Trial.

- 2) To validate the delivery of a 10-digit CBN to the City of Calgary PSAP RCER printer.

ACHIEVED. The call back number was delivered to the primary 9-1-1 operator's Centrex MBS set and RCER printer.

Considerations

- 1) The solution(s) for both Goals must be scalable to the entire Alberta provincial E9-1-1 platform.

ACHIEVED. The solution used during the Trial is scalable to the entire province of Alberta.

- 2) The solution(s) for both Goals must strongly consider the technical portability to other like provincial E9-1-1 platforms, i.e. Ontario, Quebec, British Columbia.

ACHIEVED. TCI has advised that the technical solution used in the Trial is portable to British Columbia. As well, since the solution is Nortel DMS switch-based, the participants are optimistic that this solution will be portable to other provincial E9-1-1 platforms utilizing DMS technology (e.g. Saskatchewan, Ontario, Quebec, New Brunswick).

- 3) The Trial should focus on the delivery of meaningful and useful information to the PSAP operators, with little or no effect on current operational procedures.

ACHIEVED. The solution used during the Trial required some training and practical experience. The information provided from calls within the Trial area was operationally useful (see the 'Operational Impact on the Calgary PSAP' section of this report), and had a positive impact on operations.

- 4) The participants are individually responsible for Trial costs. However, a primary focus in this regard, will be the development of key business objectives that assist with justifying both the Trial and future wide spread deployment expenses.

ACHIEVED. See the 'Detailed Assessment' section of this report for details that will assist with justifying future deployment.

- 5) The solution(s), as much as practical, should not result in stranded investments for any of the parties involved.

ACHIEVED. The efforts and costs associated with carrying out the Trial were invaluable for assessing and quantifying operational impact for future deployment. Costs associated with trunking, mapping, and manual database work for participants will for the most part be transferable to a provincial rollout.

- 6) As much as possible, the participants should consider a mechanism for future cost recovery that is fair and equitable.

NOT ACHIEVED. The recovery of costs associated with the rollout of this proven Trial solution provincially, and eventually nationally, will have to be determined in the future.

Detailed Assessment

Viability of the Technology and Architecture

- 1) Validating the routing of wireless carrier 9-1-1 traffic to the proper PSAP using ESRD.

COMMENT: In order to simplify the Trial, the participants chose to limit the Trial area to include only one primary PSAP. Therefore, this item was not directly assessed during the Trial. However, the viability of the technology to facilitate proper routing of calls was well tested and is directly transferable to meet this critical future need.

- 2) Validating the selective transfer of wireless carrier 9-1-1 calls to the proper secondary PSAP using ESRD.

COMMENT: During the Trial, this function was tested when the primary PSAP in Calgary received 9-1-1 calls from the Municipal District of RockyView (served by a secondary PSAP located in the City of Red Deer). Single button transfer was used to properly route these calls to the secondary PSAP in Red Deer, instead of the corresponding secondary PSAP in Calgary. Though the volume of such calls was limited, the viability of this approach was proven.

- 3) Validating the display of ESRD and cell site/sector information on the primary 9-1-1 operator display terminal.

COMMENT: During the Technical Stage of the Trial (see Schedule D to the Trial MOU, included at Appendix 3 of this report for details), coverage testing was conducted to confirm the correct delivery of this information to the primary 9-1-1 operator.

- 4) Validating the display of ESRD and CBN on the primary 9-1-1 operator's CENTREX MBS set.

COMMENT: During the Technical Stage of the Trial (see Schedule D to the Trial MOU, included at Appendix 3 of this report for details), coverage testing was conducted to confirm the correct delivery of this information to the primary 9-1-1 operator.

- 5) Assess impact to carrier and PSAP personnel of keeping the location (cell site/sector) information up-to-date as patterns change, new cell sites/sectors are added, etc. and as feedback from PSAPs of problems in prediction of correct cell site and sector become evident.

COMMENT: During the Preparation Stage of the Trial (see Schedule D to the Trial MOU, included at Appendix 3 of this report for details), PSAP personnel

worked with wireless carriers to create a record that accurately identified this information. Over 250 records were created, and only two subsequently required minor changes for CAD validation reasons. Due to the relatively short-term nature of the Trial, only one cell site was added to the ALI database. It is recognized that on an operational basis, this would be an incremental, continuing workload.

Operational Impact on the Calgary PSAPs

General Analysis

The number of cell sectors in the Trial area totalled 251. Of these, 238 were located in the City of Calgary, and 13 were in the rural area of RockyView. During the initial trial assessment period ending January 31, 2000 there were a total of 10,218 9-1-1 calls received. Of these, 1367 were terminated by the caller before making voice contact with the primary 9-1-1 operator (note: commonly described as 'abandoned' calls).

The majority of calls originated within the City of Calgary coverage area, and were placed by subscribers with wireless phone numbers from NPA '403' (southern Alberta area code). We noted that calls were also placed by subscribers with wireless phone numbers from NPAs other than '403', however this did not affect call routing or the proper display of the subscriber's full 10-digit CBN. For example, when a subscriber with a Toronto (NPA '416') wireless phone number placed a 9-1-1 call in the Trial area, the 9-1-1 call was correctly routed to the Calgary PSAP and the subscriber's full 10-digit wireless phone number, including NPA '416' was displayed.

The Trial proved that the delivery of the cell site/sector and CBN was successful. It also proved that having the CBN assisted the emergency services to more efficiently handle wireless 9-1-1 calls, as well as to conduct important follow-up that would not have been readily possible in the past.

Advantages

- A. With the display of the cell site/sector location, the primary 9-1-1 operator had a good starting basis for understanding the caller's location (i.e. part of the city or rural area).
- B. With the display of the CBN, the primary 9-1-1 operator along with the downstream agencies (secondary PSAPs) were able to re-contact the caller, when required. This was especially important for calls where voice contact with the caller could not be made, but background sounds could be heard. This enabled an operator to call back and determine if there was an emergency. In the end, this saved a lot of time.

- C. One wireless carrier observed a 24% reduction in the average “total handling time” for 9-1-1 calls placed during the Trial, as compared to 9-1-1 calls placed before the Trial.
- D. When abandoned calls were received, operators were able to call back the 9-1-1 caller to determine whether they had an emergency.
- E. In the past, when the police received a ‘trouble-not-known’ wireless call (ex. person screaming and then is cut-off), tracing was very difficult without a CBN. On a number of occasions during the Trial, the CBN was successfully used to obtain subscriber information thereby greatly assisting the trace process.

Challenges

- A. The CBN, not being displayed on the CAD screen, caused a delay, as the primary 9-1-1 operator had to verbally provide the wireless CBN to the downstream agency. This limitation was acknowledged before the Trial, and TCI has indicated it intends to display the CBN on the CAD screen for commercial rollout.
- B. The primary 9-1-1 operator had trouble in matching the real time information to the RCER printer information. The Trial exposed this design limitation, and TCI has agreed to adjustments to eliminate this problem for commercial rollout.
- C. With the provision of CBN, wireless carriers can expect to receive a larger number of requests for subscriber information related to ‘trouble-not-known’ calls. It is critical to ensure that 7x24 procedures between PSAPs and wireless carriers are firmly established.

Detailed Analysis

The following detailed assessment is based on the ‘Preliminary Assessment Factors’ listed at Schedule ‘E’ of the Trial MOU (see Appendix 3 of this report).

- 1) Determine if the receipt of CBN and cell site/sector information has improved the ability to handle wireless calls {survey method}.

ANSWER: Yes. See the ‘Advantages’ listed above for details.

- 2) Determine if the receipt of cell site/sector data improves the efficiency of call takers when dealing with multiple calls for the same incident {survey method}.

ANSWER: Yes. When multiple calls were received from the same area, the receipt of cell site/sector data permitted the operator to deal quickly with duplicate calls. In essence, this information provided the ability to make a faster determination, and improve efficiency.

- 3) Determine the utility of hanging wall chart maps for reference purposes {survey method}.

ANSWER: Cell coverage maps were an important tool during the technical stage, and for administrative follow-up. It is essential to have them available, but not necessary to have them hanging on the wall.

- 4) Determine if the timing, in terms of display of the ANI/ALI information to the call taker, is different from current wireline timing {survey method}.

ANSWER: There was no noticeable difference in the timing of the ANI/ALI information display between wireline and wireless calls.

- 5) Determine if the ANI/ALI display of information is acceptable {survey method}.

ANSWER: Refer to item 'A' under the 'Challenges' listed above.

- 6) Identify any problems with the delivery of accurate cell site/sector information {survey method}.

ANSWER: Refer to item '5' in the 'Viability of the Technology and Architecture' section of this report.

- 7) Identify the operational and administrative impacts caused by the display of false CBNs from unsubscribed callers.

ANSWER: The extent to which a given wireless switch might transmit an invalid CBN for an unsubscribed caller depends upon the specific switching technology employed. In order to avoid any potential issues with invalid CBNs for unsubscribed callers, one of the wireless carriers that participated in the Trial put in place an architecture that would route such calls over its pre-existing line-side 9-1-1 interconnection trunks, thereby ensuring that no CBN would be transmitted. Others carriers were able to confirm that their switches would not transmit a dialable CBN for unsubscribed callers, and therefore proceeded to transmit calls from unsubscribed callers in the same manner as from subscribed callers. However, it was discovered during the Trial that, for these latter carriers, non-dialable CBNs were being transmitted on calls from unsubscribed callers. For example, in one case, non-dialable CBNs with NXX=111 were being transmitted. This initially created confusion at the PSAP, but was later regarded as advantageous, as the appearance of a non-dialable CBN could be used by a properly trained PSAP operator as a signal that a call had been received from an unsubscribed wireless phone.

- 8) Identify instances where the CBN is utilized for investigative purposes (i.e. to identify or re-contact a witness).

ANSWER: Calgary Police did not have any specific incidents identified, likely a survey issue. However, as noted in item 'D' under the 'Advantages' listed above, Calgary Police did use the CBN to conduct follow-ups that would not have been readily possible in the past.

- 9) Identify instances where the CBN assisted in identifying nuisance or abusive callers.

ANSWER: Callers were called back and informed about them calling 9-1-1. This was especially important for callers who accidentally activated a pre-programmed emergency button. No criminal instances of abuse were documented.

- 10) Identify instances where the RCER printouts are utilized for evidentiary purposes.

ANSWER: Calgary Police primarily used the printouts available in their secondary PSAP. There were no documented instances of the police coming to the primary PSAP for a printout.

Observations & Recommendations of Trial Participants

1. The success of the Alberta Wireless Trial, and in particular the Trial team was due to a co-operative effort that respected all the participants as equals. The chairing of the group by an Alberta E9-1-1 Advisory Association (AEAA) member who was not directly involved in the actual Trial was very important.

We recommend that any future trial teams be chaired in a similar manner.

2. One of the most challenging issues to overcome during the Trial planning stages was liability coverage in the MOU. If government authorities had in place clear liability protection rules for telecommunications services in Canada, this time consuming effort would have been largely avoided. The participants note that the U.S. Government has passed a law (reference s.800) that provides equal 9-1-1 liability protection for wireline and wireless providers.

We recommend that Canadian government authorities adopt a similar liability protection framework in order to facilitate E9-1-1 deployment.

3. Consideration of cost recovery issues caused some initial delays in the planning stage of the Trial. By agreeing that participants would cover their own costs of participating in the Trial, we were able to put an end to these delays and to focus our attention on the technical and operational objectives of the Trial. We further agreed that the issue of cost recovery for commercial rollout would not be resolved within the framework of a Trial, and would have to be resolved within the scope of future tariff proceedings.

We recommend that future trials adopt the same approach to cost recovery issues.

4. The Trial confirmed the participants' expectation that the delivery of the CBN to secondary PSAPs is an essential component of commercial service delivery. This, along with ESRD functionality, is equivalent to U.S. FCC 'Wireless E9-1-1 Phase 1'.

We recommend that future trials and rollouts take this need into consideration.

5. The limited Trial area and single PSAP involvement were important for managing the logistics of the Alberta Trial. However, a larger Trial area (i.e. with more rural coverage and more than one primary PSAP) would offer certain advantages with regard to the testing of ESRD routing.

We recommend that, where feasible, future trials include a larger rural area, and at least two PSAPs.

6. Initial training material provided the essential ingredients for PSAP operators. However, unanticipated issues inevitably arose during the Trial, e.g. regarding the display of CBNs from unsubscribed callers, or the interpretation of wireless coverage characteristics. Ongoing, rapid feedback from PSAP operators was essential to the success of the Trial.

We recommend that key PSAP operational personnel be involved from the outset of a trial and throughout the subsequent rollout to ensure that a comprehensive training package is developed and that it is continually updated as practical experience is accumulated.

7. The issues surrounding calls from unsubscribed handsets received a lot of attention during the planning and implementation stages, as well as during the Trial itself. Different wireless carrier switches have different characteristics in this regard, and PSAPs should be prepared to work with each wireless carrier individually and with the E9-1-1 service provider to ensure that the information being transmitted is understood and to develop work-around solutions should problems be identified.

We recommend the future trials include specific test call procedures to determine precisely what on-screen information is displayed in relation to calls from unsubscribed handsets, and that these test call procedures be performed for each wireless carrier individually.

8. It has been noted that with the provision of CBN, wireless carriers can expect to receive a larger number of requests for subscriber information related to 'trouble-not-known' calls. It is critical to ensure that 7x24 trace procedures between PSAPs and wireless carriers are firmly established.

We recommend that future trials and rollouts ensure proper documentation and training for emergency trace and follow-up procedures.

9. The overall outcome of the Alberta Wireless Trial was a success on many levels.

We strongly support the filing of a wireless trunk-side enhanced 9-1-1 interconnection tariff by TCI.

Appendix 1 – Trial Offer Letter

Alberta E9-1-1 Advisory Association

Chris KELLETT, Staff Sergeant
Edmonton Police Service, Communications
9620 - 103A Avenue, Edmonton, Alberta
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E-mail: cckellett@ibm.net

September 28, 1998

Co-Chairs Judy Broomfield & David Farnes
Wireless E9-1-1 Working Group

RE: Offer to Host a Partial and Full NCAS Trial in Alberta

As you are aware, TELUS and the Alberta E9-1-1 Advisory Association (AEAA) representatives have verbally offered on several occasions to host an Alberta trial. The question that arose at our June meeting in Winnipeg, was how complete a trial was being offered. In follow-up with Richard Bzdega, he has indicated that Alberta is immediately ready to undertake an ESRD trial. This would allow for very timely assistance to Alberta PSAP's, such as Strathcona, in at least minimizing the major operational issues outlined in Mr. Parker's September 22nd letter to the Group.

Given the September 24th contribution from the CWTA (attached), and the statement "Despite the Nova Scotia trial of a CAS based solution, it has become apparent that an evaluation by this working group of NCAS based solutions is required.", Alberta is also willing to commit to working directly with all four wireless service providers (WSP) towards this goal. We believe Alberta is uniquely qualified, since all 4 WSP's are here, and the vast majority of technical and operational logistics are also present. Whether the solution for delivery of call back number and location data is NCAS or hybrid can be worked out through the trial.

We fully support the 3 areas of focus detailed in the CWTA contribution, and believe that as soon as practical all WSP's should identify staff in Alberta to start this process. The Alberta trial should meet the focus detailed in CWTA bullet 2, and the Trial Team can focus on meeting the objectives outlined in CWTA bullet 3 (re: impacts and costs). Obviously the new CRTC 98-25 proceeding has the opportunity to address cost recovery issues for all of the interested parties.

Finally, the impact of regional solutions versus a national strategy does not ultimately fall to the working group. The ILEC's and PSAP's have already offered a national solution, it will be up to the WSP's to decide what solution they are willing to invest in.

Let's work together to get a timely solution in to place, a lot of people are depending on us.

Truly,

Chris KELLETT

cc: Bill Walker, AEAA Chair
Henry Patram, Calgary Fire PSAP

Wireless E9-1-1 Working Group

Contribution of CWTA

Alternate Technical Solutions for Wireless E9-1-1 Services

Introduction

In a contribution to the June 12th meeting of this working group, the CWTA expressed its view that a Call Path Associated Signalling (CAS) solution is the first choice of the wireless industry. While the industry continues to hold this view, it is recognised that some telephone companies are not currently in a position to support a CAS solution. Similarly, some representatives from the PSAP community have indicated that they would be concerned about the cost for some PSAPs, to upgrade their equipment to support a CAS solution. The CWTA also recognises that Stentor has taken the position that all of its owner companies would support a non-Call Path Associated (NCAS) solution.

Aligned with the objectives of this working group, the Province of Nova Scotia and MT&T have proposed a pilot wireless E9-1-1 project involving both Cantel and MT&T Mobility. This pilot project is planned to commence later this fall. It is the understanding of CWTA that the Nova Scotia trial will use a CAS approach limited at the start to call routing using ESRD, with the planned introduction of call back number delivery in 1999 following upgrade of the ALI database.

The CWTA is very pleased to see the Nova Scotia trial move forward. The amount of knowledge to be gained from this trial should not be underestimated. While the proposed technical solution is one that has been used elsewhere (in the United States) and, as such, perhaps limited technical information will be gained, there are a host of operational issues that the trial participants will need to resolve. It is on the operational and business issues that the trial will provide the most useful information for this entire working group.

Despite the planned Nova Scotia trial of a CAS based solution, it has become apparent that an evaluation by this working group of NCAS based solutions is required. Moving forward, the CWTA would like to recommend that the working group focus on the following areas:

- ➔ Completion of CAS feasibility study (e.g.; issue of separation of wireless and wireline traffic to eliminate negative impact on wireline call control features)
- ➔ Evaluation of NCAS alternatives (e.g.; SCP, “Black Box”)
 - Including evaluation of a Hybrid approach

- ➡ Identification of the cost impacts of each of the alternatives (CAS, NCAS and Hybrid)
 - Consisting of impacts to the WSP, ILEC and PSAP environments

Conclusion

The CWTA continues to be supportive of a CAS based solution for Wireless E9-1-1, however, the Association understands that in some areas of Canada a CAS based solution may not be feasible due to cost and/or operational impacts. Therefore, the CWTA is recommending that an evaluation of NCAS and hybrid solutions be conducted by the working group to address those regions where CAS cannot be supported. Along with this evaluation, the impact of regional solutions in comparison to the original objective of a common national approach must be identified.

It is worth noting that these same issues of cost, technical interoperability, and co-ordination are also being dealt with in the United States resulting in a slower than anticipated (and mandated) rollout of wireless E9-1-1 services.

David Farnes
September 24, 1998

Appendix 2 – Alberta Wireless Trial Participants

Alberta Wireless Trial Participants

Lead Representatives

- 1) Chris Kellett - Edmonton Police Service [Chairperson] (office: 780-421-3516)
- 2) Henry Patram – Calgary Fire Department (office: 403-296-9111)
- 3) Richard Bzdega – TCI (office: 403-530-4063)
- 4) Doug McKeen – TELUS Mobility Inc (office: 403-530-0432)
- 5) Scott McArthur – TELUS Mobility Inc
- 6) Joel Thorp – Rogers Wireless Inc (office: 416-935-7213)
- 7) Parke Davis – Clearnet PCS Inc (office: 613-566-7079)
- 8) Dennis Beland – Microcell Telecommunications Inc (office: 514-937-0102)
- 9) Sylvain Lapointe – Microcell Connexions Inc

Technical Support Representatives

- 1) Sylvain Mayer – City of Calgary
- 2) Blaine Worger – Calgary Fire Department
- 3) Rick Defleming – TCI
- 4) Bob Murphy – TCI
- 5) Ron Parent - TCI
- 6) Jim Yee – TELUS Mobility Inc
- 7) James C. Taylor – Rogers Wireless Inc
- 8) Dale Hurshowy – Rogers Wireless Inc
- 9) Wes Semeniuk – Clearnet PCS Inc

Appendix 3 - Memorandum of Understanding and Schedules

MEMORANDUM OF UNDERSTANDING
FOR A TRIAL OF AN ENHANCED WIRELESS INTERCONNECTION
TO THE TELUS PROVINCIAL E9-1-1 SERVICE IN THE PROVINCE OF ALBERTA

This MEMORANDUM OF UNDERSTANDING (MOU) has been entered into effective the 30th day of September 1999 by and between:

TELUS COMMUNICATIONS, a division of TELUS Communications Inc., a company having a place of business at 31st Floor, 10020-100 Street, Edmonton, Alberta, T5J 0N5, and which operates a provincial enhanced 9-1-1 service (“TELUS Provincial E9-1-1 Service”) to which municipalities in the Province of Alberta subscribe (hereinafter referred to as the “E9-1-1 Service Provider”) OF THE FIRST PART

and

THE CITY OF CALGARY, a municipality having a place of business at P.O. Box 2100, Station “M”, 800 Macleod Trail S.E., Calgary, Alberta, T2P 2M5, and which operates a 9-1-1 Public Safety Answering Point (“PSAP”) serving its citizens and those of certain neighbouring municipalities (hereinafter referred to as the “Municipality”), OF THE SECOND PART

and

CLEARNET PCS INC, a company having a place of business at 200 Consilium Place, Suite 1600, Scarborough, Ontario, M1H 3J3, and which provides commercial wireless telecommunications services OF THE THIRD PART

and

MICROCELL CONNEXIONS INC, a company having a place of business at 20 Bay Street, Suite 1601, Toronto, Ontario, M5J 2N8, and which provides commercial wireless telecommunications services OF THE FOURTH PART

and

ROGERS CANTEL INC, a company having a place of business at One Mount Pleasant Road, Toronto, Ontario, M4Y 2Y5, and which provides commercial wireless telecommunications services OF THE FIFTH PART

and

TELUS MOBILITY, a division of TELUS Communications Inc., a company having a place of business at 3030 2 Ave. SE, Calgary, Alberta, T2A 5N7, and which provides commercial wireless telecommunications services OF THE SIXTH PART.

The third through sixth parties are hereinafter referred to individually as a “Wireless Carrier” and collectively as the “Wireless Carriers”.

The six parties are hereinafter referred to individually as a “Party” and collectively as the “Parties”.

WHEREAS the Parties share the objective of improving the quality of wireless 9-1-1 service in the Province of Alberta;

WHEREAS in pursuit of this common objective the Parties have agreed to participate in a trial of an enhanced wireless interconnection to the TELUS Provincial E9-1-1 Service in Alberta (the “Trial”);

THEREFORE, in consideration of the mutual covenants herein contained, the Parties agree as follows:

1. TRIAL AREA

- 1.1 The geographic area to be covered by the Trial (the “Trial Area”) shall be as described in Schedule A attached hereto.
- 1.2 It is recognized that the initial stages of the Trial may take place over a more restricted geographic area than the Trial Area, consistent with the Trial Plan.
- 1.3 It is recognized that some of the Wireless Carriers do not offer wireless services throughout the Trial Area and consequently may support the Trial over a more restricted area.

2. TRIAL ARCHITECTURE

- 2.1 Each Wireless Carrier shall provision a dedicated DS-1 facility from its participating wireless switch to the E9-1-1 Service Provider’s participating 9-1-1 selective router.
- 2.2 The existing CCS7 signaling interconnection established for CCS7 signaling on trunk side interconnection between each Wireless Carrier and the E9-1-1 Service Provider (pursuant to existing interconnection tariffs) shall be used to support the 9-1-1 trunks assigned within the above noted DS-1 facility for the purposes of the Trial.
- 2.3 Each Wireless Carrier, on a call-by-call basis for wireless 9-1-1 calls originating in the Trial Area, and consistent with the Trial Plan, shall transmit to the E9-1-1 Service Provider over the above noted interconnection method a ten-digit wireless call-back number as well as an Emergency Services Routing Digit (“ESRD”) identifier uniquely associated with the cell site (or sector) in which the wireless 9-1-1 call originates.
- 2.4 The E9-1-1 Service Provider, on a call-by-call basis for wireless 9-1-1 calls originating in the Trial Area, and consistent with the Trial Plan, shall transmit to the Municipality’s PSAP over its existing interconnection facilities with the Municipality’s PSAP, the ten-digit wireless call-back number received from the Wireless Carrier as well as a Location Data Record corresponding to the ESRD identifier received from the Wireless Carrier.
- 2.5 The detailed architecture for the Trial (the “Trial Architecture”), including the ESRD numbering format for the Trial, shall be as described in Schedule B attached hereto.

3. TRIAL LOCATION DATA RECORD FORMAT AND PRESENTATION

- 3.1 Each Wireless Carrier shall provide to the E9-1-1 Service Provider, and the E9-1-1 Service Provider shall enter into its E9-1-1 database, specific location information (a “Location Data Record”) for each of the Wireless Carrier’s cell sites (or sectors) which it selects for the Trial and which are located within the Trial Area. The format and presentation of the Location Data Records to be employed in the Trial (the “Trial Location Data Record Format and Presentation”) shall be as described in Schedule C attached hereto.
- 3.2 The Municipality shall provide the necessary information and assistance to the Wireless Carriers to enable the Wireless Carriers to provide complete Location Data Records for each of their cell sites (or sectors), consistent with the Trial Plan. Said information and assistance shall include, but not necessarily be limited to, the identification of the most appropriate Emergency Service Zone (“ESZ”) and the associated Emergency Service Number (“ESN”) to be assigned to each of the affected cell sites (or sectors). It is recognized that the Municipality is ultimately responsible for deciding which ESZ and associated ESN is assigned to any given cell site (or sector).

4. TRIAL CALL ANSWER ARRANGEMENTS

- 4.1 The Municipality shall ensure that its PSAP is capable of receiving, displaying and interpreting the ten-digit wireless call-back numbers and Location Data Records received from the E9-1-1 Service Provider in respect of wireless 9-1-1 calls processed during the Trial, consistent with the Trial Plan.
- 4.2 The Municipality shall ensure that 9-1-1 calls from customers of the Wireless Carriers received by its PSAP during the live phase of the Trial are afforded the same attention and priority as all other 9-1-1 calls received by the Municipality's PSAP.

5. RETENTION OF EXISTING 9-1-1 CALL ROUTING AND CALL ANSWER ARRANGEMENTS

- 5.1 9-1-1 call routing and call answer arrangements in place and in use by the Wireless Carriers prior to the Trial shall remain in place and available for use by the Wireless Carriers throughout the Trial for back-up purposes.
- 5.2 9-1-1 call routing and call answer arrangements in place and in use by the Wireless Carriers prior to the Trial shall remain in place and available for use by the Wireless Carriers after the Trial is terminated, unless the Parties agree otherwise or are directed otherwise by the Canadian Radio-television and Telecommunications Commission ("CRTC").

6. RESPONSIBILITY FOR COSTS

- 6.1 Each Party shall bear its own costs of participation in the Trial. For greater clarity, each Wireless Carrier shall bear the costs of provisioning the necessary dedicated trunking from its participating wireless switch to the E9-1-1 Service Provider's participating selective router.

7. TRIAL PLAN

- 7.1 The Trial shall begin as a technical trial restricted to Wireless Carrier personnel and designates. It shall evolve into a live trial involving actual 9-1-1 calls from customers of the Wireless Carriers received by actual call takers at the Municipality's PSAP.
- 7.2 The Trial shall commence on September 30, 1999 or as otherwise agreed to by all of the Parties (the "Start Date"), and shall terminate on January 31, 2000 or as otherwise agreed to by all of the Parties (the "End Date"). The period of time between the Start Date and the End Date shall be referred to as the "Trial Period". Within this Trial Period, provision may be made in the Trial Plan for the staggered entry or exit of the individual Wireless Carriers.
- 7.3 The detailed trial plan (the "Trial Plan") shall be as described in Schedule D attached hereto. It is recognized that amendments to a trial plan during trial execution are a regular occurrence for a trial of this nature, and the Parties agree to work in good faith to accommodate reasonable requests for amendment.

8. TRIAL REPORT

8.1 The Trial shall be followed by the issuance of a report (the "Trial Report"), the contents of which shall be agreed to in writing by all of the Parties prior to issuance to any outside party or to the general public.

8.2 The Trial Report shall include an assessment of the success of the trial in identifying an enhanced wireless interconnection to the TELUS Provincial E9-1-1 Service capable of improving the quality of wireless 9-1-1 service in Alberta. A preliminary and non-exhaustive list of the factors that may be considered in undertaking this assessment is provided in Schedule E attached hereto.

9. TERMINATION OF THE MOU

9.1 This MOU shall terminate at the earlier of the issuance of the Trial Report or 180 days after the End Date, or as otherwise agreed to by all of the Parties.

10. PUBLICITY AND PUBLIC REPRESENTATION

10.1 No Party shall issue any press releases, generate any publicity, or otherwise make any public representations regarding the trial without the prior written consent of all of the Parties.

11. NON-DISCLOSURE

11.1 "Confidential Information" means all data and information whether in written, machine readable or other tangible form, or disclosed orally, that is of value to the disclosing party, is not generally known to competitors of the disclosing party, and which is communicated to another Party in connection with this MOU. Confidential Information shall include, but not be limited to, information relative to the disclosing Party's customers, services, facilities, current or proposed business plans, roll-out plans, financial information relating thereto, telephone calling pattern information, prices, trade secrets, know-how, formulae, processes, data, network configuration and rights-of-way, drawings, proprietary information, customer lists and any other non-public information which concerns the business and operations of the disclosing Party.

11.2 The Parties intend to disclose certain information, which may include Confidential Information, to each other in connection with this MOU.

11.3 In consideration of the disclosure of the Confidential Information by one Party (the "Disclosing Party") to another Party (the "Recipient"), each Party agrees that when it is the Recipient of Confidential Information it shall:

- (a) use the Confidential Information only for the purposes of, and in connection with, the performance of its obligations under this MOU and, for greater certainty, not use such Confidential Information for competitive purposes;
- (b) hold such Confidential Information in confidence, with at least the same degree of care with which each Party protects its own confidential or proprietary information, and at a minimum in accordance with reasonably prudent standards;

- (c) restrict disclosure of the Confidential Information solely to its employees, professional advisors and consultants with a need to know the Confidential Information for the purpose contemplated herein in this MOU and who are bound to maintain such Confidential Information in confidence under terms and conditions similar to, and no less stringent than, those set out herein and advise such persons of their obligations under this MOU with respect to such Confidential Information. The Recipient hereby assumes responsibility for any disclosure of Confidential Information by any person to whom disclosure of Confidential Information is permitted under this MOU. The Recipient shall take all reasonably necessary measures to restrain any person to whom disclosure of Confidential Information is permitted under this MOU from unauthorized disclosure or use of Confidential Information;
- (d) except in connection with the purpose contemplated herein in this MOU, not copy or duplicate such Confidential Information or knowingly allow anyone else to copy or duplicate such Confidential Information; and
- (e) promptly return to the Disclosing Party, upon its request, or certify as destroyed Confidential Information in whatever form, including all electronic and magnetic copies and notes thereof, regardless of whether such Confidential Information was made or compiled by the Recipient or furnished by the Disclosing Party.

11.4 The restrictions in this MOU on use and disclosure of Confidential Information shall not apply to information that:

- (a) becomes generally known through no act of the Recipient or is in the public domain or subsequently enters the public domain other than through unauthorized disclosure by the Recipient;
- (b) was disclosed to the Recipient on a non-confidential basis by a third party having lawful possession and the right to make such disclosure, who was not under an obligation of confidence regarding the information, who was not identified to the Recipient as an agent of the Disclosing party and provided that the Recipient would not reasonably expect that such third party had obtained such information in a confidential manner from the Disclosing Party;
- (c) was in legitimate possession of the Recipient prior to its disclosure hereunder, as evidenced by appropriate records;
- (d) is independently developed by the Recipient in the future without use of the Confidential Information, as evidenced by appropriate records; or
- (e) is approved in writing by the Disclosing Party for release or other use by Recipient according to the terms set out in such written approval.

11.5 Except as otherwise provided in this MOU, each Party has the right to refuse to accept any information under this MOU.

11.6 Notwithstanding anything herein, each Party may disclose the Confidential Information to its Affiliates and employees thereof with a need to know the Confidential Information solely in connection with such Party's participation in the Trial and provided that such Affiliates and employees thereof agree to be bound by confidentiality obligations similar to those contained herein. The term "Affiliate" shall mean any person or entity directly or indirectly controlling, controlled by, or under common control with the Party.

- 11.7 The Parties agree that an impending or existing violation of any provision of this MOU would cause the Disclosing Party irreparable injury for which it would have no adequate remedy at law, and agree that the Disclosing Party shall be entitled to obtain immediate injunctive relief prohibiting such violation, in addition to any other rights and remedies available to it.
- 11.8 Each Party acknowledges and agrees that nothing contained in this MOU shall be construed as granting any rights, by license or otherwise, under any patent, copyright, trademark, trade secret or any other intellectual property rights in or concerning any of the Disclosing Party's Confidential Information.
- 11.9 Nothing in this Section 11 shall be construed so as to prevent a Party from disclosing Confidential Information to another Party or any of their respective agents and representatives for the purpose intended herein.
- 11.10 All obligations undertaken respecting Confidential Information disclosed hereunder shall survive the early termination or expiration of this MOU.
- 11.11 No permitted assignment of this MOU shall relieve the Recipient of its obligations hereunder with respect to Confidential Information disclosed to it prior to the assignment.

12. LIMITATION OF LIABILITY AND INDEMNIFICATION OF THE E9-1-1 SERVICE PROVIDER

- 12.1 In this Section 12, "Tariff" means the tariffs of the E9-1-1 Service Provider, which include the terms of service and general regulations, as approved by the CRTC from time to time to the extent required under applicable law.
- (a) Except for any breach of its obligations under Sections 10 or 11 of this MOU, the E9-1-1 Service Provider's liability to each Wireless Carrier as a result of any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind or nature whatsoever, direct or indirect, regardless of the cause, arising out of or relating to this MOU or the Tariff, the operation of, failure of or failure to operate the TELUS Provincial E9-1-1 Service or any part thereof, including, without limitation, any claim arising out of a failure to complete a 9-1-1 call, delay in completion of a 9-1-1 call, interruption of a 9-1-1 call, or error in information used in connection with the operation of the TELUS Provincial E9-1-1 Service shall be limited to the extent set out in the Tariff or this MOU.
- (b) Without restricting the generality of the foregoing, the E9-1-1 Service Provider shall not be liable and each Wireless Carrier shall defend and hold the E9-1-1 Service Provider harmless in the event of any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect from any of the Wireless Carrier's end-customers, arising out of or in relation to any act or omission of the Wireless Carrier in the furnishing of service by the Wireless Carrier to its end-customers, or for any interruption in the Wireless Carrier's service or interference with the operation of any facilities or equipment of the Wireless Carrier arising in any manner related to this MOU. Notwithstanding any other provision in this MOU or the Tariff, the Wireless Carrier assumes all responsibility, if any, to and in respect of its end-customers for the use of the services provided by the E9-1-1 Service Provider pursuant to this MOU.

- (c) Without restricting the generality of the foregoing, the E9-1-1 Service Provider shall not be responsible and each Wireless Carrier shall defend and hold the E9-1-1 Service Provider harmless in the event of any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect, arising out of or in relation to the accuracy and content of the Location Data Records delivered by the Wireless Carrier to the E9-1-1 Service Provider, and the E9-1-1 Service Provider shall not be liable for any failure to carry out its obligations hereunder as a result of the Wireless Carrier's failure to provide accurate Location Data Records, nor shall the E9-1-1 Service Provider be responsible or obligated hereunder to maintain the accuracy of such Location Data Records beyond the actual content of the Location Data Records as received by the E9-1-1 Service Provider from the Wireless Carrier, and the E9-1-1 Service Provider's sole obligation shall be to retain the Location Data Records for the purposes intended herein.
- 12.2 Other than as provided for in this MOU, there are no warranties, representations, conditions or guarantees of any kind whatsoever provided by the E9-1-1 Service Provider to each Wireless Carrier, either expressly or implied, whether arising by statute, agreement, tort, product liability or otherwise, regarding this MOU and the services provided by the E9-1-1 Service Provider hereunder including, but not limited to, warranties, representations, conditions and guarantees as to merchantability, fitness for any particular purpose, design, condition or quality.
- 12.3 Subject to 12.1, each Wireless Carrier hereby waives any claims it may now or in the future have in tort or contract law, under statute or in equity, and confirms that its rights, obligations, rights of indemnity and measure and type of damages in the event of breach are limited to those provided in this MOU.
- 12.4 This Section 12 shall survive the expiration or termination of this MOU.

13. LIMITATION OF LIABILITY OF THE WIRELESS CARRIERS AND THE MUNICIPALITY

- 13.1 In this Section 13, "End-Customer" means the ultimate user of telecommunications services provided by a Wireless Carrier.
- 13.2 Each Wireless Carrier shall not be liable for any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect from any third parties, arising out of or in relation to any act or omission of the Municipality in fulfilling its obligations pursuant to this MOU or in furnishing 9-1-1 call answer services and emergency response services, other than to the extent that said act or omission is caused by the wrongful acts or omissions of the Wireless Carrier.
- 13.3 Without restricting the generality of the foregoing, each Wireless Carrier shall not be liable for any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect from any third parties, arising out of or in relation to the information and assistance provided to the Wireless Carrier by the Municipality pursuant to Section 3.2 of this MOU.

- 13.4 The Municipality shall not be liable for any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect from any third parties, arising out of or in relation to any act or omission of a Wireless Carrier in fulfilling its obligations pursuant to this MOU or in furnishing wireless telecommunications services to its End-Customers for the purpose of enabling calls to 9-1-1, other than to the extent that said act or omission is caused by the wrongful acts or omissions of the Municipality.
- 13.5 Each Wireless Carrier (the “First Wireless Carrier”) shall not be liable for any claim, fine, demand, action, cause of action, loss, expense, liability, cost or damage of any kind whatsoever, direct or indirect from any third parties, arising out of or in relation to any act or omission of each other Wireless Carrier (the “Second Wireless Carrier”) in fulfilling its obligations pursuant to this MOU or in furnishing wireless telecommunications services to its End-Customers for the purpose of enabling calls to 9-1-1, other than to the extent that said act or omission is caused by the wrongful acts or omissions of the First Wireless Carrier.
- 13.6 This Section 13 shall survive the expiration or termination of this MOU.

14. INSURANCE

- 14.1 Each Party shall, during the Trial Period and at all relevant times, obtain and maintain in full force and effect comprehensive general liability insurance in an amount not less than two million dollars (\$2,000,000.00) inclusive per occurrence or claim with respect to its obligations and activities under this MOU, which insurance shall include contractual liability coverage and contain a cross-liability clause. Each Party shall provide a certificate of insurance or other reasonable evidence of such insurance coverage to any other Party upon receipt of a request. Alternatively, if a Party is self-insured, that Party shall provide reasonable evidence that it is or will be, during the Trial Period and at all relevant times, able to meet its obligations and liabilities under this MOU.

15. REGULATORY APPROVAL

- 15.1 Each Party shall use reasonable efforts, if required, to obtain all necessary regulatory approvals for the Trial.

16. WIRELESS CARRIER REGULATORY STATUS

- 16.1 In the documentation for the Trial, including the Schedules to this MOU, the term Wireless Service Provider (“WSP”) has generally been used to refer to all four of the Wireless Carriers. Should any of the Wireless Carriers change its regulatory status before or during the Trial from WSP to Competitive Local Exchange Carrier (“CLEC”), this change shall not impede or otherwise alter this Wireless Carrier’s continued participation in the Trial in accordance with the Trial Plan or any of that Wireless Carrier’s obligations under this MOU.

17. APPLICABLE LAWS

- 17.1 This MOU shall be governed by and be construed in accordance with the laws of the Province of Alberta and the laws of Canada applicable therein.

18. WAIVERS

18.1 No term or condition of this MOU may be waived by any Party without the express written consent of the other affected Parties, and forbearance or indulgence by a Party in any regard whatsoever shall not constitute that Party's waiver. No consent or waiver shall be effective unless made in writing by an authorized officer of the Party.

19. ENTIRE MOU

19.1 This MOU cancels, replaces and supersedes all existing agreements and understandings, written or oral, between the Parties relating to the Trial. The whole contract between the Parties relating to the Trial is contained in this MOU and no preliminary proposals, written or oral, form any part of this MOU. This MOU may not be amended or modified except by mutual agreement of the Parties in writing.

20. SUCCESSORS AND ASSIGNS

20.1 This MOU shall not be assigned, in whole or in part, by any Party without the express written consent of the other Parties which shall not be unreasonably withheld. This MOU shall be binding upon, and shall enure to the benefit of, the Parties and their respective successors and permitted assigns. Notwithstanding the preceding sentence, nothing herein, shall prevent the E9-1-1 Service Provider from subcontracting the TELUS Provincial E9-1-1 Service, in whole or in part, to any third party.

21. FORCE MAJEURE

21.1 No Party shall be liable to any other for any delay or failure in performance hereunder due to and including without limitation, fires, work stoppages, strikes, lock-outs, slow-downs and similar labour disruptions, embargoes, requirements imposed by governmental regulations, civil or military authorities, acts of God, the public enemy or other causes and circumstances which are beyond the reasonable control of the Party unable to perform. If an excused performance occurs, the Party delayed or unable to perform shall give immediate notice to the other Parties.

On behalf of the Parties:

Lorenzo Benvenuto
GM, Tactical Planning
TELUS COMMUNICATIONS, a division of TELUS Communications Inc.

Signature: _____

Date: _____

THE CITY OF CALGARY

Per: _____
City Clerk

Per: _____
Commissioner

Date: _____

Date: _____

Robert C. Simmonds
Chairman and Vice President, Regulatory
CLEARNET PCS INC

Signature: _____

Date: _____

Anthony I.W. Schultz
Vice President, Network Planning and Operations
MICROCELL CONNEXIONS INC

Signature: _____

Date: _____

Jim Smith
Vice President, Engineering
ROGERS CANTEL INC

Signature: _____

Date: _____

Dawn Hunt
Vice President, Government & Intercarrier Relations
ROGERS CANTEL INC

Signature: _____

Date: _____

Arnie Stephens
Vice President, Strategy
TELUS MOBILITY, a division of TELUS Communications Inc.

Signature: _____

Date: _____

MEMORANDUM OF UNDERSTANDING
FOR A TRIAL OF AN ENHANCED WIRELESS INTERCONNECTION
TO THE TELUS PROVINCIAL E9-1-1 SERVICE IN THE PROVINCE OF ALBERTA

AMENDMENT

This AMENDMENT has been entered into effective the 31st day of January 2000 by and between:

TELUS COMMUNICATIONS, a division of TELUS Communications Inc., a company having a place of business at 31st Floor, 10020-100 Street, Edmonton, Alberta, T5J 0N5, and which operates a provincial enhanced 9-1-1 service (“TELUS Provincial E9-1-1 Service”) to which municipalities in the Province of Alberta subscribe (hereinafter referred to as the “E9-1-1 Service Provider”) OF THE FIRST PART

and

THE CITY OF CALGARY, a municipality having a place of business at P.O. Box 2100, Station “M”, 800 Macleod Trail S.E., Calgary, Alberta, T2P 2M5, and which operates a 9-1-1 Public Safety Answering Point (“PSAP”) serving its citizens and those of certain neighbouring municipalities (hereinafter referred to as the “Municipality”), OF THE SECOND PART

and

CLEARNET PCS INC, a company having a place of business at 200 Consilium Place, Suite 1600, Scarborough, Ontario, M1H 3J3, and which provides commercial wireless telecommunications services OF THE THIRD PART

and

MICROCELL CONNEXIONS INC, a company having a place of business at 20 Bay Street, Suite 1601, Toronto, Ontario, M5J 2N8, and which provides commercial wireless telecommunications services OF THE FOURTH PART

and

ROGERS CANTEL INC, a company having a place of business at One Mount Pleasant Road, Toronto, Ontario, M4Y 2Y5, and which provides commercial wireless telecommunications services OF THE FIFTH PART

and

TELUS MOBILITY, a division of TELUS Communications Inc., a company having a place of business at 3030 2 Ave. SE, Calgary, Alberta, T2A 5N7, and which provides commercial wireless telecommunications services OF THE SIXTH PART.

The third through sixth parties are hereinafter referred to individually as a “Wireless Carrier” and collectively as the “Wireless Carriers”.

The six parties are hereinafter referred to individually as a “Party” and collectively as the “Parties”.

WHEREAS the Parties entered into a MEMORANDUM OF UNDERSTANDING (the "MOU") effective September 30, 1999 for a trial of an enhanced wireless interconnection to the TELUS Provincial E9-1-1 Service in the Province of Alberta (the "Trial");

WHEREAS Section 7.2 of the MOU specifies that the Trial shall terminate on January 31, 2000 or as otherwise agreed to by all the Parties (the "End Date");

WHEREAS the E9-1-1 Service Provider has indicated that it intends to file a tariff application (the "Tariff Application") for approval by the Canadian Radio-Television and Telecommunications Commission (the "Commission") for a commercial enhanced wireless interconnection to the TELUS Provincial E9-1-1 Service in the Province of Alberta, contingent on the outcome of the Trial;

WHEREAS the Parties agree that it is appropriate to extend the Trial to accommodate the possible implementation of a commercial interconnection arrangement;

THEREFORE, in consideration of the mutual covenants herein contained, the Parties agree as follows:

1. END DATE

1.1 In accordance with Section 7.2 of the MOU, in the event that the E9-1-1 Service Provider files the Tariff Application on or before April 30, 2000, then the End Date of the Trial shall be the date at which the Commission rules on the Tariff Application plus whatever reasonable number of days are required either to implement the commercial interconnection arrangement contemplated in the Tariff Application or to revert to the arrangement in existence prior to the Trial, as the case may be and as may be directed by the Commission.

1.2 In accordance with Section 7.2 of the MOU, in the event that the E9-1-1 Service Provider does not file the Tariff Application by April 30, 2000, then the End Date of the Trial shall be April 30, 2000 plus whatever reasonable number of days are required to revert to the arrangement in existence prior to the Trial.

1.3 Notwithstanding Sections 1.1. and 1.2 of this AMENDMENT, and for the purpose of the writing of the Trial Report specified in Section 8.1 of the MOU, the Trial shall be deemed to have been completed on January 31, 2000.

2. TERMINATION OF THE MOU

2.1 In accordance with Section 9.1 of the MOU, the MOU shall terminate 180 days after the End Date.

On behalf of the Parties:

Lorenzo Benvenuto
GM, Tactical Planning
TELUS COMMUNICATIONS, a division of TELUS Communications Inc.

Signature: _____

Date: _____

J. B. Trahan
General Manager, Fleet and Supply Management
THE CITY OF CALGARY

Signature: _____

Date: _____

Robert C. Simmonds
Chairman and Vice President, Regulatory
CLEARNET PCS INC

Signature: _____

Date: _____

Anthony I.W. Schultz
Vice President, Network Planning and Operations
MICROCELL CONNEXIONS INC

Signature: _____

Date: _____

Jim Smith
Vice President, Engineering
ROGERS CANTEL INC

Signature: _____

Date: _____

Dawn Hunt
Vice President, Government & Intercarrier Relations
ROGERS CANTEL INC

Signature: _____

Date: _____

Arnie Stephens
Vice President, Strategy
TELUS MOBILITY, a division of TELUS Communications Inc.

Signature: _____

Date: _____

SCHEDULE A

TRIAL AREA

Schedule 'A'
Trial Area

NORTH BOUNDARY

TWP RD 292 from RNG RD 282, west to RNG RD 21

EAST BOUNDARY

North on RNG RD 290 from Memorial Drive NE to TWP RD 244

East on TWP RD 244 from RNG RD 290 to RNG RD 284

North on RNG RD 284 from TWP RD 244 to TWP RD 270

East on TWP RD 270 from RNG RD 284 to RNG RD 282

North on RNG RD 282 from TWP RD 270 to TWP RD 292

SOUTH BOUNDARY

West on Memorial Drive NE from TWP RD 290 to Memorial Drive NW

Continuing East on Memorial Drive NW to 16 Avenue NW

West on Memorial Drive NW to Stoney Trail NW

WEST BOUNDARY

North on Stoney Trail NW from 16 Avenue NW to 85 Street NW

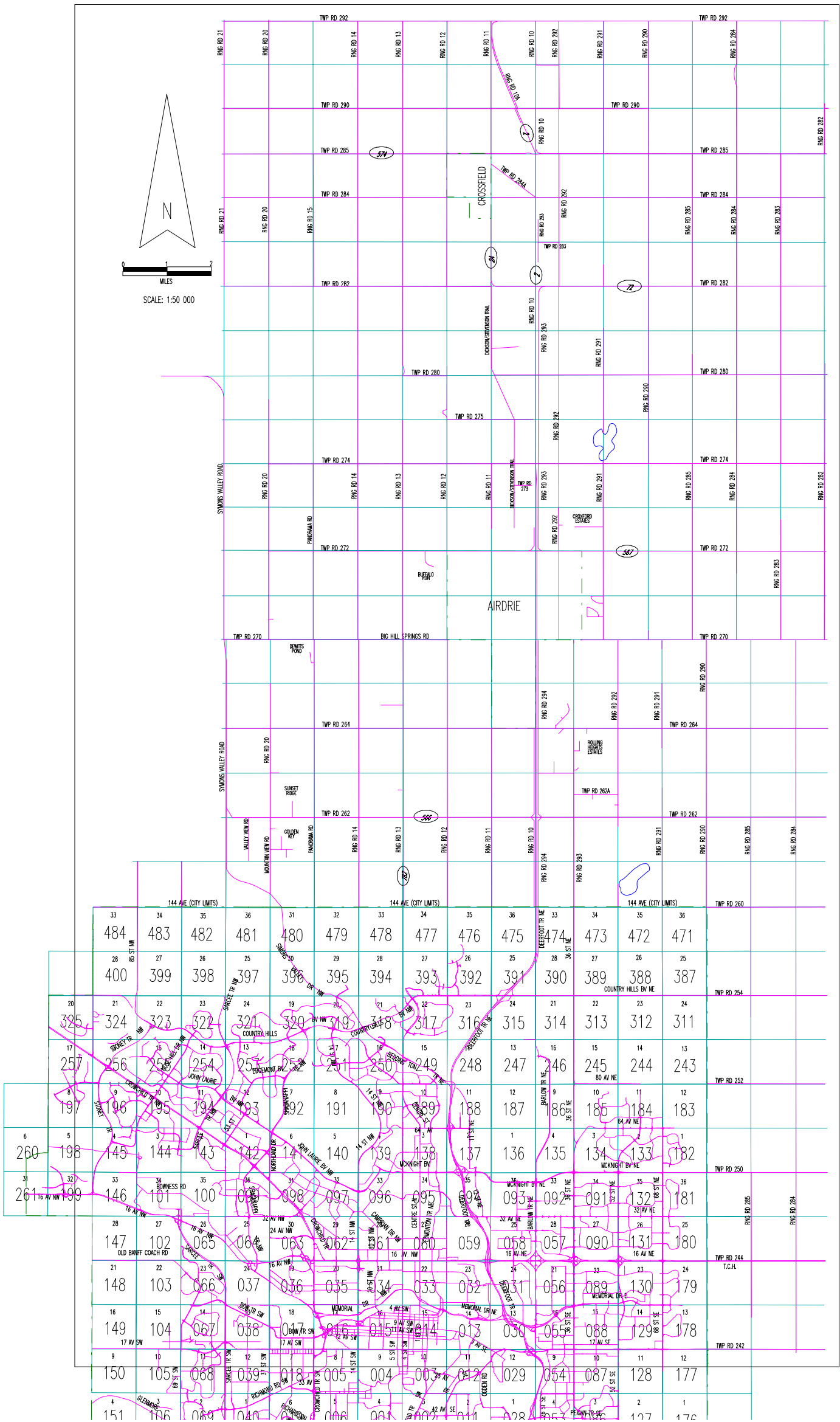
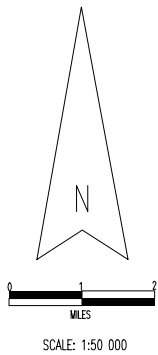
North on 85 Street NW from Stoney Trail NW to 144 Avenue NW

East on 144 Avenue NW from 85 Street NW to Symons Valley Road

North on Symons Valley Rod from 144 Avenue NW to TWP RD 280

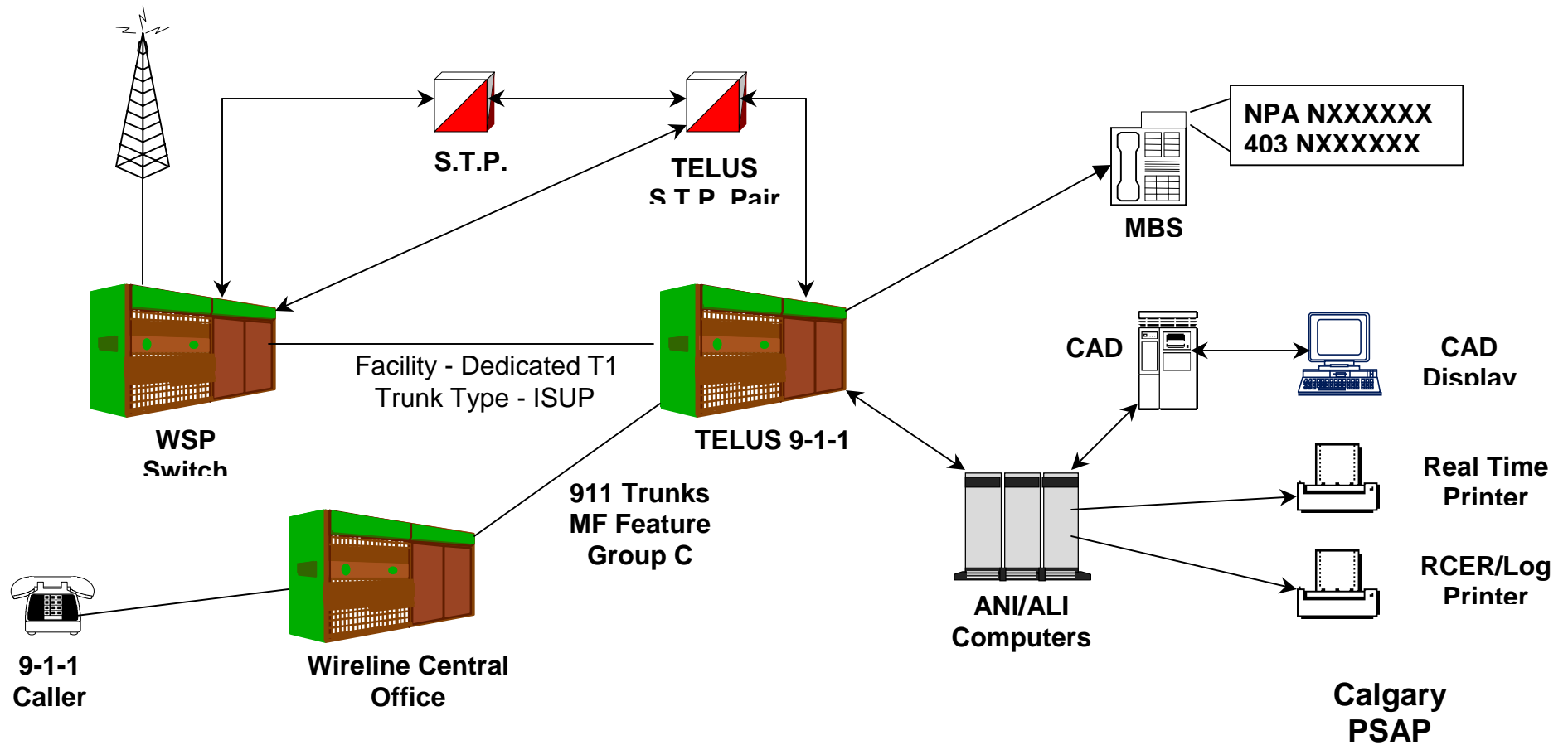
North on RNG RD 21 from TWP RD 280 to TWP RD 292

Schedule 'A' TRIAL AREA



SCHEDULE B
TRIAL ARCHITECTURE

AEAA Wireless 9-1-1 Trial Interconnection



ISUP Signalling (IAM)

Generic Digits Parameter - pANI / ESRD Number

Calling Party Number – Call Back Number (10 Digit Mobile Identification Number)

Called Party Number - Must be 911

SCHEDULE C

**TRIAL LOCATION DATA RECORD FORMAT AND
PRESENTATION**

SCHEDULE 'C'

Trial Location

Data Record Format

And

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This document has been prepared by TELUS Communications to enable the Wireless Carriers that are participating in the AEAA Wireless Trial to input data relating to their cell site/sector into the TELUS Communications E9-1-1 database.

The information contained in this document and the associated process is not to be considered as a binding proposal on TELUS Communications.

TELUS Communications reserves the right to make amendments / modification to the information and process in the future.

Introduction

For the purposes of this trial and only for this trial, TELUS Communications has retained this method of data exchange with the intent of simplifying the method by which the Wireless Carrier (Wireless Carrier) updates the E9-1-1 database.

In order to route and display cell site/sector location information on wireless 9-1-1 calls during the trial the 9-1-1 database must be updated by the Wireless Carrier with Emergency Service Routing Digit (ESRD), commonly referred to as pseudo ANI (pANI), and corresponding cell site/sector location information.

Proper completion of the supplied forms by the Wireless Carrier will allow TELUS Communications to include Wireless Carrier ESRD information into the E9-1-1 Database and selective call router and to then forward the ESRD information to the 9-1-1 call centre using existing protocols and facilities.

TELUS Communications Provided Electronic Files

TELUS Communications will provide floppy disks to each Wireless Carrier containing:

1. Electronic copy of this document.
2. Excel spreadsheet to be used for the initial load of Wireless Carrier ESRD records.
3. ESRD Change Form to be used for changes to the Wireless Carrier ESRD records after the initial load is complete.

ESRD Numbering

For the purposes of this trial and only for this trial, TELUS Communications will provide the ESRD numbers that will be used by the Wireless Carrier. The ESRD numbering will be as follows:

Wireless Carrier	ESRD From	ESRD To
TELUS Mobility	403 204 7000	403 204 7099
ROGERS CANTEL	403 204 7100	403 204 7199
MICROCELL	403 204 7200	403 204 7299
CLEARNET	403 204 7300	403 204 7399

Initial Load of ESRD (pANI) Records

The Wireless Carrier will enter the appropriate information into the provided Excel spreadsheet titled "Wireless Carrier ESRD Input Spreadsheet.xls" (the 'Wireless Carrier' in the file name will be replaced with the name of the Wireless Carrier supplying the records).

The Wireless Carrier is required to provide the following contact information on the "AEAA Wireless Trial ESRD Information Input Form.xls" spreadsheet. This contact is expected to work with TELUS Communications Service Address Control Group (SACG) in correcting errors that may occur.

Wireless Carrier	Wireless Carrier providing the information
Contact Name	Name of the person responsible for the information
Contact Phone	Phone number for the person responsible for the information
Contact e-mail	e-mail for the person responsible for the information
Contact Fax	Fax number for the person responsible for the information

Upon completion of the spreadsheet, the Wireless Carrier will mail the disk to:

TELUS Communications
Floor 16D, 10020 100 Street NW
Edmonton, Alberta T5J 0N5
Attn: Denise Jensen (Service Address Control Group)

Upon receipt of the disk the SACG will enter the information into the E9-1-1 system, contacting the Wireless Carrier for verification of any errors that may be uncovered during this process.

Changes to ESRD after Initial Load

The Wireless Carrier can request changes to their ESRD information by completing the form titled "Wireless Carrier ESRD Change Request Form" for each ESRD record that is to be changed, added or deleted.

Completed forms are to be faxed to TELUS Communications Service Address Control Group at **780 493 4535**.

TELUS Communications will return the completed form to the fax number provided by the Wireless Carrier on the form after inputting into the 9-1-1 system.

Wireless Carrier ESRD Record Validation

For the initial load, TELUS Communications will provide to each Wireless Carrier a report that details the ESRD information as input into the E9-1-1 system. This report will allow the Wireless Carrier to verify that their ESRD information is entered as they specified.

After the initial load, changes to the Wireless Carrier ESRD information can be verified by the Wireless Carrier when TELUS Communications returns the completed "Wireless Carrier ESRD Change Request Form" to the Wireless Carrier by fax.

The display information can also be verified by the Wireless Carrier during the test period of the trial by placing test calls from the cell site / sector.

ESRD Record Input Format

The Wireless Carrier is required to populate the following fields contained in the "Wireless Carrier ESRD Input Spreadsheet.xls" spreadsheet. This Excel spreadsheet has been formatted to assist in ensuring that only valid trial information is entered into the appropriate fields.

TELUS Communications does not guarantee that the validations performed by this spreadsheet will catch all errors.

ESRD Record Fields

Field	Size	Inputting Comments
ESRD	10	NPANXXXXXX (Provided by TELUS Communications for the trial period only)
Customer Name	63	Ex: WIRELESS (123 MAIN ST) NORTHWEST 41/42 (note: map reference numbers)
Apt number	5	Refer to 'Valid Apartment Types' section in this document.
Hse number	6	Numeric Values Only
Hse Suffix	1	Alpha Values Only
Street Name	50	Refer to 'Valid Street Name Information' table
Street Type	7	Refer to 'Valid Street Types' table. A drop down selection box in the spreadsheet has been provided to assist in proper validation.

Field	Size	Inputting Comments
Street Vector	2	SW, SE, NE, NW, N, S, E, W or Blank. A drop down selection box in the spreadsheet has been provided to assist in proper validation.
ESZ	5	As determined in consultation with PSAP. A drop down selection box in the spreadsheet has been provided to assist in proper validation for the trial.
WSP	15	The Wireless Carrier's name to be displayed on the PSAP 9-1-1 Screen. This entry should be consistent throughout the trial with one Wireless Carrier Name for all their records.
WSP Phone	10	NPANXXXXXX - The Wireless Carrier's 24/365 contact number for use by the PSAP operator. This entry should be consistent throughout the trial with one Wireless Carrier contact phone number for all their records.

Example ESRD Input Record

The following chart provides an example of the type of data required and the fields in which to input that data in order to create an ESRD record for inputting into the Provincial E9-1-1 Database:

Field	Entry
ESRD	4035551234
Customer Name	WIRELESS (123 MAIN ST) NORTHWEST 41/42
Apt Number	
Hse Number	123
Hse Suffix	
Street Name	MAIN
Street Type	ST
Street Vector	NW
ESZ	10110
Wireless Carrier Name	XYZ CELL
Wireless Carrier Phone	4035551000

Valid Apartment Types

The following information provides the guidelines used by TELUS Communications when entering apartment types for Provincial E9-1-1 Service. It is recommended that the Wireless Carrier use the same guidelines when entering cell site/sector addressing information. Apartment numbers must be alpha numeric or be specifically defined within Valid Apartment Values Table.

For Apartment Type	Apartment Field	For Apartment Type	Apartment Field	For Apartment Type	Apartment Field
ATTIC	ATTIC	LOWER MAIN	LWRMN	PENTHOUSE H	PENTH
BARN	BARN	LRT STATION	LRT	REAR	R
BASEMENT	BSMT	LRT STATION 1	LRT1	REAR BASEMENT	RBSMT
BASEMENT 1	BSMT1	LRT STATION 2	LRT2	REAR MAIN	RMN
BASEMENT 2	BSMT2	LRT STATION 3	LRT3	REAR OFFICE	ROFC
BASEMENT 3	BSMT3	LRT STATION 4	LRT4	REAR UPPER	RUP
BASEMENT 4	BSMT4	MAIN FLOOR	MAIN	RIGHT	RT
BASEMENT 5	BSMT5	MAIN 1	MAIN1	RIGHT BASEMENT	RTBS
BASEMENT 6	BSMT6	MAIN 2	MAIN2	RIGHT FRONT	RTF
BASEMENT 7	BSMT7	MAIN 3	MAIN3	RIGHT FRONT BASEMENT	RTFBS
BASEMENT 8	BSMT8	MAIN 4	MAIN4	RIGHT FRONT MAIN	RTFMN
BASEMENT 9	BSMT9	MAIN 5	MAIN5	RIGHT FRONT UPPER	RTFUP
BASEMENT A	BSMTA	MAIN 6	MAIN6	RIGHT MAIN	RTMN
BASEMENT B	BSMTB	MAIN 7	MAIN7	RIGHT REAR	RTR
BASEMENT C	BSMTC	MAIN 8	MAIN8	RIGHT REAR BASEMENT	RTRBS
BASEMENT D	BSMTD	MAIN 9	MAIN9	RIGHT REAR MAIN	RTRMN
BASEMENT E	BSMTE	MAIN A	MAINA	RIGHT REAR UPPER	RTRUP
BASEMENT F	BSMTF	MAIN B	MAINB	RIGHT UPPER	RTUP
BASEMENT G	BSMTG	MAIN C	MAINC	SERVICE STATION	SVCSN
BASEMENT H	BSMTH	MAIN D	MAIND	SHOP	SHOP
CORNER	COR	MAIN E	MAINE	SIDE	SIDE
COTTAGE	CTGE	MAIN F	MAINF	SOUTH	SOUTH
EAST	EAST	MAIN G	MAING	SOUTH BASEMENT	SBSMT
EAST BASEMENT	EBSMT	MAIN H	MAINH	SOUTH FRONT	SFRNT
EAST FRONT	EFRNT	MEZZANINE	MEZZ	SOUTH MAIN	SMN
EAST MAIN	EMN	NORTH	NORTH	SOUTH UPPER	SUP
EAST UPPER	EUP	NORTH BASEMENT	NBSMT	SOUTH-EAST CORNER	SECOR
FRACTIONS	1/2	NORTH FRONT	NFRNT	SOUTH-WEST CORNER	SWCOR
FRONT	FRNT	NORTH MAIN	NMN	TELEPHONE ROOM	TELRM
FRONT BASEMENT	FBSMT	NORTH UPPER	NUP	TRAILER	TRLR
FRONT MAIN	FMAIN	NORTH-EAST CORNER	NECOR	UPSTAIRS	UP
FRONT OFFICE	FOFC	NORTH-WEST CORNER	NWCOR	UP 1	UP1
FRONT UPPER	FUP	NORTH-WEST ENTRANCE	NWENT	UP 2	UP2
GARAGE	GRGE	OFFICE	OFC	UP 3	UP3
GARDEN CENTER	GDNCN	OPPOSITE	O	UP 4	UP4
HANGER	HNGR	OPPOSITE FRONT	OFRNT	UP 5	UP5
INSIDE	IN	OPPOSITE REAR	OR	UP 6	UP6
KIOSK	KIOSK	OPPOSITE SIDE	OSIDE	UP 7	UP7
JOB PHONE	JOBPH	PENTHOUSE	PENT	UP 8	UP8
LEFT	LT	PENTHOUSE 1	PENT1	UP 9	UP9
LEFT BASEMENT	LTBS	PENTHOUSE 2	PENT2	UP A	UPA

For Apartment Type	Apartment Field	For Apartment Type	Apartment Field	For Apartment Type	Apartment Field
LEFT FRONT	LTF	PENTHOUSE 3	PENT3	UP B	UPB
LEFT FRONT BASEMENT	LTFBS	PENTHOUSE 4	PENT4	UP C	UPC
LEFT FRONT MAIN	LTFMN	PENTHOUSE 5	PENT5	UP D	UPD
LEFT FRONT UPPER	LTFUP	PENTHOUSE 6	PENT6	UP E	UPE
LEFT MAIN	LTMN	PENTHOUSE 7	PENT7	UP F	UPF
LEFT REAR	LTR	PENTHOUSE 8	PENT8	UP G	UPG
LEFT REAR BASEMENT	LTRBS	PENTHOUSE 9	PENT9	UP H	UPH
LEFT REAR MAIN	LTRMN	PENTHOUSE A	PENTA	UPPER LEVEL	UPRLV
LEFT REAR UPPER	LTRUP	PENTHOUSE B	PENTB	WEST	WEST
LEFT UPPER	LTUP	PENTHOUSE C	PENTC	WEST BASEMENT	WBSMT
LOBBY	LOBBY	PENTHOUSE D	PENTD	WEST FRONT	WFRNT
LOFT	LOFT	PENTHOUSE E	PENTE	WEST MAIN	WMN
LOWER	LWR	PENTHOUSE F	PENTF	WEST UPPER	WUP
LOWER LEVEL	LWRLV	PENTHOUSE G	PENTG		

Valid Street Name Information

The following information provides the guidelines used by TELUS Communications when entering street names for Provincial E9-1-1 Service. It is recommended that the Wireless Carrier use the same guidelines when entering cell site/sector addressing information. Always use a named or numbered street name, when available instead of a legal land description or a lot/block/plan type address.

- the street name, example “Main”
- the legal land description (LLD), example “SW 33 51 26 W4”
- the legal subdivision, example “6 33 51 26 W4”
- the lot block plan (LBP), examples
- full LBP, “1345 112 556AB” (Lot is 1345, Block is 112, Plan is 556AB)
- Partial LBP, LT112333PL1231112 (Lot is 112333, no Block, Plan is 1231112)
- Partial LBP, BK4444PL123112 (No Lot, Block is 4444, Plan is 123112)
- In the event that the LLD information is available for a LBP, the LLD information will be added to the LBP in the format of “LBP / LLD”. Example “1345 112 556AB / SW 33 51 26 W4” or “LT112333PL1231112 / SW 33 51 26 W4”.

The following abbreviations will be applied to any occurrence of the listed words below, whenever they are part, but not all of a street name (not including the street type)

FULL NAME	ABBREVIATION
FORT	FT
HIGHWAY	HWY
LAKE	LK
MOUNT	MT
MOUNTAIN	MTN
NUMBER	NO
POINT	PT
PRINCE	PR
SAINT	ST
SECONDARY HIGHWAY	SH

Range / Township Roads / Highways

Some rural municipalities in Alberta have chosen a Range Road / Township Road addressing system. Following is a sample of these types of addresses and the fields that the addressing elements must be entered into.

Range Road is abbreviated to RNG RD, Township Road to TWP RD, Highway to HWY and Secondary Highway to SH.

Examples:

- If the address is 123 20452 Township Road 515 the House Number field would be 123 and the Street Name field would be 20452 TWP RD 515.
- If the address is 20452 Township Road 515 the House Number field would be blank and the Street Name field would be 20452 TWP RD 515.
- If the address is 123 20452 Range Road 515 the House Number field would be 123 and the Street Name field would be 20452 RNG RD 515.
- If the address is 20452 Range Road 515 the House Number field would be blank and the Street Name field would be 20452 RNG RD 515.
- If the address is 20452 Highway 14 the House Number field would be blank and the Street Name field would be 20452 HWY 14.
- If the address is 20452 Secondary Highway 14 the House Number field would be blank and the Street Name field would be 20452 SH 14.

Valid Street Types

The following information provides the guidelines used by TELUS Communications when entering street types for Provincial E9-1-1 Service. It is recommended that the Wireless Carrier use the same guidelines when entering cell site/sector addressing information. These entries can be entered directly into the Excel spreadsheet or selected from the drop down box provided within the input field.

For Roadway Type	Street Type	For Roadway Type	Street Type	For Roadway Type	Street Type
ABBEY	ABBEY	GLADE	GLADE	PATHWAY	PTWAY
ACRES	ACRS	GLEN	GLEN	PINES	PINES
ALLEY	ALLEY	GREEN(S)	GRN	PLACE	PL
AVENUE	AV	GROUNDS	GRNDS	PLATEAU	PLAT
BAY	BAY	GROVE	GROVE	PLAZA	PLAZA
BEACH	BCH	HARBOUR	HARBR	POINT	PT
BEND	BEND	HEATH	HEATH	PORT	PORT
BOULEVARD	BLVD	HEIGHTS	HTS	PRIVATE	PVT
BYPASS	BYPASS	HIGHLANDS	HGHlds	PROMENADE	PR
BYWAY	BYWAY	HIGHWAY	HWY	QUAY	QUAY
CAMPUS	CAMPUS	HILL	HILL	RANGE	RNG
CAPE	CAPE	HOLLOW	HOLLOW	RIDGE	RDGE
CENTRE	CTR	ISLAND	ISLAND	RISE	RISE
CHASE	CHASE	KEY	KEY	ROAD	RD
CIRCLE	CIR	KNOLL	KNOLL	ROUTE	RTE
CLOSE	CL	LANDING	LANDING	ROW	ROW
COMMON	COMMON	LANE	LN	RUN	RUN
CORNER(S)	CRNR	LIMITS	LMTS	SQUARE	SQ
COURT	CRT	LINE	LINE	STREET	ST
COVE	COVE	LINK	LINK	TERRACE	TERR
CRESCENT	CR	LOOKOUT	LKOUT	THICKET	THICK
CROSSING	CROSS	LOOP	LOOP	TOWERS	TOWERS
DALE	DALE	MALL	MALL	TRAIL	TR
DELL	DELL	MANOR	MNR	VALE	VALE
DOWNS	DWN	MAZE	MAZE	VIA	VIA
DRIVE	DR	MEADOW(S)	MDW	VIEW(S)	VW
END	END	MEWS	MEWS	VILLA	VILA
ESPLANADE	ESPL	MOOR	MOOR	VILLAGE	VILGE
ESTATES	EST	MOUNT	MT	VILLAS	VILA
EXPRESSWAY	EXPY	MOUNTAIN	MTN	VISTA	VISTA
FIELD	FIELD	ORCHARD	ORCH	WALK	WLK
FOREST	FOREST	PARADE	PARADE	WAY	WY
FREEWAY	FWY	PARK	PK	WHARF	WHARF
FRONT	FRT	PARKWAY	PKY	WOOD(S)	WOOD
GARDEN(S)	GDN	PASS or PASSAGE	PASS	WYND	WYND
GATE	GATE	PATH	PATH		

Wireless Carrier ESRD Change Request Form

Please fax complete form to: Service Address Control Group at 780 493 4535

TELUS Communications to send confirmation to Wireless Carrier Fax: _____

Contacts:

Wireless Carrier _____	TELUS Communications
Contact Name _____	Denise Jensen
Contact Phone _____	780 493 5418

Please perform the following function for this ESRD record:

Add
 Change
 Delete

Field	Existing Record	Change To / Add
ESRD		
Customer Name		
Apt Number		
Hse Number		
Hse Suffix		
Street Name		
Street Type		
Street Vector		
ESZ		
Wireless Carrier Name		
Wireless Carrier Phone		

For TELUS Communications Use Only

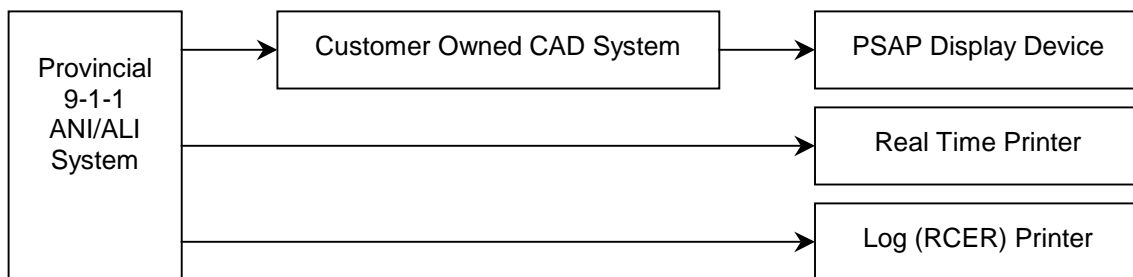
Action:
 Data Base Records Updated
 _____ / _____ / _____

No Action Required
 _____ / _____ / _____

ESRD Presentation to the PSAP

The existing TELUS Communications Provincial E9-1-1 Service data facilities, CAD packet format, Real Time and Log Printer formats will be used to display the wireless ESRD information on 9-1-1 calls originating from cell sites / sectors selected by the Wireless Carrier as part of the wireless 9-1-1 trial.

The ESRD will be located in the ANI field for all outputs (CAD packet, Real Time and Log Printer outputs). The wireless call back number will not be included in the CAD packet or Real Time Printer output. Following is a block diagram of the data connections used in TELUS Communications Provincial E9-1-1 Service:



Log Printer (RCER) Output

The Log Printer output (also referred to as the RCER) will include both the ESRD, displayed in the ANI field, as well as the wireless call back number. Sample LOG Printer printout is shown below:

```

(403)555-1234 ESRD          CALLBACK: (403)204-7000
WIRELESS (123 MAIN ST) NORTHWEST 41/42
123 MAIN ST NW
SA COMMENT:
ESZ: 10110 SOMEWHERE          CITY OF SOMEWHERE
98/03/27 4035551234 E911ACD 4901 9900 11:05:13 11:05:14 11:05:16 11:05:35
5551234 E911FIRE 11:05:24
XYZ CELLULAR (403)555-1000
  
```

The information presented on line 1 represents the following:

ANI	(403)555-1234
Class of Service	ESRD
Callback Number	(403)204-7000

Real Time Printer Output

The Real Time Printer output will include the ESRD within the ANI field. Sample Real Time Printer printout is shown below:

```
(403)555-1234 ESRD
WIRELESS (123 MAIN ST) NORTHWEST 41/42
123 MAIN ST NW
SA COMMENT:
ESZ: 10110 SOMEWHERE                CITY OF SOMEWHERE
      SOMEWHERE FD                    (403)555-1235
      SOMEWHERE POLICE                 (403)555-1236
      SOMEWHERE EMS                     (403)555-1237
1998/03/27 11:02:59 TEST911PSAP      4902
XYZ CELLULAR (403)555-1000
```

CAD (Computer Aided Dispatch) Output

The CAD packet will include the ESRD within the NPA and ANI fields. The CAD packet (9-1-1 call information) provided by TELUS Communications is received by a CAD system owned by and located at the PSAP. The 9-1-1 call information contained in the CAD packet is presented to the 9-1-1 call taker on a display device that is connected to the CAD system. The format of the 9-1-1 call information is determined by the PSAP and will vary from PSAP to PSAP. Following is a typical 9-1-1 display screen:

Call Time:	99/12/25 10:45:52	LSP:	XYZ CELLULAR
Phone #:	(403)555-1234	Class:	ESRD (403) 555-1000
Name:	WIRELESS (123 MAIN ST) NORTHWEST 41/42		
Address:	123 MAIN ST NW		
Location Info:			
Community:	SOMEWHERE	ESZ:	10110
Municipality:	CITY OF SOMEWHERE		
Fire:	SOMEWHERE FD		(403)555-1235
Police:	SOMEWHERE POLICE		(403)555-1236
EMS:	SOMEWHERE EMS		(403)555-1237

SCHEDULE D

TRIAL PLAN

Trial Plan

Alberta E9-1-1 Wireless Trial – Calgary

Introduction - Setting the Stage

Preamble

Wireless interconnection to the TELUS Communications Provincial E9-1-1 Network is presently accomplished using line side connections. The 9-1-1 call routing and information delivered with the 9-1-1 call reflects the location of the central office, not necessarily the wireless caller's location, and does not include the wireless caller's call back number.

The Alberta E911 Advisory Association, in an effort to move the work of the CWTA Wireless E911 Working Group (National) from high level conception to a ground level implementation stage, offered to assist TELUS Communications and the Wireless Service Providers (WSP's) in conducting a technical trial.

This technical trial will verify the suitability of using Feature Group 'D', ISUP 9-1-1 interconnection trunking between TELUS Communications and the WSP. This trunking arrangement will provide the ability of passing routing information (i.e. the location of the cell site/sector) and the call back number of wireless users from the WSP(s) switch(s) through the TELUS Communications Provincial E911 system to the PSAP and ultimately to the PSAP operator's ANI/ALI display.

Goals of the Trial

- 1) To validate the delivery of Cell Site and Sector information (Emergency Services Routing Digits (ESRD), formerly known as pseudo-ANI) to the City of Calgary PSAP. Targeted timeframe of Q4 1999. [UPDATED]
- 2) To validate the delivery of a 10 digit call back number to the City of Calgary PSAP RCER printer (see Schedule 'C'). Targeted timeframe of Q4 1999. [UPDATED]

Important Considerations

- The solution(s) for both Goals must be scalable to the entire Alberta Provincial 9-1-1 platform.
 - The solution(s) for both Goals must strongly consider the technical portability to other like Provincial 911 platforms, i.e. Ontario, Quebec, British Columbia.
-

Important Considerations (continued)

- The Trial should focus on the delivery of meaningful and useful information to the PSAP operators, with little or no effect on current operational procedures.
 - The participants are individually responsible for Trial costs. However, a primary focus in this regard, will be the development of key business objectives which assist with justifying both the Trial and future wide spread Deployment expenses.
 - The solution(s), as much as practical, should not result in stranded investments for any of the parties involved.
 - As much as possible, the participants should consider a mechanism for future cost recovery that is fair and equitable.
-

Live Stage

Once the 'Pre-Trial Stage' steps have been completed, the following steps will move us through and into a 'live' Trial:

- 9) **CUTOVER WSP TRUNKING TO 'LIVE' CALL PROCESSING** – This will be a staged process, and will be a cooperative effort between all participants to ensure that no calls are lost. A back-out procedure will be exercised if 'voice' call processing is disrupted in any manner. Depending on the success of the captive trial, the target dates are as follows:

- Clearnet Date:
- Microcell Date:
- Rogers Cantel Date:
- Telus Mobility Date:

- 10) **BACKUP AND/OR CALL OVERFLOW TRUNKING** – In cooperation with TELUS, each of the WSP's (if technically possible) will ensure that interconnection is setup to provide for backup and/or overflow processing of the 'voice' call, should either eventuality be necessary. Depending on the success of the captive trial, the target dates are as follows:

- Clearnet Date:
- Microcell Date:
- Rogers Cantel Date:
- Telus Mobility Date:

- 11) **CUTOVER SUPPORT AND TRAINING FOR PSAP CALLTAKERS** – The Calgary PSAP and TELUS will have personnel on hand during the live cutover of each WSP. The timing will be as follows:

- Calgary PSAP Date: same time as items #9 and #10
- Telus Provincial E911 Service Date: same time as items #9 and #10

- 12) **LIVE TRIAL MONITORING PROCESS** – All participants will be responsible for identifying problems that occur during the 'live' trial process. The PSAP Calltakers will report troubles using the normal Telus Provincial E911 Service process, however issues related to the Trial will all be reported to a Trial designate person to ensure timely response and more importantly complete tracking. WSP's will also report issues to the same Trial designate person, as required.

- All Participants Date: from the dates in section 9 to January 31, 2000
-

Part
3

Training

Calgary PSAP Training Outline

- Preview – purpose of Trial, and expected outcomes
- Design – high level description of architecture of the Trial
- Screen Presentation – provide sample(s) of the typical CAD display of a wireless call
- Use of Overlay Maps – instruction regarding the use of each WSP's Trial Area coverage map
- Issues – identify an call processing irregularities and/or known problems, and how to handle
- Trouble Reporting – explain the process, and importance of reporting all problems / anomalies

Telus Provincial E911 Service Training

Provide training and/or instructions to database, network, and administration personnel, as deemed appropriate.

WSP Training

Provide training and/or instructions to database, network, and administration personnel, as deemed appropriate.

SCHEDULE E

**PRELIMINARY LIST OF ASSESSMENT FACTORS
FOR THE TRIAL REPORT**

SCHEDULE 'E'

PRELIMINARY LIST OF ASSESSMENT FACTORS FOR THE TRIAL REPORT

- ◇ Assessment of the viability of the technology and architecture used:
 - validating the routing of Wireless Carrier 9-1-1 traffic to the proper PSAP using ESRD;
 - validating the selective transfer of Wireless Carrier 9-1-1 calls to the proper PSAP using ESRD;
 - validating the display of ESRD/cell site/sector information on call taker display terminal;
 - validating the display of ESRD and callback number on call taker Meridian ACD (Automatic Call Distribution) set;
 - Assess impact to carrier and PSAP personnel of keeping the location (cell site & sector) information up to date as patterns change, new cell sites/sectors are added, etc. & as feedback from PSAPs of problems in prediction of correct cell site & sector become evident.

- ◇ The Calgary PSAP will assess the success of the Trial as follows:
 - Determine if the receipt of CBN and cell site/sector information has improved the ability to handle wireless calls [survey method];
 - Determine if the receipt of cell site/sector data improves the efficiency of Call Takers when dealing with multiple calls for the same incident [survey method];
 - Determine the utility of hanging wall chart maps for reference purposes [survey method];
 - Determine if the timing, in terms of display of the ANI/ALI information to the call takers, is different than current wireline timing [survey method];
 - Determine if the ANI/ALI display of information is acceptable [survey method];
 - Identify any problems with the delivery of accurate cell site/sector information [sample analysis];
 - Identify the operational and administrative impacts caused by the display of false CBN's from unsubscribed callers;
 - Identify instances where the CBN is utilized for investigative purposes (i.e. to identify or re-contact a caller);
 - Identify instances where the CBN assisted in identifying nuisance or abusive callers;
 - Identify instances where the RCER (Remote Call Event Record) printout is utilized for evidentiary purposes;
 - Analysis of the effect on average total call duration (i.e. dialed digits to hang-up by the caller or primary/secondary PSAP) during the trial period [Comparison of TELUS Mobility and Clearnet pre-trial samples versus their measurements during the trial];
 - Need to determine number of actual on-site visits/responses to wireless 911 calls that are made during trial due to availability of cell site/sector data where none would have been possible before which is an assessment of the impact of having map information to locate callers [number of responses].

Appendix 4 – Glossary of Terms

Glossary of Terms

AEAA	Alberta E9-1-1 Advisory Association: an association comprised of emergency service agencies and municipality representatives in the Province of Alberta.
ALI	Automatic Location Identification: The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone and supplementary emergency services information.
ANI	Automatic Number Identification: Telephone number associated with the access line from which a call 9-1-1 originates.
CAD	Computer Aided Dispatch: A computer based system which aids PSAP attendants by automating selected dispatching and record keeping activities.
CBN	Call Back Number: The telephone number associated with a wireless telephone used to contact the caller.
CISC	CRTC Interconnection Steering Committee: An organization established by the CRTC to assist in developing information, procedures and guidelines as may be required in various aspects of the CRTC's regulatory activities.
CRTC	Canadian Radio-television and Telecommunications Commission: An independent agency responsible for regulating Canada's broadcasting and telecommunications systems.
CWTA	Canadian Wireless Telecommunications Association
DMS	Digital Multiplex System: Digital switching technology provide by NORTEL Networks.
ESRD	Emergency Service Routing Digits: A telephone number used to support routing of wireless originated 9-1-1 calls to the appropriate PSAP and subsequent emergency response agencies.
FCC	Federal Communications Commission: an independent United States government agency charged with regulating interstate and international communications by radio, television, wire, satellite and cable.
ISUP	Integrated Services User Part???: The part of a CCS/SS7 signaling node that is used to develop and format signaling messages.
MBS	Meridian Business Set: Single-line phones with multi-line functionality provide by NORTEL Networks.
MOU	Memorandum of Understanding
NPA	Number Plan Area: An established three-digit area code for a particular calling area.
PSAP	Primary Safety Answering Point: A facility equipped and staffed to receive, answer and forward to an emergency response agency 9-1-1 dialed calls.
RCER	Remote Call Event Record: A post call processing record transmitted to a PSAP through a data link.
TCI	TELUS Communications Inc.: The Alberta 9-1-1 service provider and participant in the Trial.