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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the Matter of	)	
	)	
Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102 RM-8143

COMMENTS OF THE
CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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COMMENTS OF THE
CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Cellular Telecommunications Industry Association ("CTIA")[1] submits its Comments in the above-captioned proceeding pursuant to the Commission's request for additional comment regarding the *ex parte* presentation filed by the Ad Hoc Alliance for Public Access to 911 ("Ad Hoc Alliance")on September 17, 1998.

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[1] CTIA is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the association covers all Commercial Mobile Radio Service ("CMRS") providers, including 48 of the 50 largest cellular and broadband personal communications service ("PCS") providers. CTIA represents more broadband PCS carriers and more cellular carriers than any other trade association.

I. Introduction and Summary

In its *ex parte* filing, the Ad Hoc Alliance introduces into the record of this proceeding a new "adequate signal" proposal that implicitly responds to the concerns raised by CTIA, the public safety community, and others, regarding the unintended consequences of the Ad Hoc Alliance's previous "strongest signal" proposal. In these comments, CTIA urges the Commission to reject the new "adequate signal" proposal because it is predicated on the same flawed assumptions as the original "strongest signal" proposal, and because it is intended to trigger a patent rather than address a problem.

Both the "strongest signal" and the new "adequate signal" proposals focus exclusively on the wireless handset's measurement of the forward control channel of an analog cellular system.[2] The forward control channel, however, is not an adequate measure of system quality, as it is only one of the many parameters that are used for wireless network design and call completion. It should be no surprise, therefore, that the "adequate signal" proposal, like the

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[2] Earlier in this proceeding, the Ad Hoc Alliance limited its proposal to cellular phones operating in the analog mode. See January 30, 1998 Separate Report of the Ad Hoc Alliance for Public Access to 911, at 7.

"strongest signal" that preceded it, will reduce the reliability of wireless networks, doing more harm than good.

In response to the CTIA Standards Requirement Document ("SRD") for 9-1-1 Call Completion, the Engineering Committee TR45 of the Telecommunications Industry Association ("TIA" and "TR45") concluded that "call completion for emergency services is fairly deterministic and the probability can be increased by operational and implementation approaches based on existing standards capabilities."[3] TIA also concluded that mechanisms such as the A/B programmability of wireless handsets offer a means by which to improve 9-1-1 call completion rates, and TR45 suggests that such an approach can be implemented within existing standards in a fashion known as "*Automatic A/B Roaming.*"[4]

In comparison to the "strongest signal" and "adequate signal" proposals, Automatic A/B Roaming is a better solution to the concerns raised by the Ad Hoc Alliance in regard to

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[3] *See* Committee Correspondence from John A. Marinho, Chair, TIA Engineering Committee TR45, to Art Prest, CTIA (September 24,1998)(attached hereto as Attachment 1).

[4] *Id.*, at 2. *Automatic A/B Roaming* describes the operation of a handset whereby the handset overrides any "local" programming of the handset (*i.e.*, subscriber programmed, preferred carrier only) and seeks a non-preferred carrier in the event the preferred carrier is unable to process the 9-1-1 call attempt.

wireless 9-1-1 call completion because, as TR45 notes, it is compatible with present network registration and control procedures.[5] CTIA urges the Commission to accept the *"Automatic A/B Roaming"* solution developed by TIA.

Finally, this latest *ex parte* proposal and round of comments underscore how the Commission has frustrated the realization of the Phase I and Phase II wireless E9-1-1 capabilities by its tendency to deal with wireless E9-1-1 issues on a piecemeal and *ad hoc* basis. CTIA's Petition for Reconsideration and Clarification, filed in this proceeding on February 17, 1998, sets forth the need for Commission action if we are to move from the promise to the realization of nationwide wireless E9-1-1 service. As CTIA urged in its Petition, the Commission must establish "9-1-1" as the uniform, nationwide, dialing code for emergency calls; the Commission must encourage federal agencies to facilitate the use of federal property for wireless facility siting to advance the ubiquitous availability of wireless E9-1-1 services; the Commission must permit wireless carriers to

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[5] TR-45-2 notes that network call completion probability can be increased by the mobile station not initiating a new system registration during the emergency call origination process. Committee Correspondence from Cheryl J. Blum, Chair, TR-45.2, to Mr. Ed Hall, CTIA (August 21, 1998)(attached hereto as Attachment 1). Thus, the basic premise of the Ad Hoc Alliance's proposal is destined to do more harm than good.

receive the same limitations on liability traditionally afforded communications common carriers; and the Commission must resolve the ambiguities CTIA and its members have identified that are impeding the implementation of wireless E9-1-1 service.[6]

II. THE STRONGEST SIGNAL PROPOSAL AND ITS PROGENY

The wireless industry joins with the Public Safety community, the FCC, and the Ad Hoc Alliance in recognizing the need to complete wireless calls to 9-1-1. Every 9-1-1 call can save lives and protect the public. More than 83,000 emergency calls are completed every day, along with millions of other CMRS calls. Unfortunately, the Ad Hoc Alliance has distracted and delayed the FCC and wireless industry from completing the important work of this docket. Instead of discussion and resolution of the issues that have frustrated realization of the Phase I requirements, the Ad Hoc Alliance has sought to advance a specific technology to address an unquantified need.

The wireless industry has opposed the Ad Hoc Alliance's "strongest signal" proposal simply because the negative

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[6] CTIA has invited NENA and APCO to join CTIA in developing a plan that will resolve the wireless E9-1-1 implementation issues. *See* letters from Thomas E. Wheeler, CTIA, to Ms. Leah Senitte, NENA, and Mr. Jack Keating, APCO (dated August 26, 1998)(attached hereto as Attachment 2).

consequences associated with the proposal are more than likely to outweigh the alleged benefits. While the Ad Hoc Alliance has elected to focus its efforts on convincing the FCC to dictate a specific change to the industry technical standards for analog cellular service that are incorporated by reference to the Cellular Compatibility Specifications in Part 22 of the Commission's rules, the wireless industry and public safety community have pursued the goal of examining the best practices for completing calls to 9-1-1 through the open industry standards process.

Although the Ad Hoc Alliance specifically was invited to present its proposal to TIA for review, it respectfully declined to participate in TR45's technical evaluation of 9-1-1 call completion.[7] The Wireless E9-1-1 Implementation Ad Hoc ("WEIAD") group, which was formed to address technical wireless 9-1-1 issues, strongly believed that a Standards Requirements Document to be submitted to TIA for consideration offered the greatest promise of evaluating and developing the best means to ensure the completion of 9-1-1 calls. In response to this belief, CTIA sponsored the drafting of the

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[7] It should be noted that the specific technical solution, *i.e.*, the "strongest" and now the "adequate" signal proposal, advocated by the Ad Hoc Alliance appears to be described in a patent that would prevent its adoption as an open industry standard without the participation of the patent's owner.

Wireless 9-1-1 Call Completion SRD and submitted it to TR45 for their expert review. As noted above, the results of their review are attached to these Comments as Attachment 1.

The record in this proceeding can best be summarized as an attempt by the Ad Hoc Alliance to advance a specific (and patented) technical change to the analog cellular industry standard, and their search for a set of facts that would justify this change. In other words, as CTIA claimed almost three years ago in its first response to the "strongest signal" proposal, the Ad Hoc Alliance has a solution in search of a problem.

Throughout this proceeding, as the wireless industry and public safety community exposed the flaws in the various predicates advanced by the Ad Hoc Alliance, the Ad Hoc Alliance has not yielded on their proposal to base a cellular phone's selection of a system for completing a 9-1-1 call on the strength of the carriers' forward control channel.

In advancing the most recent iteration of its "strongest signal proposal," the Ad Hoc Alliance has jettisoned its original claim that the requested rule change would benefit users in urban and suburban areas.[8] In an effort to overcome

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[8] Thus, the unfortunate assault on Ms. Marcia Spielholz, which occurred in Los Angeles, California, and her allegations concerning the service provided by her cellular carrier, which are currently pending in the Superior Court

concerns that its proposal would increase emergency call blocking and hamper the provision of the enhancements to wireless 9-1-1 service that lie at the heart of this proceeding, the Ad Hoc Alliance now advises the Commission that its proposed rule change is needed to provide access to 9-1-1 from portable analog cellular handsets in outer suburban and rural coverage areas.[9] However, as CTIA explains below, there is no evidence to support this claim.

Three years after it first submitted the "strongest signal" proposal, the Ad Hoc Alliance finally has acknowledged the concerns CTIA and others raised at the outset. However, because the "adequate signal" proposal is predicated on the same flawed technology assumptions as the original "strongest signal" proposal, it too would do more harm than good.

Like the "strongest signal" proposal, changing the FCC's rules to require cellular handsets to scan the forward control channels of both the "A" and "B" band cellular systems when

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of Los Angeles County, would not be addressed by the "adequate signal" proposal. According to the Ad Hoc Alliance's September 17 *ex parte* submission, "[i]n the core and close-in suburbs, the portable handset user will find fairly good signal available on the street"; moreover, "the portable handset user is not disadvantaged in being able to access and use those [core urban and close in suburban] portions of the cellular network." *See* August 19,1998 Trott Report at 4, 2.

[9] August 19, 1998 Trott Report, at 3.

calling 9-1-1 would increase the likelihood of blockage; diminish the benefits of "enhanced 9-1-1" service by increasing the number of calls that the serving switch could not validate; remove incentives for carriers to deploy advanced location features as a way of differentiating themselves in the market; and increase call set-up time, causing users, particularly in an emergency situation, to abort the call attempt and redial, over and over again.[10]

As the August 19, 1998 Trott Report observes: "a cellular call involves four frequencies to complete a call: Forward Control Channel; Reverse Control Channel; Forward Voice Channel; and Reverse Voice Channel." Trott Report, at 4. Citing Dr. Lee, the Trott Report states that "[t]he definition of portable coverage is based on all four frequencies being above a given threshold level." *Id.* Since the presence of an "adequate" forward control channel signal level measured exclusively by the handset is independent of, and wholly separate from, the network interactions needed to assign voice channels and complete the call, and because the "adequate signal" proposal measures only one of the parameters that are used for wireless network design and call completion, it should be rejected by the Commission.

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[10] *See* TIA Committee Correspondence, Attachment 1 hereto.

The Ad Hoc Alliance now argues that there should be an "adequate" forward control signal (as defined by the August 19 Trott Report) in urban and close-in suburban areas, so only rural and outer suburban areas, where cells are more distant, will be affected by its proposal. However, these rural areas also will experience the network blockage and diminution of enhanced 9-1-1 features associated with the "strongest signal" proposal.[11] As CTIA has noted throughout this proceeding, the fundamental problem with any proposal that is based only on the handset's measurement of the signal strength of a cellular system's forward control channel is that the forward control channel, by itself, does not indicate whether an emergency call will go through.

TIA now has examined this issue and has reached the same conclusion. However, TIA also concluded that there is a better solution to enhancing the completion of analog cellular calls which TIA describes as "Automatic A/B Roaming."

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[11] Since most calling in rural areas is associated with interstate highways and other major roads, rural cellular systems are clustered along the roadways. There is no reason to assume that blockage and the other problems associated with the Ad Hoc Alliance proposal will be any less of a problem in these areas.

III. "AUTOMATIC A/B ROAMING" - THE TIA ALTERNATIVE

As noted above, in response to the SRD submitted by CTIA, with the WEIAD's endorsement, TIA, in an open process, conducted a review of the "strongest signal" proposal as well as other methods of enhancing analog cellular emergency call completion. The results of this review are attached hereto as Attachment 1.

The most significant finding to come from the TIA's review is stated on the second page of Attachment 1:

> such mechanisms as the commonly available A/B programmability of wireless handsets offers another means by which to improve 9-1-1 call completion rates. In fact, such an approach can be implemented in a fashion that is referred to as "*Automatic A/B Roaming*" whereby the handset overrides any "local" programming of the handset (*i.e.*, subscriber programmed, preferred carrier only) and seeks a non-preferred carrier in the event the preferred carrier is unable to process the 9-1-1 call attempt.
>
> Attachment 1, at 2.

As TIA indicates, "Automatic A/B Roaming" can be implemented within existing standards and is compatible with present network registration and control procedures and functions.

CTIA endorses this proposal, and notes that a handset with such a feature is already on the market.[12] No rule change

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[12] The Audiovox cellular phone scans the preferred and then the non-preferred carrier only when the preferred carrier is not available. *See* letter from Paul Wilkinson,

was required to produce and bring this product to market. Instead, Audiovox developed this feature to better meet consumers' needs, just as economic theory would predict in a competitive market. And unlike the Ad Hoc Alliance's proposal, Automatic A/B Roaming promises to enhance the overall completion of wireless calls to 9-1-1.

IV. THE AD HOC ALLIANCE HAS NOT MET ITS BURDEN

In a July 17, 1998 ex *parte* submission in this proceeding, TruePosition enclosed a twelve page legal analysis of the strongest signal proposal prepared by Willkie Farr & Gallagher. The legal analysis points out that the proponent of a new government requirement must carry the burden of proving that the requirement is both necessary and cost effective. The legal analysis, citing Home Box Office, Inc. v. F.C.C., 567 F.2d 9 (D.C.Cir. 1977), notes that "regulation perfectly reasonable and appropriate in the face of a given problem may be highly capricious if that problem does not exist."

Audiovox Communications Corp., to Jonathan Linkous, Ad Hoc Alliance (June 2, 1998) (attached hereto as Attachment 3). The Commission should note that the Ad Hoc Alliance conducted field trials with the Audiovox handset and could not distinguish the performance of the Audiovox phone's "Automatic A/B Roaming" from its own "strongest signal" proposal. *See* Ad Hoc Alliance June 22, 1998 *ex parte* submission in this proceeding.

The Ad Hoc Alliance has cited two tragic anecdotes in the course of its advocacy efforts. The first of these tragedies involved Ms. Marcia Spielholz, who alleges in a lawsuit filed against her cellular carrier that she was unable to reach assistance during the course of a car chase and assault. As noted above, the Ad Hoc Alliance's own expert report now concludes, in the course of supporting the new "adequate signal" proposal, that the available cellular strength is "high" in core urban and close-in suburban cells. August 19, 1998 Trott Report at 4. Accordingly, the Ad Hoc Alliance now focuses its attention on rural areas, and in particular, the second of the two tragic anecdotes, a terrible accident that claimed the lives of the Lechuga family.

The record establishes that the Lechuga family's vehicle left the road in a rural area, and the family did not reach 9-1-1 with its handheld cellular phone. The actual wireless call records associated with this incident have been placed in the record of this proceeding by the Ad Hoc Alliance. The very existence of these records disprove the Alliance's claims, and demonstrate that the Lechuga family's handheld cellular phone was able to successfully communicate with the serving carrier's system.

The only way detailed call records could be generated by the serving carrier was for the handset used by the Lechuga

family to be within the range of the nearest base station of their carrier. While it is true that the power level of the forward control channel of an analog cellular system can (indeed, must) be tuned to define the cell's borders and limit interference with adjacent cells, the maximum signal strength of a mobile station's reverse control channel is the same as the maximum signal strength of the mobile station's reverse voice channel. Put simply, if a portable cellular handset can transmit its MIN/ESN information and dialed digits to the carrier's base station over its reverse control channel, the handset can use an equally strong signal to transmit on the reverse voice channel. Based on an analysis of the call records, a more likely explanation of the Lechuga tragedy is that the family mistakenly dialed non-dialable numbers.[13] The records clearly indicate that the Lechuga family dialed "1911", but as the Ad Hoc Alliance concedes, "1911" was not a dialable number on the Lechuga family's preferred system.[14]

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[13] The Lechuga family's confusion documents the need for the FCC to assert its jurisdiction over numbering resources and adopt 9-1-1 as the uniform national emergency number.

[14] *See* Ad Hoc Alliance *ex parte* submission dated June 5, 1998. Moreover, since the Lechuga family never dialed 9-1-1, neither the strongest, nor the adequate, signal proposal would have applied to their situation.

must resolve the ambiguities CTIA and its members have identified that are impeding the implementation of wireless E9-1-1 service.

Although the Commission did not seek further comments on these issues, each of the subjects listed above are standing in the way of wireless E9-1-1 service. The Lechuga family dials a nondialable number rather than 9-1-1 and fails to summon emergency assistance; every day in Washington D.C., thousands of commuters cannot use their wireless phones to reach 9-1-1 because the United States Park Service continues to refuse site wireless antennas within Rock Creek Parkway and other federal parkways; uncertainty over the scope and cost of liability protection chills the provision of E9-1-1 service in California; and E9-1-1 service is likely to be implemented successfully on a nationwide basis only if the ultimate control over technical choices is retained by wireless carriers. CTIA urges the Commission to act now on each of these matters.

VI. CONCLUSION

For the reasons set forth above, the Commission should reject the *"adequate signal"* proposal first advanced by the Ad Hoc Alliance on September 17; accept the recommendation of TIA Engineering Committee TR 45, and call on the wireless industry to implement *"Automatic A/B Roaming"*; and most importantly, complete its work on the really critical issues in this proceeding that are impeding the availability of wireless E9-1-1 services.

Respectfully submitted,

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October 7, 1998

ATTACHMENT 1

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

COMMITTEE CORRESPONDENCE

Please reply to:

John A. Marinho
Chair, Engineering Committee TR45
c/o Lucent Technologies
67 Whippany Road
Whippany, NJ 07981

September 24, 1998

Mr. Art Prest
Vice President for Science and Technology
CTIA
Suite 200
1250 Connecticut Avenue NW
Washington, DC 20036

Re: "Emergency Service Call Completion"

Engineering Committee TR45 appreciates the opportunity to further correspond on the issues of Emergency Service Call Completion particularly as it relates to the concept of "Strongest or Adequate Signal" strength. The attached material represents a consolidated set of comments from the September 2-3, 1998 and previous TR45 meetings. These comments are based on materials pertaining to "Strongest Signal" including the TROTT Reports and the report to the FCC from the WEIAD as well as the CTIA Standards Requirements Document (SRD) for 9-1-1 Call Completion.

The Committee's review of the materials conclude that the mechanisms currently defined in standards are superior to the "Strongest Signal" proposal and that standards development activities related to this proposal are not warranted. Further, it should be noted that signal strength is not an adequate measure of system quality, as it is only one of many parameters that are used for wireless network design and call completion. The question of 9-1-1 Call Completion rates must be considered on an end-to-end basis to achieve the requirements outlined in the SRD, or for any overall improvement to today's system.

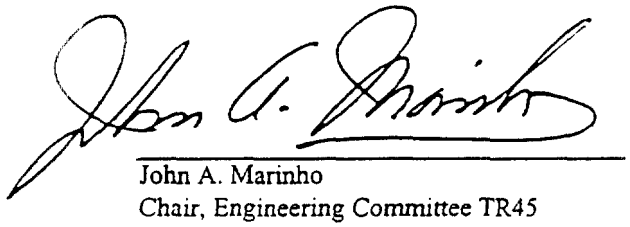
As indicated in the August 22, 1998 correspondence from Subcommittee TR45.2, call completion for emergency services is fairly deterministic and the probability can be increased by operational and implementation approaches based on existing standards capabilities including implementation of Priority Access and Channel Assignment (PACA).

Additionally, the correspondence from Subcommittee TR45.1 indicates that such mechanisms as the commonly available A/B programmability of wireless handsets offers another means by which to improve 9-1-1 call completion rates. In fact, such an approach can be implemented in a fashion that is referred to as "*Automatic A/B Roaming*" whereby the handset overrides any "local" programming of the handset (i.e., subscriber programmed, preferred carrier only) and seeks a non-preferred carrier in the event the preferred carrier is unable to process the 9-1-1 call attempt. Such "*Automatic A/B Roaming*" can be implemented within existing standards and is compatible with present network registration and control procedures and functions. Relative to digital technology, the attachments indicate that the standards support similar capabilities for an integrated network approach in meeting the requirements for improved 9-1-1 call completion rates.

The committee continues to study the requirements set forth in the SRD, but would solicit CTIA's views on the cited capabilities.

Please do not hesitate to contact me should there be any questions or clarification needed.

Yours truly,



John A. Marinho
Chair, Engineering Committee TR45

Copy to: TR45 Subcommittee Chairs
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TELECOMMUNICATIONS INDUSTRY ASSOCIATION

COMMITTEE CORRESPONDENCE

August 21, 1998

Cheryl J. Blum
Chair, TIA TR-45.2
Lucent Technologies
1000 E. Warrenville Road
Naperville, Illinois 60566

Mr. Ed Hall
AVP for Technology and Network
CTIA
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Washington, D. C. 20036

Dear Ed,

TR-45.2 has reviewed CTIA's SRD on Emergency Service Call Completion and the following comments are provided based on initial review.

1. Call completion from a network perspective is a fairly deterministic process. Wireless systems are engineered to provide the best level of subscriber service for all calls. Call completion probabilities for emergency services can be increased by increasing the size of the trunk groups toward the emergency services network or by providing diverse routing. Either of these solutions is purely operational and requires no standardization.

   It should be noted that the network call completion probability can be increased by the mobile station not initiating a new system registration during the emergency call origination process. This means that a preference should be given to the system where the mobile is currently registered when a user attempts an emergency service call.

2. We agree that the call setup time should be minimal, but we disagree as to the example time of 2 to 5 seconds cited. This objective can only be made when ISUP signaling is used for a mobile station that is already registered with the serving system. Normal network signaling to authenticate the mobile station and to obtain a valid mobile directory number for callback can add several seconds to the objective as can the use of Enhanced MF signaling.

3. Access to a clear voice channel is within the domain of the base station and mobile station and is not a function controlled by TR-45.2.

4. Ability to communicate clearly with the 9-1-1 call taker again is within the domain of the base station and mobile station and is not a function controlled by TR-45.2.

5. The selection of a radio channel again is within the domain of the base station and mobile station and is not a function controlled by TR-45.2. Remember the note under number 1 above for possible impact by selecting a channel in another system.

6. Phase I features and capabilities, i.e., the reporting of a callback number and the serving base station, cell site or sector, should not be impacted by changes for 9-1-1 call completion. Phase

II features and capabilities, i.e., the reporting of latitude and longitude, should not be impacted by changes for 9-1-1 call completion, provided that the emergency service caller uses the system for which it has a subscription. Some position technologies may be available only on the system(s) where the emergency service caller has a subscription or service arrangement. When a call is made from other systems, position information may not be available especially for mobile based and mobile assisted position determining technologies. Position information may not be available for non-subscribers, users without a roaming agreement, international roamers, non-initialized mobile stations. These constraints have little to do with 9-1-1 call completion except that 9-1-1 call completion may negatively impact the service by allowing or forcing an emergency service caller to a system where the caller is not a subscriber (or a valid roamer).

7. Applicability to all air interfaces may have an inadvertent side effect of increased call setup time, or decreased probability of position determination; if a mobile station is forced to originate the call on a system other than the current serving system.

8. Priority Access and Channel Assignment will interwork with emergency service calls as currently specified. However, it should be noted that PACA requires modifications to mobile stations and base stations. PACA may also require special training for the emergency service callers that may prove prohibitive.

It should be clear from the above commentary that the solution for choosing an air interface channel should avoid choosing a channel from any system other that the system that the mobile is currently registered. It is recognized that normal channel selection algorithm does a re-scan during the origination process and such a re-scan may select a channel from another system. This selection is considered to be desirable to choose an acceptable voice channel even though it does cause some delays to processing the call. The objectives of the SRD may be best met if the 9-1-1 call completion algorithms for channel selection were invoked only when the normal channel selection algorithms fail to select a usable voice channel.

Blindly selecting the "best" or "strongest" control channel or voice channel will increase the probability of forcing the call on another system necessitating the normal authorization and registration processes. These processes will, as previously noted, delay the call and may decrease the probability of determining the position of the emergency service caller.

Solution 4, to preprogram all mobile with alternating default SIDs, has no impact to network provisioning or network operations, so this solution should be deployed independent of any other solution. This solution is required to achieve a balance in system accesses for emergency service calls from non-initialized mobile stations.

In conclusion, 9-1-1 call completion should not require any standardization of MSCs, HLRs, or network signaling by TR-45.2. However, TR-45.2 should remain involved in evaluating the network impact of solutions by the air interface groups.

Regards,

Cheryl J. Blum

Cheryl J. Blum
Chair, TIA TR-45.2

Copy to: J. Marinho, Chair TR-45
All TR-45 Subcommitte Chairs

ATTACHMENT 2