

1 accuracy in rural environments, specifically for rural
2 environments? What is the accuracy close to a cell site,
3 just close to the cell site of the design category? So I'd
4 like to hear from each one o the network overlay vendors if
5 they will be providing that type of document.

6 MR. KAHAN: This is Dennis Kahan from SigmaOne. I
7 have not seen this, your particular document, but we would
8 be happy to provide that type of information.

9 MR. CHADNEY: Excuse me, this was a CDG test forum
10 that actually put this paper together. SigmaOne was
11 actually invited to attend these conference calls in putting
12 this together. I will say that is the case for every single
13 network overlay vendor.

14 MR. KAHAN: I appreciate that. I personally have
15 not seen your document. We would be happy to provide
16 information, a base on that kind of data.

17 MR. MALONEY: This is John Maloney from KSI. We
18 also have not yet participated in any official CDG tests.
19 Our tests so far have been on a relatively small scale.
20 We're currently in negotiations or discussions with major
21 carriers for large tests at the end of the year. But our
22 tests have been conducted, say, for the last nine years in
23 the area of our operations and the statistics have been
24 calculated and reported as in the docket now.

25 We are expecting to be externally audited and to

1 operate in the way in which GTE and others have written test
2 plans, as well as CDG.

3 DR. HILSENATH: Oliver Hilsenrath from U.S.
4 Wireless. I'm surprised we know about the requirement. We
5 were part of the forum that set the requirement. We're part
6 of the CDG test group at Bell Atlantic and we're testing
7 according to that document and most of that information is
8 available. Excerpts I tried to present today in my
9 presentation.

10 MR. STILP: Lou Stilp, TruePosition. TruePosition
11 is participating with the CDG in developing a network based
12 location test plan. P.J. Louis and Matt Ward, who are
13 standards people, are involved in that, so I think Mr.
14 Chadha is aware of that.

15 TruePosition actually does a fair amount of
16 testing under the condition, although I'll admit it is with
17 amps and TDMA phones, which have differing characteristics
18 than CDMA near the base station. When we deploy a network
19 and the network is displayed over in the corner there in the
20 real time, the 125 cell sites in Philadelphia and the 70 in
21 Houston all have phones not just at the cell site, but
22 inside the cell site. One of the ways in which we monitor
23 performance of the system is that every ten minutes, in some
24 cases, or every 30 minutes, these phones register and they
25 are monitored 24 hours a day.

1 Now, a phone in the cell site has the interesting
2 characteristic that it is directly under the antenna beam of
3 the cell site, which makes it in possibly the worst position
4 for that cell site. And then, of course, by being in one
5 cell site, it is the maximum distance from all the other
6 cell sites that surround it, and so we think it's actually
7 kind of a worst case placement for a phone, when one
8 considers how network solutions work.

9 And so, we recognize that CDMA phones perform a
10 little differently and that the power gets turned way down.
11 And we will admit that with CDMA network based solutions,
12 there is an area that surrounds the cell site, very, very
13 near to the cell site, where it's possible that that phone
14 cannot be heard in spite of the 30 db processing gain that
15 we have, that it cannot be heard at other base stations.

16 And so, we have actually produced coverage plots
17 that show that in something like 99 percent of the area of
18 the CDMA system, we believe the phone can be heard at three
19 and two different sites and location can be calculated very
20 near to the cell site. There is a point where it will fall
21 off. But amps and TDMA have been very successful in those
22 environments.

23 MR. CHADNEY: Okay, I would just like to reinforce
24 to finish this particular question, because like I say, I've
25 got two others, that all of these network overlay vendors,

1 as far as I'm aware, were aware of this document. I have
2 not personally seen anything that conforms to that test plan
3 from any network overlay vendor now. And this is one month
4 after AirTouch put out an FRI specifically requesting
5 accuracy information under various conditions.

6 MR. SUGRUE: What is the significance of being
7 near the cell site?

8 MR. CHADNEY: That brings me onto my second
9 question. The situation with being close to a cell site for
10 CDMA is the fact that CDMA systems self-interfere with one
11 another. It interferes with itself, and the principle
12 behind this is that what CDMA is trying to do is be
13 spectrally very efficient and that's why you have a one to
14 one reuse. And what that means is, if you're reusing the
15 frequency in every cell, it means when you're close to a
16 particular cell site, other sites that are neighboring can't
17 really see that mobile because, obviously, if it could do
18 that particular mobile which is being served by the cell
19 site that it's close to, is going to be interfering with
20 those surrounding cell sites.

21 And that's why these TDOA systems and AOA systems
22 inherently have an advantage with amps, because amps is
23 fundamentally spectrally inefficient and therefore, as we
24 move to -- and this isn't just CDMA, this is going to apply
25 to GSM as well and also with TDMA, when they start using

1 things like power control based on error rate. Spectrum
2 efficiency is going to get a lot better. So I just have a
3 general question as to, you know, what is the performance
4 for these, of these systems, when you have very high
5 spectral efficiency and, say, one to one reuse in the
6 system?

7 MR. MALONEY: I might also interject some
8 experience we've had recently. Actually, over the years,
9 we've seen performances change significantly. We've noticed
10 in recent times that like CDMA transmissions which we are
11 not currently at this instant processing, and others are,
12 with TDMA, we find aggressive power control going on very
13 rapidly down to Level 10, when the phone gets near to a cell
14 site.

15 And so, the power control issue is not just a CDMA
16 issue. I mentioned earlier that our solutions do include
17 single site processing and have, and they integrate whatever
18 information we get. We're surprised to find, in fact, that
19 it doesn't come into play more often. As Lou mentioned, and
20 Oliver, if a call goes through, you get a location. And
21 even more so, the signal processing gains that anybody can
22 institute in their signal processing apply to the
23 infrastructure approach as well as any other, and with the
24 signal processing gains, we get that perfectly usable,
25 location related measurements at multiple sites, even though

1 the communications cannot be established between all those
2 sites. The communications only have to succeed to a single
3 site. The location calculations can still be successfully
4 performed at multiple sites.

5 MR. STILP: But there's an interesting balance to
6 consider here and that is that the closer that a phone gets
7 to a cell site, even if the power is getting turned down
8 such that a three-site or two-site solution can't locate it,
9 the closer it gets to the cell site, of course, then the
10 more valid Phase I information is, right, because by
11 definition, you're right next to the cell site. So it's not
12 like there is no solution at all.

13 As Mr. Soliman pointed out, there is going to be
14 areas and situations in which every location technology has
15 a weakness. And with CDMA in particular, there's no
16 question that very near to the cell site, but where Phase I
17 is most valid is where it becomes most difficult for three
18 site and two site solutions. But we emphasize we're
19 talking, you know, in many cases, hundreds of feet from the
20 cell site and so that is how close can be.

21 MR. CHADNEY: Okay, I would just like to again
22 follow up on this specific point in that I haven't seen any
23 data that has actually quantified how big that particular
24 area is. And again, this is in light of AirTouch putting
25 out an RFI specifically on that information within the last

1 couple of months.

2 So my third question relates to the antenna arrays
3 on the base station where these measurements have been
4 taken. As probably everybody in this room is aware,
5 carriers are under a lot of pressure these days to reduce
6 the unsightliness of their sites. They're under a lot of
7 pressure not to put up more antennas. Some CDMA, some
8 carriers now have PCS spectrum. For instance, Air Touch in
9 Los Angeles, we already have antenna phones up, amps and
10 CDMA. And one of the ways that we're looking at to try and
11 mitigate the effect of having to put up more antennas for
12 PCS systems and generally, sort of smaller cell sites as we
13 continue to expand on network, is to use cross-polarization.

14 And in these situations, we have antenna clusters
15 that are very small. You basically have three antennas for
16 separate sites, but just strung on the top of a pole, which
17 is very different to what we see now with a lot of cellular
18 antenna sites, where we have basically some cases, six
19 receive antennas, typically sort of three meters apart or
20 so, strung around the triangle. And I just wanted to ask
21 the network overlay vendors to what extent their tests have
22 been done with cross-polar antennas in a configuration that
23 is, say, representative of equipment that is now beginning
24 to be rolled out extensively by carriers? And that is, you
25 know, the pole, single pole with three cross-polar antennas

1 on the top of it, back to back.

2 MR. KAHAN: SigmaOne has not tested that
3 configuration.

4 MR. STILP: I guess two comments on that for
5 TruePosition. One is, of the approximately 200 cell sites
6 we're now deployed, there's not a single antenna that was
7 added to any one of them. So we're using in all cases, the
8 existing antennas on the cell site.

9 Specifically with respect to cross-polarize, we
10 only did one set of testing, quite honestly, and that was
11 four years ago in the City of Philadelphia, where we were
12 comparing the results of spacial polarization, which is what
13 most cell sites currently are, to cross-polarizations, which
14 is what Mr. Chadney is asking about right now.

15 And there's actually a minimal -- in those tests,
16 which admittedly were four years ago, we saw minimal
17 difference. The reason you do this, of course, is to help
18 combat relay fading, so presumably the antenna
19 configurations you would deploy in the future would have at
20 least the same effect for relay fading as your existing,
21 spatially polarized ones.

22 MR. CHADNEY: Right, one of the points I was
23 getting at there is that, particularly for systems that are
24 exploiting time difference of arrival and not angle of
25 arrival, if you're relying on that spacing between diversity

1 antennas, to give you some type of time difference of
2 arrival, then that's going to go away if you've got cross-
3 polar antennas.

4 MR. STILP: We do not rely on the spacing of the
5 antennas. We rely on it for the same type of multipath
6 mitigation that the base station is looking for, as well.

7 MR. KAHAN: SigmaOne also does not rely on that
8 spacing for the issues that you raised, at all.

9 MR. SUGRUE: If I could just interject, if you
10 don't mind, Tony, so your answer to the question is there's
11 no antenna impact from implementing your system, at the base
12 station?

13 MR. STILP: That is correct.

14 MR. MALONEY: Certainly, the TDOA approaches are
15 applicable with just a single omni direction or a single
16 cluster element. The directional approach is used so-called
17 phase arrays or multi-element rays, and they depend upon
18 some spacial separation among the receiving elements.

19 The antennas we have used have not even been
20 connected with a cellular system. As I mentioned, we've
21 been operating totally stand alone or as an entirely
22 independent overlay. Our antennas have used elements that
23 are about halfway length apart, so they're about that far
24 apart. They occupy about -- and, about that high. So they
25 aren't very big, and they would fit physically within the

1 same volume or as a part of a cross-polarized antenna. But
2 you do need some directional sensitivity in order to exploit
3 angle information.

4 If you're going to take advantage of both angle
5 and time information, then you need some directional
6 sensitivity, and our antenna elements are very small and
7 would fit very easily in the volume that is provided.
8 Certainly with the spacial diversity, you can use the
9 antenna elements that are out there, and Oliver certainly
10 has been doing that, too, also exploiting the spacial
11 separation of the elements.

12 DR. HILSENATH: Well, with the ease with which we
13 were able to lay out our equipment with existing cellular
14 operations was primarily because we didn't require any type
15 of changes on impact to the variety, whole variety of
16 antenna arrays that cellular carriers are using. And I
17 would say that in general, I haven't seen two identical
18 sides between the several attempts that we have rolled out
19 throughout the country.

20 So there is a site design issue that comes with
21 location as well as with any type of wireless operation that
22 would be rolled out. We didn't see limitations between that
23 spread of designs to our system, but it should take into --
24 or should be clear that in rolling out the nationwide
25 location capability, there will be site design issues, the

1 same type that carriers are experiencing all the time.

2 It's a natural for network design, although I
3 would say that in our experience, we were able to conform
4 with whatever the carrier had, in most cases, except of
5 maybe cases in which there was a singles to contend on, on
6 which we needed to add some.

7 Otherwise, we operated with very sectorized
8 antennas with on site, with rural type of on site. I do not
9 anticipate that the cross-polarization issue is going to
10 impact us, although we haven't ever seen a site like this as
11 Lou said. And the major parameter that is important to U.S.
12 Wireless in our strategy is more the site layout aperture,
13 rather than the way the antennas are organized. As long as
14 there's a spread of three feet of one meter, we don't
15 anticipate problems in rolling out the system.

16 MR. HATFIELD: We probably need to -- I was going
17 to come back to that. Go ahead, please.

18 MR. NIXON: Jim Nixon, Omnipoint. One issue that
19 I think will become more apparent as we move into Phase II
20 is the impact of zoning restrictions on tower sites.
21 There's a lot of comment in the record that network
22 solutions have problems near the fringes of their coverage
23 area, and I think that we need to also consider the impact
24 of zoning prohibitions and county-size areas or large areas
25 that would effectively create a blank area in which the

1 carrier would never be able to comply, using a network
2 solution, given the zoning limitations. And I'd like to
3 suggest that at some point we consider how compliance would
4 be measured in those situations, if it can be demonstrated
5 that that's what the impact is.

6 MR. SUGRUE: And just to pick up on what Mr.
7 Birchler said earlier, this is situations where there is a
8 communications link. It's a conditional probability, but
9 unable to establish the location.

10 MR. NIXON: Correct, but at the edge of the
11 coverage area, if you're relying on three antennas to make
12 your location calculation, you're going to have more trouble
13 getting those three antennas, depending on a whole range of
14 variables that we have here.

15 A zoning area, where you essentially have in the
16 middle of an otherwise good footprint, a large hole that's
17 been created by zoning prohibitions, you'd be artificially
18 creating a boundary of the network, where you may not be
19 able to get sufficient antenna connections or communications
20 to actually determine your location.

21 If you had sites within that area, the problem
22 will completely go away, because it will then be within
23 another good footprint. So just a consideration that
24 another impact of the zoning issue.

25 MR. KAHAN: If I could respond to that, because

1 it's actually a very good point that Mr. Nixon is making.
2 First of all, when we talk about fringe areas, there's two
3 kinds. One is, the fringe of one system is frequently the
4 beginning of another, and so, where one carrier is hitting a
5 fringe, there's obviously the opportunity on the other side
6 to complete the loop, complete the circle, so to speak.

7 The second thing to consider is that location of
8 receivers are not full base stations and that the antennas,
9 if one had to add kind of an auxiliary receiver somewhere,
10 it does not have the same kind of antenna mounting and all
11 the power requirements and the cell site requirements that a
12 standard base station does. And so, it is entirely possible
13 to be creative in finding solutions for truly fringe areas
14 where there is no cellular coverage beyond that, in
15 completing the circle with auxiliary receivers. I mean,
16 there's a percentage of cases where that might be the
17 creative solution that one applies.

18 MR. SUGRUE: The cellular receiver would be there
19 just to provide the location?

20 MR. KAHAN: Yes, it would be there solely --
21 location systems are receive-only. They don't transmit, and
22 so if I were going to mount an antenna only for receiving,
23 I'd mount a much smaller, very different antenna than one
24 might use for a full blown cell site. So the antenna can be
25 much smaller, much more unobtrusive, perhaps, than another

1 type of tower, such as a paging tower, an FM tower. And
2 again, it would be there just to complete, you know, the two
3 site or three site solution needed for that fringe area.

4 MR. NIXON: And I would suggest that that would be
5 good for those solutions that don't necessarily need to have
6 a one to one relationship between sites and antennas, but in
7 order to maintain technological neutrality, I think we need
8 to also consider the other perfectly valid solutions that
9 may not require just a separate, or would not be able to use
10 a separate location.

11 MR. MALONEY: I also would like to point out, we
12 never rely on three antennas. There's a significant
13 misunderstanding. People have claimed three are needed.
14 They are not needed. We have produced results from a single
15 site. Oliver does. We produce them from two sites
16 routinely, and we operate at distances that people can't
17 conduct communications at. So it's not always clear, and I
18 certainly agree with Lou that the antennas for location are
19 not obtrusive, big, etc. Ours are quite small.

20 MR. NIXON: There are a number of zoning boards
21 that would probably disagree with that.

22 MR. SUGRUE: Maybe we'll make it an over the air
23 reception device and just -- no, just kidding.

24 MR. SMITH: I'm Tony Smith of Nortel. I'd just
25 like to add to something that Mr. Nixon said and, perhaps,

1 also indirectly, to a point Ron Rudokas made. I guess I'm
2 concerned about some of the economics. You know, you can
3 always achieve accuracy and you can always achieve the right
4 yield if you spend enough money.

5 We do a lot of proposals for various carriers such
6 as Nortel Networks. One of the things I'm seeing is a large
7 amount of highway build out, which is quite linear coverage.
8 Certainly, the opportunity of triangulation is not there.
9 While it may be true, somebody mentioned a number, that 5
10 percent of cells in a mature cellular network, only 5
11 percent are paired and in the remaining cases you could have
12 triangulation, that statistic would not be true of an
13 evolving network, as yet immature.

14 So we're seeing a lot of highway build out where
15 you're going to have pairs of cells. You're not going to be
16 able to triangulate, but if you do, your economics will be
17 shattered, adding potentially 30 percent incremental cost to
18 achieve that build out economics. That would not be
19 practical, and Mr. Rudokas also makes the point about rural
20 coverage, where he may only have a single cell.

21 I think what we need are yield estimates and
22 accuracy estimates for one cell situations, for two cell
23 situations and for three cell situations. And I think we
24 need to have those published and I think we need to have the
25 test conditions clearly articulated, so that we understand

1 the antenna heights, the antenna types, etc., so that we can
2 take some of the myths out of -- or misconception out of the
3 situation we have.

4 MR. KAHAN: Dennis Kahan from SigmaOne. SigmaOne
5 does use a hybrid system, which allows us to develop either
6 TDOA, if there's an antenna problem, or we can deploy AOA,
7 or we can deploy both of them. Because of the fact that we
8 use two technologies in that highway situation, in
9 particular, when you have two technologies, you can use AOA
10 from most of the antenna sites that are receiving the
11 signal, plus a single Time Difference of Arrival
12 measurement, which creates a hyperbolic line which
13 intersects at approximately 90 degrees to the vehicle or the
14 phone that you're trying to track. So we don't have a
15 problem there.

16 What is very interesting about the tenor of the
17 conversation is the absolute insistence or the desire on the
18 part of carriers and infrastructure manufactures, that I
19 think is good, to locate every single phone that is out
20 there. What's fascinating to me is that when you look at
21 the network based systems, when you deploy one and I'll just
22 use an example -- you deploy in Los Angeles County, you
23 deploy and you cover 1.5 million or two million subscribers
24 on day one. How long is it really going to take for the
25 handset manufacturers to deploy and cover 1.5 million

1 subscribers, since, after all, that is the goal that
2 everyone is trying to reach?

3 The thing that I find disappointing is that the
4 carriers in particular do not want to commit to covering all
5 of their subscribers. They either want to do it in good
6 faith or they want to have very loose deadlines. Those
7 kinds of things don't jive to me. Either you care about all
8 of them and you care about them all on day one, or you
9 don't. And to try and attack the network based systems and
10 say, well, the network based systems are not perfect, they
11 are not perfect. But to attack them to say that you're
12 missing 2 or 3 percent of the coverage or 1 percent, or you
13 can't get someone very close to a cell site may absolutely
14 be true. And the network people are always working to
15 improve their systems.

16 But look at the reverse side of the coin. If you
17 look at what NENA is trying to do, for example, and you try
18 and analyze the absolute desire to, as quickly as possible,
19 cover all of your amps customers, cover all of your TDMA
20 customers, GSM customers or CDMA customers and do that on
21 day one, how many more lives will you save than if you
22 implement a waiver regulation that basically says, well, we
23 believe in rapid deployment, but don't hold us to it. We
24 want to do it in good faith.

25 I think there's a real big dichotomy between

1 trying to nail network people on deficiencies on their
2 systems, and then at the same time holding up your hands and
3 saying, well, we're going to deploy when the marketplace
4 let's us.

5 MR. SMITH: I would really like to respond to that
6 comment, because I don't think it's a question about who's
7 trying to get who. It's a question of trying to get to the
8 facts. If we, as equipment suppliers, and I'm speaking for
9 Nortel Networks, if we are to support a given approach, it
10 is because of two reasons. One, because we believe it
11 works, it can comply with the FCC requirements, and it's
12 been proven to be compliant, and number two, because our
13 customers believe it will comply to their needs, as well.

14 So in a sense, we're the piggy in the middle.
15 We're not out to get anybody. We're simply asking for the
16 right evidence to be put on the table so that we can all
17 make sensible decisions.

18 By the way, I want to emphasize another point.
19 Given the even horizon, and I'm taking October 1, 2001 as
20 being real, given that some of the solutions require self-
21 site modifications, given that standards will not be issued
22 until Q1 of next year, it's about time we got those details
23 out on the table so that we can actually, by the time we
24 have the standards, make sensible decisions to start moving
25 forward with solutions to the marketplace.

1 MR. MILLER: Bob Miller, NENA. I'd like to go
2 back to the first question that the deputy chief said, if
3 anyone remembers it, are there any other solutions? There
4 will always be other solutions and today we're talking about
5 good solutions, better and best. And some of these may be
6 better, some may not be as good. Some may be less, some may
7 be more.

8 But you know, we're here. This is kind of a
9 subset of what 94-102 is about. And I remember the area of
10 the meetings we had in '94 when we drew up the weight paper,
11 the CTI in the industry. And the whole goal was to make
12 wireless 911 as compatible with wire live and PBX as
13 possible. And several states have demonstrated systems,
14 some even demonstrated them within a year of the ruling.
15 And we have people that say, we can't do this thing in 2001.
16 People have asked for waivers that haven't tried things.
17 And there are companies that have made things. There may be
18 companies that can do it better. We all hope we can get
19 into a Phase III.

20 But you know, in the four hours that we'll spend
21 here today, I calculated 20,000 911 calls. I mean, we have
22 74 million subscribers, we have 110,000 calls a day. It's
23 hard for me to wrestle with neutrality, but I can wrestle
24 with public safety neutrality. And who's going to answer
25 for these people, these calls, and we have to locate these

1 people. Let's keep in mind, it's not only a case of
2 locating them, it's what it's done to our PSAP when we spend
3 all this additional time trying to figure out where they
4 are. It pulls down our full service from wire line 911.
5 And I think we need to move forward.

6 I mean, the FCC has asked in these general
7 comments what they can do. I think we need to halt the
8 dates and move forward. And I'm sure we have a lot of good
9 handset technology that's going to come. Maybe some will
10 come by 2001, maybe some will come later. But I think we
11 have to really focus on public safety and move forward.

12 MR. HANNA: I'm going to refocus on some
13 technology issues here, at least Bob and I get into a tussle
14 here. One question, I guess, for all the manufacturers
15 here, the providers, there were different issues presented
16 here in terms of the time frame in which it might take to
17 answer certain calls at the PSAP. I guess the question for
18 each of the E-OTD providers would be whether the data you've
19 assembled so far represents calls that have come in from
20 cold starts, for the subscriber who has the phone in the
21 glove box, they pull it out and turn it on, or is that from
22 a tracking mechanism? Then there's a follow up to that, but
23 I'd like to have that question answered first.

24 MR. KAHAN: SigmaOne locates from cold starts. We
25 locate on the reverse control channel signal, which is a 100

1 millisecond burst in amps and it's somewhat shorter in TDMA,
2 about 20 milliseconds. So we locate instantaneously. We
3 don't even need the voice assignment to be done before we
4 know the location.

5 MR. BELL: Walter Bell from SnapTrack. We always
6 use cold start first fix in all of our test data.

7 DR. HILSENATH: So do we at U.S. Wireless,
8 testing a whole variety of handsets, in any type of
9 conditions, in buildings, outside buildings. And in
10 general, we're very open and we believe that we're one of
11 the largest players in the location developer community.

12 We encourage members of public safety to pay
13 visits to us and our colleagues here and to witness the way
14 they're being trialed while they're in conjecture.

15 MR. SOLIMAN: Samir Soliman from QUALCOMM. We
16 always position the phone during call set up or just after
17 call set up. And by definition, assisted GPS is a warm
18 start.

19 MR. CHADHA: Yes, this is Kanwar Chadha from Sirf.
20 As was said, in a wireless assisted environment, you really
21 never have a GPS cold start, because GPS cold start means
22 you have no information at all, whether satellites are
23 visible or whether they exist or not. Typically, cold start
24 in a wireless environment will be more like a hard start by
25 traditional GPS means.

1 In autonomous mode, you can have a cold start and
2 cold start or relatively warm start, and warm start time
3 will be about 38 seconds, compared to three to eight seconds
4 if you did a wireless assisted start.

5 I would also bring up one more question, I mean,
6 one more point referring to the previous speakers. I think
7 we need to keep the morality of the situation somewhat out
8 of it.

9 (Laughter.)

10 MR. CHADHA: I mean, we are not a socialist
11 country. We have to look at what makes economic sense and
12 we have to pick our technology based on, you know, not
13 saving the last life, but in the long run, where more lives
14 will be saved. And I think it's important to keep in mind
15 the accuracy achievable in the long run. GPS technology is
16 there today. It has been a proven technology. The key
17 question is not whether the technology is there or not. The
18 key question is whether you put it into the handsets or not
19 and that, to a certain extent, is determined by the
20 directions carrier dates, the directions FCC gives them.

21 It's very difficult to assume that in one day, you
22 will have 260 million or 270 million of U.S. covered,
23 suddenly with either network based or GPS based
24 technologies.

25 Infrastructure is more difficult to change than

1 handsets.

2 MR. BELL: This is Walter Bell from SnapTrack. I
3 just need to clarify the cold start, warm start. I think
4 we're getting caught up in semantics between a GPS
5 terminology and an emergency location terminology.

6 Nothing has been said that's wrong about warm
7 start and cold start, but I just need to clarify that part
8 of the tenant of the SnapTrack architecture is that the
9 server technology, the server architect provides warm start
10 type of assistance information to a cold start scenario. So
11 it is true that we are operating from a GPS perspective we
12 could put into a warm start mode because of this aiding
13 information that comes from the server. But to the
14 emergency locate perspective, it is cold start. The phone
15 could be off, the GPS equipment is all off. There's no
16 prior knowledge of location.

17 MR. STILP: I don't want Mr. Hanna going home
18 without knowing TruePosition locates its first attempt on
19 each call on the initial control channel burst and then will
20 switch over to voice channel tracking, so in two to three
21 seconds, we have location.

22 MR. HANNA: If I could do a follow up question,
23 though, several others in the room had the privilege of
24 being at the House hearing several months ago when the House
25 bill on Wireless 911 was passed and we now have Senate Bill

1 800 pending. One of the issues that was addressed in that
2 bill had to deal with privacy issues. I guess one of the
3 items I'd like to address from the various providers is the
4 ability, I guess, as to whether you are constantly locating
5 or you have the ability to locate a caller, you know, at
6 will, or is this solely on the activation of 911?

7 DR. HILSENATH: Yes, I would like to discuss the
8 topic a little bit. I think that there has to be a little
9 bit of a better understanding of what the network solutions
10 are going to do and what they're not going to do. There's
11 this feeling that there's going to be this nationwide
12 network that is now going to listen to everybody and locate
13 everybody.

14 However, the location overlay is able to track
15 radio events. Those radio events have to be identified by
16 somebody that will tip off a network like U.S. Wireless or
17 other people's network. Who, what is the identity of the
18 person that was assigned that channel? That function is
19 always performed by the carrier and we anticipate it will be
20 always performed by the carrier, as long as, for example,
21 that U.S. Wireless Network is out there, locating radio
22 events, the association of those events, with the subscriber
23 that actually made the call, it's totally in the hands of
24 whoever is controlling that identity, which is the switch.

25 So generally, there's no ability of network

1 solutions to dive into the privacy of the subscribers more
2 than any other type of solution. In general, there's one
3 place where our entire privacy needs to be safeguarded, and
4 not only location. It's identity, it's content and it's
5 location, and all of those events are being controlled by
6 the switch. As long as that function is handled well,
7 there's no difference in privacy handled by a network or
8 handset solution.

9 If I might take the opportunity of making another
10 couple of comments, I was actually very excited to hear at
11 what extent infrastructure manufacturers and carriers are
12 preoccupied by the fringe areas of location service, because
13 it means that it feels like there's commitment out here to
14 make it ubiquitous, to make it work everywhere. Highways,
15 fringes of service areas, it feels very good as a location
16 provider to feel this type of commitment.

17 It escapes me a little bit how can that be handled
18 with all that care by potentially not doing location
19 altogether and waiting a decade for that capability to roll
20 out in the market? So if we are, indeed, preoccupied with
21 how every highway is going to be covered, if every fringe
22 will be covered, how rural areas will be covered for
23 location, we should also think of the fact that if we steer
24 the wheel here the wrong direction, highways, fringes or
25 downtowns might not have location for the next decade.