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ATTACHMENT A

Non Recurring Cost Team
20-22 August 1997

DENVER FORUM
NRC ISSUES

Telecommunications Management Network

Fallout

Flow Through Data

Probabilities

"DRAFT"...PRIVILEGED AND CONFIDENTIAL
PREPARED FOR USE OF COUNSEL
IN PENDING LITIGATION

TELECOMMUNICATIONS MANAGEMENT NETWORK

ISSUE: Operational Support Systems (OSS) assumptions utilized in Cost Studies should align with Telecommunications Management Network (TMN) Architecture as specified in Bellcore Documentation, GR-2869-CORE, Issue 2, October 1996.

MCI / AT&T POSITION: Yes. In the end, TMN OSS compliant systems and processes will best deliver customer service requirements and support a competitive environment. It should be noted at the same time, that TMN compliant OSSs in themselves are only part of the "Forward Looking" architecture. A forward looking network with "Intelligent" Network Elements are critical in the effectiveness of the end to end "process flow" through the OSS.

SUPPORT: FCC direction for Local Competition indicates that a forward looking approach should be utilized when cost modeling the Network Elements and Provisioning Process. (FCC 96-325 First Report and Order, Para. 690)
It is now generally acknowledged within the Telecommunications industry that the most forward looking OSSs and INEs are those that are compliant with the TMN industry standard.
TMN not only provides for the automation and flow-through capabilities that exist today, but it goes beyond that to provide "interoperability of operations systems from different software vendors[1]."

OPINIONS: There does not appear to be a "complete" model that exists or can be built, consisting of system components that individually and when linked, meet TMN Generic Requirements noted above. With this in mind there is concern that the demand that Cost Studies reflect TMN compliant systems and process costs, will be supported by most jurisdictions.
It is also felt that we must continue to push for TMN compliant systems and processes in order to accomplish the fairest and most competitive environment that will benefit customers most in the long term.

ANTICIPATED ATTACKS: A demand for TMN compliant systems and process will be challenged and referred to as "vaporware", or conceptual futuristic design for OSS, the "next generation" of OSS. It will be argued that there are system components available today that are TMN compliant, and some are in place (e.g. EASE for Local Interconnection) and that it is the intention of the ILEC to build any new system according to TMN.

The ILEC will point out that their systems and processes are in line with FCC "forward looking" direction. They have been investing and are continuing to invest in their systems to stay as current as can be reasonably expected and have reduced manual intervention as evidenced by dramatic levels of staff reductions.

It will be argued that TMN is a relatively new standard and that they contributed towards the development. They will point out that it is totally unrealistic and financially irresponsible to expect the ILEC's to perform as TMN compliant.

Manual intervention will be required, much similar to that for the interconnection in the Long Distance interaction. Local competition is of greater complexity considering the extended number of elements that can make up the complete circuit. As such, when designs other than the very basic loop and service package are moved from the ILEC to the CLEC, flow through levels that one would anticipate in the TMN environment in a ILEC only local service delivery are stressed and will be reduced.

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1 Operations Support: The Next Generation, Bellcore Exchange Pub. Summer 1997, pp 12-15

WITNESS STRATEGY: Witnesses should support the assumptions that are built into the NRC Model. The OSS "legacy systems" architecture that currently exists within the ILEC industry is assumed and modeled in the NRC Model as opposed to TMN compliant systems, for the following reasons:

(1) the existing legacy OSS, when efficiently operated and maintained, provide automated and flow through functionality that is similar in nature to TMN compliant systems
   (a) all databases are updated on a timely basis and are consistent with each other
   (b) OSS are appropriately sized and electronically linked
   (c) OSS use front end edits to maximize the possibility that erroneous information is entered
   (d) OSS rely on the latest software releases and reside on high availability platforms.

(2) use of the existing OSS's for costing purposes is a conservative approach since some of the existing OSS's are not as robust as TMN compliant systems, and

(3) costs for TMN compliant systems are not readily available.

It should also be noted that while OSSs that are TMN compliant will function best with TMN compliant technology, efficient technology assumptions are not necessarily all TMN compliant.

SUGGESTED TESTIMONY QUESTIONS & ANSWERS:

1-Q. WHY ARE OSS ASSUMPTIONS IMPORTANT TO THE DEVELOPMENT OF A NON RECURRING COST MODEL?

A. Assumptions based on OSS's that have evolved over time have a very significant impact on NRC's. The major driver of high NRC's is incremental labor times and labor rates. The reduced requirement for human intervention, as a result of advanced OSS, significantly reduces the incremental NRC's associated with such functions as Pre-Ordering, Ordering, Provisioning, Billing, and Maintenance. Significant cost savings can be achieved even with existing OSS's if their capabilities are not undermined by polluted/non - coordinated/outdated databases, low availability platforms, or inefficient configurations.

2-Q. ARE TMN OR OTHER EFFICIENT OSS ARCHITECTURES DESIGNED TO WORK WITHOUT HUMAN INTERVENTION?

A. Yes. From the point of ordering to provisioning, minimal human intervention is required. Human intervention is required only in cases where:
   (a) one system has been updated and another has not
   (b) databases have not been appropriately updated
   (c) errors have occurred on the individual orders
   (d) the network is exhausted, or
   (e) incompatibility exists between OSSs.

Therefore, where the above conditions do not exist, the fallout of orders should be minimal, reducing both the operational cost incurred by the company, and prices to end users, wholesalers and resellers.

3-Q. WHAT IS YOUR RECOMMENDATION REGARDING WHAT TECHNOLOGY ASSUMPTIONS SHOULD BE USED TO MODEL THE COSTS FOR RECURRING AND NON RECURRING COST STUDIES?

A. To comply with TELRIC principles as outlined by [Economist], the most forward looking, least cost and most efficient technology assumptions to be used in Cost Models should be TR 303 and TMN compliant OSSs. As a practical matter, the non recurring costs modeled should assume properly operated, maintained and efficient embedded OSSs which may not be fully TMN compliant. This will build conservatism into the model. Efficient OSSs are defined as follows:
   (a) all databases are updated on a timely basis and are consistent with each other
   (b) OSSs are appropriately sized and electronically linked
   (c) OSSs use front end edits to minimize the possibility that erroneous information is entered
   (d) OSSs rely on the latest software and reside on high availability platforms

Therefore it is my recommendation that this Commission should require [ILEC] to model its costs such that they approach TMN standards.

4-Q. CAN YOU BRIEFLY EXPLAIN TMN?

A. Yes. In the early 90's, Bellcore was funded by their owners to develop a generic set of requirements in order to inform the telecommunications industry of Bellcore's view of proposed generic requirements and objectives for operations, based on the TMN architecture. The TMN model provides an architectural framework for the efficient management and operation of telecommunications networks and services. TMN assists in developing an architecture, or a blueprint, of how to organize and run efficient, cost effective operations support systems (OSSs) coupled with an intelligent network elements (INEs) for the forward-looking telecommunications network. Such systems would take full advantage of both the increasing sophistication of data management processes and the forward-looking telecommunications network. The optimum scenario exists when you have both the OSSs and the Network in a forward looking state. One without the other will significantly impact the efficiency of the overall process for provisioning and maintenance.

Most of the major RBOCs funded and participated in the development of the "Generic Requirements for Operations Based on the Telecommunications Management Network", or Bellcore GR-2869-CORE, Issue 2, October 1996. It is now generally acknowledged within the telecommunications industry that the most forward-looking OSSs and INEs are those that are compliant with the Telecommunications Management Network ("TMN") industry standard. TMN not only provides for the automation and flow through capabilities that exist today, but it goes beyond that to provide "interoperability of operations systems from different software vendors".[2] Today, "almost all vendors of operations-support software claim TMN compliance."[3] Bellcore's GR-2869-CORE provides guidelines that support a full range of incumbent LEC service offerings, provides standards for interoperability[4] and sets specific standards for OSS and network elements that telecommunications OSS and INE suppliers and manufacturers are asked to meet in order to sell products within the telecommunications industry.

5-Q: DOES THE NRCM MODEL COSTS UNDER A TMN ARCHITECTURE?

A. No. For purposes of the NRCM, the OSS "legacy systems" architecture that currently exists within the ILEC industry is assumed. Existing legacy OSSs are modeled as opposed to TMN-compliant systems for the following reasons:

(1) the existing legacy OSS systems, when efficiently operated and maintained, provide automated and flow through functionality that is similar in nature to TMN compliant systems,(Observation- when we make this statement you ask yourself the question....then why go to the expense of TMN?....in (2) the robust nature of TMN is mentioned...we need to expound on meaning of "robust" and mention other advantages gained by moving to TMN...such as ...efforts to maintain and associated process costs to accomplish flow through are simplified and more cost effective.)

(2) use of the existing OSSs for costing purposes is a conservative approach since some of the existing OSSs are not as robust as TMN-compliant systems, and

(3) costs for TMN-compliant systems are not readily available.

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2 Operations Support: The Next Generation, Bellcore Exchange Pub., Summer 1997, pp12-15.

3 Ibid.

4 Interoperability is standard communication protocols and languages between different equipment (OSS and INE).

FALLOUT

ISSUE. *Fallout is a Local Service Request, that by design, should flow through all involved OSSs and activate all involved Intelligent Network Elements, but fails to do so.* Most ILEC systems are electronically linked and are dependent on one another for various data elements. Occasionally an error will occur as data flows through the systems and this error will cause a service order to "fall out" of the systems. For example, in an electronic ordering process, if one of the OSSs receives erroneous or incompatible information from another OSS, the order will be designated as a process "fallout" and may require manual intervention to correct or complete the order.
The end to end fallout assumed in the Non Recurring Cost Model put forward by AT&T / MCI is 2%. Most ILEC's are including fallout assumptions well beyond 2% in their cost studies (Fallout assumed may range from 10–45%).

MCI /AT&T POSITION: ILECs are utilizing Network and OSS Technology assumptions and cost history which are not forward looking as directed by the FCC. Typically, assumptions by ILECs, lead to "fallout" and the need for costly manual intervention to permit service orders to continue towards completion. This will lead to cost outputs which will not support competitive pricing and a competitive marketplace for customers.

SUPPORT: FCC direction as outlined in 96-325 First Order and Report, Sections 685 and 690, calls for the application of TELRIC Methodology and ...prices for interconnection and access to unbundled elements would be developed from a forward looking economic cost methodology based on the most efficient technology deployed in the incumbent LEC's current wire center locations. The use of forward looking technology in the network permits network elements to communicate to OSSs in a manner that requires minimal or no manual intervention for provisioning or maintenance activiyies. Extending this direction by the FCC to the OSSs would suggest that these OSS are efficient and forward looking, i.e. do not include embedded inefficiencies and error prone databases requiring extensive manual intervention to process orders.

OPINIONS: We are at the turning point for major efficiency changes in the OSSs as a result of new database architectures and process communication links. The TMN architecture is taking hold and will deliver the improved performance that is necessary in a competitive environment. As stated in GR 2869 CORE... "Telecommunications service providers are facing increased competition for market share. To be competitive and provide quality service they need high-quality operations capabilities to support their service offerings and they need to design their operations architecture to be efficient , cost effective and rapidly deployable."
ILECs should not be allowed to use costs in their models, that reflect embedded technology, and inefficient operational systems and processes (high levels of fallout are synonymous with inefficient systems and processes).

ANTICIPATED ATTACKS: Low levels of fallout are based on forward looking technology and efficient systems. The ILECs will identify that the technology that they are reflecting in their models is the latest technology. They will indicate that the anticipated heavy fallout is due to the complexity of building a complete service out of a number of unbundled elements, and associating and linking these elements successfully, based on inventories in databases either within their control or not.

Examples of fallout will be given that will appear to make fallout a reasonable expectation. Due to the relative untested process changes and again, the complexity of hardware combinations and design options (a number of which result from their "reverse engineering"), the reduction of fallout beyond current levels will be an unreasonable expectation in the short term. In fact, maintaining the current levels will be a challenge. Companies such as PacTel are experiencing extensive problems getting successful interactive systems going. Some fallout types are as follows:

(a) Database synchronization errors
(b) Network element denial

(c) Communications errors
(d) Link synchronization errors
(e) Hardware platform maintenance
(f) New software release incompatibility (OSS/OSS or OSS/NE)
(g) Hardware platform errors (Non Fault Tolerant or Non High Availability)
(h) Network Element Failures (New element not recognized, element breakdown)
(i) Others (held orders, network exhaustion, new service/feature introduction, etc.)

To get to the level of fallout proposed by the MCI and AT&T, would require a extensive amount of initial capital (hundreds of millions) to be invested for systems changes (some of the system elements are not available today as per NRCM assumptions) and a considerable amount of initial and ongoing expense to validate and maintain a perfectly correct database. The degree of investment and effort will vary dependent upon the service that is being assembled. MCI and AT&T are assuming that the existing "legacy systems" are at a stage of evolution and purity well beyond the realm of reasonableness. Assembling a service in a monopoly environment in no way resembles assembling a service of unbundled network elements with a multitude of entrants.

If the Commission requires that the ILEC produce fallout performance in the area of 1-2% as proposed by MCI and AT&T, or at a level better that today's performance (with consideration for improvement rate similar to current years), the Commission should allow the ILEC to recover their costs without unduly penalizing their shareholders for this work brought about by Local Competition. In other words, the benefits of competition are for the customers and the new entrants and that is where the costs should be placed for any accelerated capital investment or expense.

WITNESS STRATEGY: Fallout levels proposed by MCI and AT&T are not built on "vaporware". There are ILECs that have systems and processes that deliver services built with unbundled network elements, and their fallout levels are approaching, at, or better than, what our model proposes for certain service delivery. Also, the ILEC is proposing to deliver similar performance for other end to end service delivery. (Example- SWBT transcripts for EASE/ TSR and UNE flow through provisioning. This system is for residential and business applications. The new entrants service rep has command of the same legacy systems as SWBT. This system typically handles 65,000-103,000 orders per day with 1% of the orders falling out of the system. SWBT has indicated that its expectation for this electronic solution for the new entrants will also have a 1% fallout. If the order falls out of the system the new entrant has the ability to correct the problem. (HELPDESK assistance will be available from the ILEC on an as required basis)

Cost models are supposed to be built based on forward looking technology assumptions. Once the electronic interfaces to the system components throughout the processes are in place, and the new entrant's personnel have the same (parity) access, read write as required, as the ILEC attendants, fallout levels of 1-2% are reasonable. The only real impediments to this, beyond poorly managed ILEC databases, is the placement of ineffective interfaces and the use of network elements that are not forward looking and capable of intelligent communications with network OSS. These impediments should not be at the expense of the new entrants.
To insure that effective interfaces are constructed, the ILEC should build and pay for this work, and should demonstrate excellent performance. Otherwise, there is no motivation to have a least cost and effective interface in place.
The deteriorated databases are clearly a shareholder expense that has not been undertaken as it should have been. All databases should be maintained current and synchronized at all times as a matter of good business. Not paying to maintain these databases is a decision resulting from expense funding availability in past years.

SUGGESTED TESTIMONY
QUESTIONS AND ANSWERS:

1-Q. WHY IS FALLOUT IMPORTANT?

A. Fallout is important because in many instances it is the only cost driver for an otherwise seemless electronic flow through process. With OSSs that are well managed and well maintained, the rate of fallout is expected to be minimal, especially in a competitive environment. This is true because fallout effects the customer in terms of longer/shorter delivery intervals and restoration/response times, as well as higher costs to provide service. A company operating in a competitive environment would have market incentives to continuously implement ways to improve customer service.

2-Q. IS THE 2% NRCM FALLOUT RATE SIMILAR TO THE ASSUMPTIONS BEING UTILIZED BY [ILEC NAME] IN THEIR COST STUDIES?

A. Not at all. Several ILEC's, including [ILEC NAME] have assumed a significantly higher degree of manual intervention –where mechanization should be implemented – in their cost studies for OSSs. This assumption is faulty in that it does not represent an efficiently managed or forward looking set of systems or processes, and results in a much higher degree of manual intervention. This in turn produces a higher non recurring cost than should be experienced with the automatic flow through processes that actually exist today. Also, manual intervention and input, in itself, can lead to further fallout. This is a possible explanation for the higher fallout rates declared by the ILECs in their studies.

FLOW THROUGH DATA

ISSUE: Is there evidence where flow through at a 1-2% level has been experienced in any ILEC ? Are there any claims being made by Telco s that they are or intend to be at a 1-2% level of flow through performance in their OSSs?

MCI and AT&T POSITION: Yes.

SUPPORT: Strong challenge to TMN and associated flow through assumptions in Iowa . This is seen as an area where a great deal of challenge will originate from the ILEC's and there is not a great deal of data available that can be readily tabled to support.

OPINIONS: There is witness concern that we do not have enough concrete data at this time to refute ILEC, and possibly any Commission, disbelief that 1-2% fallout is reasonable assumption for fallout at this time. There is concern that individual systems and interfaces may offer a 1-2% flow through but that when all the databases, and systems in, for example, the provisioning process, are put together, a 1-2% flow through performance is not "do-able" in the foreseeable future.

ANTICIPATED ATTACKS: There is no industry OSS flow through performance level on a system by system basis. Each ILEC will have different systems and processes. Overall, end to end, order flow through performance is the only way to effectively look at and compare capabilities. These flow through capabilities can be accomplished through different approaches—investment in systems or heavy investment in manual activities—. It will be very difficult to relate flow through rates and costs to accomplish—if not impossible.
There could be any number of assumptions made re flow through level and there is no evidence beyond individual process flow through performance results.....there may be an example of one process that is at 1% and there may be 7 other examples where the level is anywhere from 20-50%.

There is very little flow through "Touch Time" data available whereby one can look at the cost to build a service in a monopoly environment let alone in a Local Competition environment. It is not realistic to agree to such an impacting level of flow through to set costs. Based on the overwhelming data that suggests that we are far from accomplishing this performance in the near term. The complexity of Local Competition is such that maintaining current flow through performance will be a challenge. Reasonable cost improvements will come in reasonable time.

WITNESS STRATEGY: Reference can be made to Notes on TMN, and Fallout, and the following input gathered which can be cited as support for a high level of flow through.

(a) Questions were raised at a California PUC sponsored workshop on OSS issues, April 29, 1997. Subsequently, Pacific Telesis Counsel, David Discher, responded in writing on May23, 1997. The following is a direct excerpt from the response:

PREORDERING/ORDERING	REF	REQUESTER	RESPONSE
What percentage of orders flow through from the service rep taking the order through completion of billing without human hands?	Trans Page 1651 line 121	Sue Platner MCI	Our estimate is that about 95% of our orders taken by the retail service reps flow through without manual intervention. (Once our service reps have manually entered the order SORD or Starwriter.)
What is the error rate associated with these services within this process? It's	Trans Page 1652	Sue Platner MCI	About 5% of our orders taken by the retail service reps require manual

the flip side of the mechanical flow through question.	line 18	intervention. We do not track where in the process these manual interventions are required.

(b) Transcripts from a Pre-hearing Conference, June 24,1997, where MCI and AT&T met with SWBT before Chairman Pat Wood, Commissioner Judy Walsh and Administrative Law Judge Kathleen Hamilton, contain statements that suggest that SWBT, for certain types of services, is accomplishing 98-99% flow through of service orders. SWBT indicates that they are accomplishing similar performance for some unbundled scenarios and plans to build flow through for others so that all processes possible are edited and mechanized to the point that the 98-99% flow through will be accomplished for CLEC orders. ***Perhaps the most meaningful reading in this transcript is pages 339-343, where SWBT is determined to put in place a choice of system approach (EASE, LEX, Datagate, Verigate, or EDI) which will in the end give the same flow through performance that they are experiencing with their proprietary system EASE as it relates to TSR)***

SWBT: "We have ...and these are our proprietary systems EASE, Easy Acces Sales Environment, that we use in our resident service center for the consumer application and in our business service center for the business applications. A trained service rep in our Company using Residential EASE will flow through...we will flow through about 99% of all the orders that are issued through Consumer EASE untouched by human hands.....every day we process about 65,000 orders a day....

Business EASE....supports up to 30 business lines, which is the preponderance of the business customers in our territory....support some hunting...simple Centrex...and also supports ISDN basic rate interface.

...back in 1991-92 time frames....we built I a thousand – a little over a thousand edits. So once that service order is typed in and its typed incorrectly, then this is where the 99% flow through is achieved. ....we are running in our retail operation probably about a 1-2% error rate. So we've done lots of edits to make sure that we do achieve this efficiency in flow through."

MCI/AT&T:" And when you place the order for unbundled elements, does it flow through in the same sense that it—when you use EASE for TSR.

SWBT: ...it does not have all of the flow through for all of the order types that EASE does. We are developing flow through for order types with EDI. And We're right now trying to attack what we expect to be our largest volume types of orders. For resale a conversion type request, we have developed flow through so if an order comes through an EDI file, or if that same order comes through as a transaction using the LEX interface, the order will flow through in SORD the same as it does for EASE."

MCI/AT&T: "Is the long -run goal that it will all be mechanized?"

SWBT: " Well our long-run goal is to mechanize everything that we can. The truth is that there are certainly order situations such as the complex order types that Liz has already talked through where there is manual intervention that's going to be required because of the complexity of the order. ***But those are the same situations that we face today.*** But our goal is to not only mechanize the flow through for the conversion type resale order, change type, new connect type, disconnect, we either have those pieces in place or we're working on flow through for those pieces right now and we're near completion with all that. ***But our goal is to also mechanize flow through for unbundled elements such as loop with port."***

PROBABILITIES

ISSUE: Probability factors are utilized in the formulation of Activity Costs as follows:

ACTIVITY COST = PROBABILITY (%) X TIME (SECS) X LABOR RATE ($) / 3600 (SECS)

A clear understanding of these probability factors is required...how they are applied in the model...where they came from or how they were developed.

MCI / AT&T POSITION: Lets first start with a couple of definitions that clarify "Probability".

1) **Probable**- supported by evidence strong enough to establish presumption but not proof; likely to be or become true or real
2) **Probability**- Something that is probable: the quality or state of being probable; the chance that a given event will occur.

Each of the over 200 activities or events in the model could occur in a service delivery process to some degree or not at all. Therefore you will see probabilities ranging from 0-100%, or designated N/A, where an activity is part of the overall process but because it is performed by the CLEC or is a CLEC system activity, it is not part of the ILEC Activity Cost calculation.

SUPPORT: Probabilities are variable. They can be State specific ratios, observation or study related, Subject Matter Expert estimate, based on Data Request responses or model default values**) and dictated by such inputs as :

- Copper to Fiber Outside Plant Ratio
- Central Office Staffed to Unstaffed Ratio
- Average Trip Time (in minutes)
- Number of work Tasks per Trip
- Workplace Set Up Time (in minutes)
- POTS Fallout level designated
- COMPLEX order Fallout level designated
- ...a combination of the above

or...Probabilities can be absolute values based on Subject Matter Experts direct input.

- Installing Card for Digital Cross-connect System...DS-3/DS-1 Interoffice Transport
- Intrusive Test (ITS)....DS-3/DS-1 Interoffice Transport
- Install Plug-in for Low Speed DS-1 (Low speed STS1 to DS-1)
- Performance Monitoring Testing .....DS-3/DS-1 Interoffice Transport (Recurring Cost)
- CPU Time for Registers....DS-3/DS-1 Interoffice Transport (Recurring Cost)

**Model Default Value Inputs Version 1.2

Copper-Fiber OSP Ratio..... 60%
CO Staffed-Unstaffed Ratio..... 80%
Average Trip Time (in Minutes)..... 20
Fallout % POTS..... 2%
Fallout % Complex..... 2%
Number of Orders per Trip..... 4
Setup Time (in minutes)..... 5

Examples:

a) **Activity ID No. 3**....During Pre-Ordering, there is a 100% Probability that the ILEC gateway requests address data from Administrative Information System and CSR. (Note: Since this activity is performed by a system, even though the CPU time is infinitesimal, it is an "R" (Recurring) cost which is not included in the ILEC Activity Cost.). There is a high degree of confidence in the Probability stated even though there has been no extensive study to determine the 100%. This is a logical assumption as this is a logical step in a logical process.

b) **Activity ID No. 12**....During Provisioning, there is a 100% Probability that LFACS makes Outside Plant Assignments, e.g. cable and pair. As in a), there is a high degree of confidence in this logical Probability. There are numerous other 100% Probabilities with a high degree of confidence based on the fact that it is a system activity that is logical in the service process flow.

c) **Activity ID No. 88**....During the Provisioning of a Channelized DS1, there is a 100% Probability that someone in the FMAC will pull and analyze the order. This is a non-system, manual, activity where there is a high degree of confidence that this activity will take place because it is a logical step in this service type flow, and that there is nothing that will influence the degree or quality of the probability such that it will be anything but 100%. There are a number of similar manual activities where 100% Probability is also applied. Again, there was no extensive study, with respect to probability as this step is logical. The challenge in these areas will come with respect to the TIME or LABOR RATE values in the model...how were they determined and what study or studies or data are we relying on?

d) **Activity ID No. 73**....During the Provisioning of a 2-Wire Loop, the process time could be influenced by the fact that the loop selected is either copper or fiber. In the default scenario it is pointed out that out of a typical 100 loops, 60 would be copper and 40 would be fiber. (Where State specific data is available or gathered through a Data Request, consideration should be given to adjusting the % Copper Input. A lower % Copper will reduce the ILEC Activity Cost as fiber technology requires only system activity to do the loop provisioning). The default level here was derived from

e) **Activity ID No. 65**....During Provisioning, the process time could be influenced by the degree of Fallout. Fallout is not generally 100%, but actually should be at the other end of the spectrum. We have cited data in SWBT where both simple and complex orders were discussed in the Pre-hearing session. SWBT representative did indicate that there were orders that would always require manual attention due to their uniqueness and complexity. On an average day, SWBT would process 65,000 orders and on a busy day 103,000 with a 99% flow through. On an average day 1300 orders would be processed manually. 2% for Fallout was set for both POTS and COMPLEX orders. This level is based on citing in SWBT as well as consideration for a process that is efficient and has the basic qualities of a TMN process.

f) **Activity ID No. 70**....During the Provisioning of a 2-Wire Loop, there may be occasions where travel is required to a remote central office as a % of offices are generally unmanned. This would only occur where copper loops are involved as fiber technology designs can be provisioned remotely due to the intelligent nature of the elements. Therefore, in order to accurately reflect this occasional cost, a formula is applied [(1- %CO Manned) X %Copper/Fiber Ratio X (1/ Number of Orders per Trip)] which works out to be [(1- .80) X .60 X 1/ 4) = 3%]. The 80% manned office default should be pursued to reflect State specific fact where possible. The 4 orders per trip is seen as a conservative load assignment to make a trip to a remote Central Office productive. Sending an installer with anything less or even 1 order at a time is seen as a formula for total inefficiency. Single order dispatches are rare as loads are built to include repair, other upkeep work that is generally captured in recurring costs. The default level was determined

g) **Activity ID No. 190, 195, 196,197**,...During the Provisioning of the DS1 and DS3 Interoffice Transport absolute values have been built in based on first hand experience of Subject Matter Experts.

ANTICIPATED ATTACKS: The ILECs will probe for the source and reliability of any assumptions and resulting numbers that we use in the model. Probabilities will be questioned as to what exactly do they represent, where do they come from , are they based on any studies, who made the assumptions and what are their credentials, how can our numbers vary to the degree they do relative to the ILECs (e.g. Fallout), do the numbers truly reflect State specific demographics, is there a range of outcome reliability, is there any statistical validation at all, etc.

WITNESS STRATEGY: The overall objective of the NRCM needs to be restated as much as possible. The Model is to provide a means by which any one can develop realistic non recurring costs through a process which is open and understandable and follows the guidelines laid out by Government agencies.
The Model utilizes assumptions based on forward looking technologies and is not mired in embedded facilities considerations which introduce considerable activities which are usually manual and heavily impact non recurring cost. Also, since processes that are modeled by ILECs tend to be based on process data and studies which come from an era of monopoly performance, inaccurate and poorly synchronized databases will not permit the flow through performance that is fundamental to an efficient and competitive operation.

The Model does use Subject Matter Expert input, as do most of the models that have been submitted by the ILECs. Many of the Subject Matter Experts do come from Bell Operating Companies and the data they input must reflect reality, todays facts, and their honest perspective as most of the CLEC SME's will be called upon to witness under oath. In some respects personal observations can be deemed more realistic as facts put forward to not include the inefficiencies that are sometimes captured in the accounting information or reporting that occurs in studies.

The witness needs to be well versed in the operation of the model and the numbers that are used in it. Also, the linkage to the Hatfield model needs to be well understood but the witness needs to refrain from being drawn into discussion outside the immediate links that are used in the NRCM.

This document contains lawyer / client privileged information. Not for disclosure to persons other than those on the NRC witness team and their lawyers.

September 10, 1997

A discussion on disconnect charges.

By: Roger Fredrickson

History:

Disconnect charges were established back when it took manual intervention to deny service to a customer. The charges were collected up front as part of the non-recurring costs because of the difficulty experienced in collections after a customer has terminated service, especially if service was terminated unwillingly.

RBOC cost studies for bottleneck services focus primarily on identifying costs even if they do not truly reflect the actual economics of the activity. Once established with the public service commissions, they are rarely withdrawn even if the activity is no longer required. Also, these rates may be subsequently adjusted upward or downward to meet the political climate in revenue requirement filings. Whether this has actually happened for disconnect charges is anyone's guess and it is likely to be different state by state.

Retail Disconnects:

We have all learned that in today's environment, things have changed. The disconnect is accomplished electronically through a class of service change in the switch which either denies service or provides warm dial tone. The only realized cost is that of the service order activity.

Wholesale Disconnects:

Customer Migration (TSR & UNE-P)

When a CLEC wins a customer from the ILEC, the end user has already paid disconnect charges to the ILEC at the time service was established. The transfer of service is accomplished by the CLEC through gateway at no cost to the ILEC. What happens when the end user discontinues service from the CLEC?

The CLEC issues the disconnect order through gateway which changes the class of service to either deny or provide soft dial tone at no cost to the ILEC. The CLEC incurs all costs of the disconnect, therefore, the ILEC should issue a credit to the CLEC for the disconnect charges paid by the end user.

Note: If the ILEC is successful at winning a lost customer back, the ILEC should absorb the cost of the transfer (service order activity) just as the CLEC did when they won the customer from the ILEC.

New Customer (TSR & UNE-P)

When a new customer is established the CLEC pays the ILEC the appropriate NRC and should NOT include the cost of a disconnect. If the customer disconnects service while still with the CLEC, the disconnect costs will be incurred by the CLEC. If the ILEC wins the end user from the CLEC, then the ILEC can determine if they want to charge the end user a disconnect charge at that time.

Customer migration (unbundled loop)

The cost of the disconnect from the ILEC switch and reconnect to the CLEC terminal is covered by the NRC. When the end user disconnects service from the CLEC, the connections should stay in place so that we can provide warm dial tone. (This is a parity issue.) Thus, no disconnect charges apply. If the ILEC wins the end user from the CLEC, they should willingly swing the jumper to their switch and disconnect charges do not apply. If the CLEC reassigns the facility to another end user, the connection is covered by

the NRC. Again, no disconnect costs. The only time a disconnect charge is appropriate is when the CLEC issues a service order to physically break down the circuit.

New Customer (Unbundled loop)

The same conditions exist as in the customer migration (Unbundled loop) scenario.

Conclusion:

Disconnect charges should only apply when a CLEC is not using gateway, or when the CLEC issues a service order to physically disconnect the circuit, and then, service order charges are inappropriate.

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ISSUE: Work Operations Time.

AT&T/MCI Position: The time spent for each activity containd in the NRCM are times that are estimated by SME's and in some cases by actual observations of the activities. These times need to be validated and documented. Some times are documented by videotape, however, the videotape may be unreliable due to some breaches of work protocols. As a result the videotape may not be releasable to the public.

SUPPORT: The times associated for each activity must be supported utilizing an acceptable (FCC or PUC) methodology. There are several methods to develop the time per activity. Time and Motion studies, filming and /or SME estimates and Task Oriented Costing (includes probabilities). The major issue for each of the metods is to be able to have a statically valid sample for each of the times per activity. The time measures must be documented and must be statistically valid. Therefore, in order to develop any valid studies, access to a working Central Office or interviewing technicians that have recently performed the activities that are contained in the NRC model are required.

The other ways to obtain the data (time to perform an activity) would be to accept the times that the ILEC provides in their NRC studies and then dispute the activities performed, the probability of performing the activity and the activity itself based on forward looking technology and/or OSSs. An additional way of obtaining the data would be to perform the study in a lab environment e.g. Lucent, Nortel, Bellcore. Alternatively, the lab vendors may have a videotape themselves of some of the activities. MCI is pursuing obtaining information in this manner from the vendors.

Opinion: In order to utilize ILEC time per activity new entrants must have access to the NRCs in enough detail to determine if the time and activity data should be accepted or disputed. The problem with using the ILEC data would be the mapping of activities into the NRC model, how to dispute the times and activities, how to dispute the probabilities and any implications of even using ILEC data. In order to dispute any of the data some basis for the dispute is required therefore back to being able to measure times and activities ourselves.

Using a lab environment would be a good basis but would be hard to defend or relate to a "real" situation. The lab alternative seems to be the only valid alternative at this time because most (in not all) CLECs have minimal activity on the line side of their local switches.

NRC Model Checklist

1) **Customizing the 'Batch Run'**
   - The user may choose to exclude one or more NRC types from the 'Batch Run'.
   - The user could choose to exclude Install-TSR because a jurisdiction has already adopted pricing rules for certain TSR elements.

2) **Choosing State & Company**
   - The user must ensure to choose the correct State & Company combination. This choice effects the labor rates used by the model.

3) **Choosing Labor Rates**
   - The user must ensure that the correct rates for the given state and company are in the States Database.
   - The user must ensure that they select the 'State Defaults' button when selecting the labor rates. The user should only alter the defaults if a commission orders them to do so.

4) **Choosing Other Input Settings**
   - *Copper-Fiber Ratio* - the user must choose either a commission ordered value, the Hatfield value, or a value obtained via interrogatory.
   - *Central Office Staffing Ratio* - the user must choose either a commission ordered value or a value obtained via interrogatory.
   - *Variable Overhead* - the user must choose either a commission ordered value or the Hatfield value.
   - *Trip Time* - the user must choose either a commission ordered value, the NRC team SME estimate, or a value obtained via interrogatory.
   - *Setup Time* - the user must choose either a commission ordered value, the NRC team SME estimate, or a value obtained via interrogatory.
   - *Fallout* - the user must choose either a commission ordered value or the NRC team SME estimate.

Note: The user can find generic interrogatories that correspond to the listed variables in the Generic Interrogatories document.

DRAFT - PREPARED IN ANTICIPATION OF LITIGATION

FILENAME: TEMP NRCMDIP3 DATE: 10 Sep ·97

STATUS: Final

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ISSUE: 100% ILEC DIP & DOP in the NRCM is an defensive position.

MCI ATT POSITION: Yes. BUT challenged by the SMEs & witnesses.

SUPPORT: Assumed that the long standing practice of DIP & DOP is the most cost efficient method of committing facilities in advance. This is done during the construction phase with the assigned facilities being updated in the LFACS and SWITCH inventory systems.

OPINIONS: 1- DIP DOP refers to the station wire and cable facilities to the central office There may be situations where the concept of 100% DIP DOP may not apply. An example is where lots may

have been subdivided and where there would be no existing plant (e.g. feeder, distribution, drop wire) established constructed to the new building. This would also be the case in a new subdivision where all of the plant may have been constructed up to the Serving area interface (SAI) DIP DOP varies by area, state and ILEC. Therefore, the 100% DIP DOP assumption may be insupportable since absolute DIP DOP can create problems as detailed below

2- It is obvious that all lines presently in service are DOP candidates (99%-)

3- A very high percentage (90%-) of reconnects for residential service utilize DOP facilities Exceptions would include areas with few spares where a DOP may be 'stolen' to provide someone else with service.

4- A high percentage (80%-) of new installs and second lines involve dispatch. Very few companies pre-run drop and inside wire today unless they have an agreement with the building landlord, etc.

5- The majority of business orders are dispatched today even where DOPs are in place since the inside building cable and associated wire usually require some changes. This, however,
would be an additional charge to the customer and should not be confused with the DOP process.

ANTICIPATED ATTACKS: 1- The ILEC will challenge the fact that DIP DOP is 100% and since it may be less, how should those costs be modeled.
2- Will the CLEC be establishing a DIP DOP process for the facilities to the co-location cage?
3- How are CLEC DIP DOP facilities modeled?
4- What recurring and non-recurring charges should be levied on the CLEC in such a situation?

RECOMMENDATIONS: 1- Generate a discovery request (DR) to determine what the DIP DOP ratio is for

the ILEC. The ILEC may respond with a lower than expected ratio.

2- Modify the NRCM be include a variable DIP/DOP input using the same rationale as for the Copper Fiber ratio and based on a well run ILEC(s) that exploit all of the benefits of a DIP/DOP program.

3- Add steps to the model to include the dispatching of an installer for drop installation and associated testing.

4- Address the issue of CLEC DIP/DOP by determining a policy and applying same to the cost model (for disconnects).

5- Use a National average (if there is such a thing) as the model default. If not, I would recommend 80 - 85% for DIP and 85 -90% for DOP (this is only a gut feel and outside plant experts may wish to suggest another number). I would also blend the two (2) percentages so that only one variable input is required in the model.

WITNESS STRATEGY: The ILEC should provide the DIP/DOP ratio to the CLEC in a timely manner such that the data is input into the NRCM to account for deviations from the assumed 100% DIP/DOP scenario. If the DR is not answered soon enough, then the witness should ask the Commissioners to direct the ILEC to provide the data and offer to run the NRCM costs again with the revised data, emphasizing that the model run will only take a few minutes to complete the many calculations required to establish fair and reasonable NRCs that include the required DIP/DOP adjustment. If the DR response indicates an abnormally low ratio, promote the new default ratio developed from other ILECs that exploit the benefits of DIP/DOP to a higher degree.

SUGGESTED TESTIMONY
QUESTIONS & ANSWERS.

1- Q Are there any situations where the 100% DIP/DOP assumption would be invalid and an installer dispatch would be required?

A. Yes, there are several. Some examples could be in the case where existing properties have been further subdivided and new homes built that would exceed the capacity of the original facility build

for that area or where a new subdivision has been established and the drop wires have not been run from the Serving Area Interface (SAI) to the building.. There could also be situations where a second line into a location is ordered, where the inside wiring has been placed by other than an ILEC (e.g. new development) or where the ILEC has chosen not fully DIP/DOP a particular area .

2- Q. How should NRCs be established where the existing facility will be exhausted.?

A. There should be no NRCs in such a case since the ILEC would be required to construct additional facilities and the costs would be recovered in the recurring rates and the DIP/DOP process would be invoked as part of the construction process.

3- Q. How should NRCs be established where a drop has not been installed (e.g. new subdivision) or an additional line has been ordered?

A. The NRCs should be established as illustrated in the NRCM for such a scenario. That is, NRCs would be charged for the dispatch of the installer (assuming four work orders) and for the time to install and test the drop wire. The cost of the materiel would be recovered under recurring charges.

4 - Q. How should NRCs be established for situations where DIP/DOP has not been fully implemented?

A. Since the DIP/DOP processes are proven cost efficient effective processes, the NRCs should be based on the assumption that the facilities are DIP/DOP. This position further promotes the TELRIC principles adopted by this Commission and the FCC and positions the customer to receive

quality service at the best possible price.

1. Dedicated Facilities

IMPORT WHITEPAPER ON 'ILEC-DIP/DOP'

1.0 General

The *NRCM* assumes dedicated facilities exist in the plant, both inside (Dedicated Inside Plant - DIP) and outside (Dedicated Outside Plant - DOP). Long standing practices have demonstrated that it is more cost efficient to commit facilities ahead of time to facilitate rapid service activation. This is accomplished during the construction phase (i.e., building of the plant). Anticipated living units are assigned facilities in the inventory systems such as LFACS and SWITCH. The inventory systems are updated to reflect this commitment.

When customers move from one location, it is assumed that in time another customer will move into the same location. Therefore, the "disconnect" of a service is in reality a "deactivation" of service to a particular living unit, (i.e., no physical work is performed, save the deactivation by a computer command that initiates soft dial tone or some other "temporary" service suspension state, is performed on the network elements).

1.1 ILEC - DIP/DOP

DOP refers to the station wire and cable facilities to the central office. It is obvious that all lines presently in service (100%) are DOP candidates. If the facilities don't exist, then once they are constructed the costs of which are recovered under recurring costs, they become eligible for DOP. Thus the 100% DIP/DOP default built into the NRCM is a reasonable assumption since these processes are proven to be cost effective and efficient. This position is further promoted by TELRIC principles adopted by PUC Commissions and the FCC that aids in positioning the customer to receive quality service at the best possible price.

The ILEC may cite examples where DIP/DOP is not practical or has not been applied. Examples could be a) where lots have been subdivided and there is no existing plant (e.g. feeder, distribution, drop wire) established/constructed to the new building; or b) areas where facilities are tight and available spares may have been 'stolen' to provide someone else with service; or c) where a second line has been requested. These are all non issues from a non-recurring cost perspective. In example 'a'; the costs are recovered under recurring costs - for construction. In example 'b'; this is a penalty that the ILEC absorbs as a trade off for untimely construction. Finally, in example 'c'; the drop wire installation is capitalized and recovered under recurring costs.

Once the facilities are in place, there are no reasons why DOP and DIP cannot be implemented. If the ILEC chooses not to do so, then it must absorb the costs associated with the decision.

1.2 CLEC DIP/DOP

CLEC DIP/DOP refers to the central office (CO) wiring and loop connections to the customer premise on new and migrated services. DIP connections may include wiring to collocation cages and DOP connections may include the inside wiring.

DIP & DOP, as a Forward Looking practice, is not an issue. In the cases of TSR and UNE-P, when the CLEC customer moves or terminates service, a LSR must be issued by the CLEC to the ILEC to either keep the line or give it back to the ILEC