EXCHANGE CARRIERS STANDARDS ASSOCIATION, INC.
Comments For The Inter-Industry Meeting
On Network Reliability
At The Federal Communications Commission

SUMMARY

ECSA's Comments review its inter-industry problem-sharing and consensus resolution processes as well as its SS7 and related activities. They also review the efforts ECSA already has underway to improve the reliability of Common Channeling Signalling networks under various conditions of network stress.

ECSA submits that whether the need be for a real-time solution to a real-time problem or a long-term technology-based resolution through standards-setting, ECSA and its sponsored Committees (Committee T1 which develops American National Standards; the Carrier Liaison Committee on equal access; the Information Industry Liaison Committee on ONA; and the Telecommunications Industry Forum on EDI and bar coding) can provide effective forums for the efficient consideration of a wide variety of telecommunications issues and can promote innovative responses to those issues involving telecommunications facilities, services, and equipment in a timely manner.

In this connection, ECSA believes that its Carrier Liaison Committee's forum -- the Network Operations Forum ("NOF") is the best vehicle for addressing issues on the SS7 outages and network integrity assurance. In fact, the NOF is pursuing industry discussions on these issues in a workshop scheduled for October 2-3, 1991 in Alexandria, Virginia. The workshop is designed to share the view and experience of carriers and equipment manufacturers. Among the issues to be discussed are potential network vulnerabilities, selection of protocol options, protocol

performance objectives and emergency communications during a service outage. The goal is to improve the reliability of Common Channel Signalling networks under various conditions of network stress.

ECSA also submits that there is a record of successful cooperation between industry and the FCC, and the effective relationship between regulators and the industry should not be altered. To this end, ECSA recommends that with a vehicle such as the NOF already undertaking issues raised by the recent SS7 outages, the FCC could aid the industry's efforts in a cooperative relationship by attending the first NOF workshop and monitoring the efforts and the progress of the industry.

In short, the proper documentation exists in the NOF, the technical expertise is pooled in the NOF, and a solid track record of being responsive exists in the NOF. NOF's work can focus on what can be done today.

EXCHANGE CARRIERS STANDARDS ASSOCIATION, INC.
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The Exchange Carriers Standards Association, Inc. ("ECSA") submits these Comments to the Federal Communications Commission ("FCC" or "Commission") in response to the issues set forth in the August 7, 1991, letter from Richard Firestone, Chief of the Common Carrier Bureau to establish the Inter-industry Meeting on Network Reliability.

ECSA's Comments provide background information regarding its role in telecommunications network interconnection standards, exchange access procedures and administration, implementation guidelines for industry standards related to electronic data interchange ("EDI") and bar coding, and network capabilities and the development of open network architecture ("ONA") services. This information is particularly relevant to Questions III, V, and VII of the Commission's list directed to the industry to the extent that they concern ECSA, as a private standards developer, as an inter-industry mechanism for prompt problem-sharing and efficient problem-solving, and as an effective vehicle to achieve results. Accordingly, ECSA expects that its members and some of its participants invited to the Inter-industry Meeting will respond directly to the Commission's questions, while ECSA's

input and information is limited to those questions which pertain to its inter-industry problem-sharing and consensus resolution processes as well as its SS7 and related activities. Importantly, this information will also review the efforts ECSA already has underway to improve the reliability of Common Channel Signalling networks under various conditions of network stress.

INTRODUCTION

ECSA, established in 1983, is a not-for profit association of 137 wireline exchange carriers ranging in size from the Regional Bell Operating Companies ("RBOCs") with millions of access lines to small rural carriers with a hundred or so lines.

Governed by a twenty-one member Board of Directors, ECSA was formed to serve several important purposes. First, it was designed to provide equitable representation of exchange carrier interests in the broad spectrum of standards and related technical matters affecting the exchange carrier industry. Second, it was formed to provide the sponsoring organization for an independent standards committee. Since February of 1984 it has sponsored and supported Committee T1, a leading United States telecommunications standards-setting organization accredited by the American National Standards Institute ("ANSI") as a consensus mechanism for developing voluntary interconnection standards. In response to the changing environment brought about by equal access, ECSA realized its third purpose, to accept sponsorship of the Carrier Liaison Committee ("CLC"). Organized in 1984, the

CLC serves as an umbrella organization for industry-wide forums for the discussion and resolution of nationwide problems concerning the provision of exchange access services. Fourth, in 1987, ECSA accepted the request of the RBOCs to sponsor and support the Information Industry Liaison Committee ("IILC") which serves as an inter-industry mechanism to facilitate the exchange of information on network capabilities and the development of ONA services. Also in 1987, ECSA undertook sponsorship of the Telecommunications Industry Forum ("TCIF"), a forum for purchasers, manufacturers, and suppliers of telecommunications equipment, products, and services to address issues on industry standards such as those for electronic data interchange and bar coding (Attachment A for Organizational Chart).

These ECSA Committees cover the broadest spectrum of the telecommunications industry. More than 300 companies--exchange carriers, interexchange carriers, equipment manufacturers, vendors and end users--have assigned more than 1,500 participants to work cooperatively to develop guidelines and resolve operations issues ranging from installation, testing and maintenance of SS7 networks to ordering, provisioning and billing for access service to the development of domestic standards for network interconnection and interoperability.

The Federal Communications Commission has referred operational issues to ECSA Committees--among them the Ordering and Billing Forum--seeking broad-based industry consensus resolution.

Telecommunications organizations and standards-setting bodies worldwide recognize and consult with the forums sponsored by ECSA. For example, the European Telecommunications Standards Institute ("ETSI"), the Japanese Telecommunications Technology Committee ("TTC"), and the Korean Telecommunications Technology Association have all held discussions with ECSA's accredited standards Committee T1-Telecommunications on the most efficient means to develop timely, high quality, technical interconnection standards.

The United States Department of State regularly consults with Committee T1 in developing U.S. positions on standards being developed by agencies such as the Consultative Committee on International Telephone and Telegraph ("CCITT").

Since its inception -- in which it assumed the post-divestiture standards-setting role which was performed by AT&T -- Committee T1 has developed nearly one hundred (100) technical network interconnection or interoperability standards, developed 2,300 contributions that have been adopted as U.S. positions for consideration in foreign standards-setting organizations, and issued a dozen technical reports. In some instances, foreign governments and standards organizations have adopted, as their own, standards developed by Committee T1.

NTT has requested information about the operation of ECSA's IILC and its work on ONA. Along with IILC, ECSA's CLC and the TCIF have--without regulatory or legislative intervention--developed voluntary, industry-wide consensus resolutions and

guidelines for more than 1,000 operational issues. These forums sponsored by ECSA have worked efficiently and effectively on a wide range of issues.

No other industry, foreign or domestic, has created an organization devoted to both formal standards development and to cooperative, prompt problem solving.

Thus, whether the need be for a real-time solution to a real-time problem or a long-term technology-based resolution through standards setting, ECSA and its committees can provide effective forums for the efficient consideration of a wide variety of telecommunications issues and can promote innovative responses to those issues involving telecommunications facilities, services and equipment in a timely manner. The following responses to Questions III, V, and VII will demonstrate this further.

FCC QUESTION III. Are Information Sharing Mechanisms Among The Participants In The Telecommunications Industry Adequate To Avoid And/Or Correct Network Disruptions?

ECSA's members and the participants in its activities are likely to provide an individual-company perspective on the adequacy of information sharing mechanisms. However, it is important for the Commission to know that ECSA provides, through sponsorship of the CLC and the IILC, inter-industry vehicles which represent significant industry effort and cooperation to identify technical and related network problems, exchange

information on these problems and seek consensus resolution of the problems in a timely manner. A closer look at these two Committees will demonstrate this point.

The first of these Committees is the CLC. Proposed by ECSA in September 1984, and endorsed by the FCC in January 1985, the CLC was established to provide inter-industry mechanisms for the discussion and voluntary resolution of nationwide concerns regarding exchange access ordering, provisioning, installation, repair, maintenance, billing, and administration. The CLC serves as an umbrella for three associated industry forums: (1) the Industry Carriers Compatibility Forum ("ICCF"), which addresses technical exchange access interconnection issues such as carrier identification codes and automatic number identification; (2) the Ordering and Billing Forum ("OBF"), which addresses issues concerning the ordering, provisioning and billing of access services, including ONA; and (3) the Network Operations Forum ("NOF"), which deals with installation, maintenance and testing issues associated with providing exchange access, currently including issues associated with mass media stimulated calling events and SS7, as well as toll fraud prevention. Almost all of the technical and operations issues are dealt with by these three forums.

The CLC and its associated forums address and attempt to resolve issues based on a somewhat-less structured process than that of Committee T1. Resolution of issues is achieved by consensus. Thus, while a proposed resolution of a specific issue

may not be a participant's first choice, an effort is made to determine whether it is one that the participant can accept and support, with significant opposition to a proposal usually stopping the resolution process. Each participant has committed to discuss issues and consider proposed resolutions in good faith.

The ICCF, the OBF and the NOF are structured to be responsive to and resolve national technical issues in the various aspects of the equal access environment. For example, the ICCF provides a forum for network interconnection issues with participants coming primarily from exchange and interexchange carriers. More recent issues have tapped the operator service providers, cellular mobile carriers and radio common carrier pagers. Since 1983, ICCF has addressed such issues as echo control, carrier identification codes (where work is ongoing), and trunk blocking.

The OBF, established in 1985, is the largest of the forums and provides evidence of the successes that can flow from industry addressing industry's operational problems. The OBF's activities focus on ordering, provisioning, and billing of access services. During 1989, the OBF's activities were expanded to include non-access issues, such as message exchange requirements as driven by new services such as SS7 and ONA. The OBF, regularly attracts three hundred participants and accomplishes its mission through six working committees covering such services as billing, subscription, and 800 database. Most telling of the

significant OBF successes is its track record on the number of issues resolved in its six-year existence. The OBF has initiated over seven hundred issues and reached consensus on over six hundred of these issues.

Chartered in August 1984, the NOF is a working forum for the identification, discussion and resolution of nationwide issues concerning the installation, testing and maintenance of exchange access services. The NOF concentrates on developing and maintaining a number of working manuals such as the Installation and Maintenance Operations Reference Document, an industry administrative operations generic reference to facilitate interexchange and exchange carrier administrative and operational relationships; the Testline Guidelines and Coordinator Directory which provides interexchange carriers and exchange carriers with Testline Coordinator contacts; the Network Management Guidelines and Contact Directory to facilitate exchange carrier and interexchange carrier communications and relations; and the 800/900 NXX Trouble Look Up Table.

Of particular import is the NOF's most recent publication of the SS7 Link and Trunk Installation & Maintenance section of the Installation and Maintenance documents, and the Catastrophic SS7 Network Failure/Restoration Contact Directory. These NOF undertakings are most timely with respect to the SS7 network outages. In fact, as a result of the recent SS7 outages and its experience in this area, the NOF is expanding the scope of its work and pursuing industry discussions on SS7 integrity

assurance. This workshop, scheduled for October 2-3, 1991, is designed to share the views and experience of carriers and equipment manufacturers and has the goal of improving the reliability of Common Channel Signalling ("CCS") networks under various conditions of network stress. More than seventy (70) exchange carriers, interexchange carriers, equipment manufacturers, software vendors, and end users have indicated that they plan to attend. Among the issues to be discussed are potential network vulnerabilities, selection of protocol options, protocol performance objectives and emergency communications during a service outage. (See Attachment B for meeting announcement and agenda.) ECSA believes that it will provide an avenue to exchange information and examine issues on the continued reliability of the CCS network.

In its relatively brief history, the NOF has successfully addressed more than one hundred operations issues and developed the important documentation described above to assist the industry in implementation of these consensus resolutions. Of significance is the fact that the NOF has been addressing SS7 and related issues since 1988. (See Attachment C for NOF Issue Status Report) The NOF, through its industry participants, has been and continues to be proactive in its efforts to deal with SS7, from the time of the technology's development to, through its deployment, and as maintenance and operations issues arise. In this connection, the industry via the NOF, has been able to go through its SS7 learning curve and now is able to turn to the NOF

with real problems and seek real solutions as SS7 is being deployed.

The NOF also has demonstrated its ability to provide prompt resolution to operations issues. For example, the NOF published its first issue of the SS7 Link & Trunk Installation Maintenance Document in June 1991. Just two months later, the NOF published the second issue of the document, incorporating important amendments to the text based on industry experiences with SS7. Of import is the fact that an outline of the documentation has existed and been available to the industry since 1988 when the first SS7 issues were introduced into the NOF process. As the NOF resolves issues, the resolution becomes part of NOF documents, with the industry reaching agreement on all documentation language. However, resolutions to issues are effective and available when the industry closes the issues.

The NOF's ability to address diverse technical/operations concerns also can be seen in its undertaking of those issues identified by Bellcore's Media Stimulated Calling Working Committee with respect to mass media stimulated calling events. The NOF will be the prime focus for industry input triggered by mass media stimulated calling events on such issues as the need for historical data, streamlining notification of such events between exchange carriers and interexchange carriers, and call gapping -- an NOF issue already in existence.

Thus, ECSA believes that with a vehicle such as the NOF, in place to address and debate operations issues, the results are

and will continue to be sound technical industry practices representing the best thinking of the industry as a whole. Moreover, the industry through forums such as the NOF is best suited to continue to meet its own needs.

ECSA's IILC demonstrates another arena where industry-generated initiatives and industry cooperation have proven successful. As the RBOCs initiated discussions on open network architecture and related services with the non-exchange carrier industry, it became clear that there was a need for an inter-industry mechanism whereby interested parties could discuss and resolve industry-wide concerns about the provision of ONA services. In October 1987, ECSA agreed to support this process and the IILC was chartered as one of its Committees. The IILC's goal is to facilitate the exchange of information on network capabilities and the development of ONA services.

Like the CLC in its processes, the IILC strives for industry consensus on issues associated with the provision of ONA services. The IILC has addressed such issues as access to BOC network management systems, enhanced service provider input to future technology development, and computer-telecommunications switch call control. Resolution has been reached on such issues as interlata transport of ONA services, and frame relay access which identifies the relationship of frame relaying to Integrated Services Digital Networks' ("ISDN") D-Channel, and an ONA Services User Guide to provide users up-to-date information regarding ONA services.

As can be seen in these activities alone, the industry has initiated both a structure and a process that identifies critical network problems, shares information on these problems and resolves them -- all with the appropriate technical expertise. While somewhat different from the more formal standards-setting process of a Committee T1, ECSA also believes that the consensus process used by the CLC and its forums as well as the IILC, is efficient, is flexible, is timely and is responsive. It produces broad-based consensus resolutions which will best stand the test of time.

FCC QUESTION V. Are Existing Standards-setting Bodies For Hardware, Software, And Interconnected Operations Effective?

Again, ECSA emphasizes that its members and its participants are likely to provide an individual-company perspective in response to this question. However, ECSA believes that the effectiveness of private industry standards development can be well-supported by a compelling example--its own Committee T1.

When ECSA considered a Committee T1, it researched other standards developing organizations and looked at their success and failure elements. ECSA found that all of the successful standards developers in the telecommunications industry, as well as other industries were members of the American National Standards Institute ("ANSI"). ANSI's due process concepts fit the industry's needs precisely. Accordingly, ECSA requested that ANSI sanction it to become Secretariat of the newly-proposed

Committee T1 on Telecommunications. ANSI provided acceptance in 1984 and Committee T1-Telecommunications held its first official meeting commencing its operations under procedures proscribed by ANSI.

Committee T1's specific mission is to develop technical standards and reports supporting the interconnection and interoperability of networks at external interfaces with end-user systems, other carriers, information and enhanced-service providers, and customer premises equipment.

As one of the ANSI-accredited committees developing American National Standards for telecommunications networks, Committee T1 membership is open to all persons with a direct and material interest in its activities. There are four membership interest categories: exchange carriers, interexchange carriers, equipment manufacturers, and users and general interest which includes user groups, professional associations, and agencies such as the Federal Communications Commission ("FCC" or "Commission"), the Commerce Department, and the State Department at the federal level, as well as state level agencies.

From the outset, Committee T1 and its technical subcommittees, now numbering seven, have represented a broad cross-section of the industry (e.g. in addition to exchange carriers such as Bell Atlantic, GTE, and United, interexchange carriers such as MCI and AT&T; manufacturers such as Rockwell International, Northern Telecom and AT&T; and members of the user community, including many representatives of the U.S. government)

as well as many foreign firms (e.g., Fujitsu, NEC, Siemens, Ericsson and Alcatel) as well as representatives from foreign telecommunications administrations (e.g. British Telecom and the Canadian Standards Association). The Committee currently has 177 members (84 voting members and 93 non-voting members) with the total number of technical experts participating at all levels of Committee T1 in the range of fifteen hundred.

Most important is the high level of productivity Committee T1 has been able to achieve during its seven-year existence. To date, nearly one hundred standards developed by Committee T1 have been approved as American National Standards or are in the approval process. Among these standards are eight American National Standards on Signalling System No. 7 ("SS7") covering the SS7 spectrum, from general information on the technology to transaction capabilities to operations and maintenance. With each of these SS7 standards, the overall objective is to provide an internationally standardized, general purpose, common channel signalling system that provides a reliable means of transfer of information. (See Attachment D for a complete listing of the standards.) In addition, nearly two hundred projects continue to be worked on in Committee T1, many of which will also result in American National Standards.

Thus, in its brief existence, Committee T1 has been able to establish a forum where over fifteen hundred experts from all segments of the telecommunications industry cooperatively engaged in a consensus process to develop timely technical standards

relating to existing and newly-emerging technologies.

Committee T1 has also achieved international preeminence. As noted earlier, Committee T1 stands as a model for the Japanese TTC and ETSI. Foreign standards bodies such as the Canadian Standards Association and the Swiss have emulated T1's work by adopting and reproducing T1 standards as their own.

Mention must also be made of the February 1990 Interregional Telecommunications Standards Council meeting convened at the invitation of Committee T1 in Fredericksburg, Virginia. Its purpose was to urge the International Telecommunication Union ("ITU") Administrative Council to consider changes within the International Telegraph and Telephone Consultative Committee ("CCITT") structure to maintain its preeminence as a worldwide telecommunications standards body. These changes included the need for CCITT to give priority to modernization, flexibility, and efficiency of its organization and working methods. Representatives from telecommunications administrations throughout the world attended, including Europe, Japan, Canada, and Australia. A second conference being held in mid-September in Nice, France, continues the important work started in Fredericksburg.

Committee T1's effectiveness can be attributed only to the voluntary nature of the current process of standards development as managed by ANSI. Through this process, industry participants are able to define priorities and utilize and allocate resources for achieving specific goals in the most efficient and cost

effective manner. Such success reflects T1's effectiveness in managing the flow of critical technical information to interested parties throughout the industry and globally. In fact, Committee T1, through its technical subcommittee T1S1 on Services, Architecture, and Signalling, has contributed over one hundred and eighty draft U.S. contributions this year alone to the CCITT which after approval by the U.S. Department of State become contributions to the ITU.

As to whether changes in the standards-development process are warranted and FCC action necessary, ECSA maintains that administrative or regulatory control over standards developers such as Committee T1 is not warranted and would be wrong.

The current private voluntary standards process administered by ANSI is the most sound, efficient and effective means for achieving essential standardization, particularly as it relates to telecommunications products and services. Any effort to increase FCC involvement or change direction mandated by the FCC would unnecessarily compromise the effectiveness of industry committees such as T1, and potentially redirect industry efforts to projects deemed important from a government perspective, rather than as demanded by the marketplace. For these reasons, ECSA submits that it would be a mistake if any effort were undertaken to redesign the domestic standards infrastructures so that greater FCC involvement or control could occur.

However, the FCC does have a valuable role to play relative to standards, and its role can be enhanced. Committee T1 has

sought and continues to seek formal liaison with the FCC as technical issues warrant, and provides input to the Commission, as appropriate, while the FCC monitors the standards work by receiving all documentation on a monthly basis. ECSA believes that this kind and level of involvement is an important and useful role for the government to take in private industry activities. It is one that should be reaffirmed and be continued.

In short, ECSA believes that the effectiveness of private industry standards development is well-supported. Committee T1 serves as just one example. No steps should be taken to inhibit or hinder these efforts. Rather, ECSA submits that a coordinated effort between the FCC and the industry would maximize opportunities for all.

FCC QUESTION VII. What Overall, Integrated Steps Should The FCC, State Regulators And Industry Take Together To Minimize Future Network Outages?

ECSA is aware of the seriousness of the recent SS7 outages and the magnitude of the implications for subscribers, for the network, and for the industry. ECSA believes that these concerns can best be resolved efficiently and effectively first by the industry. The complexities of the network do not offer easy solutions, and thus, regulatory involvement should be a well-defined, cooperative interface between the industry, the FCC, and the state regulators.

In the CLC arena, ECSA already has an established history of

operating in a cooperative FCC/industry partnership. The Commission has endorsed the CLC itself and has referred certain issues to the CLC. Among these were the technical issue of call splashing as it was being employed by the operator service provider industry. In just three months, the CLC Task Force filed a report with the FCC outlining the industry's response to the issue. Another FCC referral to the industry was the issue of call blocking between end offices and access tandems. Exactly one month after the FCC requested CLC assistance, the CLC reported back to the Commission that the industry had reached consensus that the first step was to provide useful data on trunk blocking. Two additional follow-up reports were made to the FCC, and a consensus resolution was reached, closing the issue of blocking data availability in just over four months after the CLC had been asked to address the matter.

Other examples of FCC-referred issues exist. The CLC and the OBF have been addressing meet-point billing of access services as directed by the Commission since 1985, with annual reports being sent to the FCC on the industry's progress. Toll fraud prevention issues also have been important to the FCC. The NOF's Toll Fraud Prevention Committee recently met with the Commission to indicate what the industry is doing to prevent this significant problem. The list goes on.

ECSA submits that this record of successful cooperation between industry and the FCC is one that should be affirmed here. ECSA's NOF is a vehicle that already exists and is already

undertaking the issues raised by the recent SS7 outages - an action prompted by the industry in response to the critical threats to the network and subscribers posed by SS7 outages. In fact, as noted earlier, the proper documentation exists in the NOF, the technical expertise is pooled in the NOF, and a solid track record of being responsive exists in the NOF. The NOF also can be proactive as demonstrated by its work on SS7 issues during the development of SS7 technology. ECSA believes the industry is well-equipped to seek real-time solutions to real-time problems via the NOF. This approach allows the more immediate industry concerns to be addressed and acknowledges that the long term solutions, i.e., technology-based solutions--can be referred to formal standards-setting bodies, such as Committee T1. In short, the NOF's work can focus on what can be done today.

As for regulatory involvement and/or intervention, it is clear that ECSA's inter-industry, consensus resolution Committees have worked in successful cooperation with the FCC for a number of years, receiving both industry and FCC endorsement. Further, ECSA believes that this is an effective relationship between regulators and industry -- one that should not be altered. To this end, the FCC could aid the industry's efforts in a cooperative relationship by attending the October meeting of the NOF in Alexandria, Virginia. And as with any ECSA-sponsored, industry-led activity, the FCC and state regulators are invited to monitor the efforts and the progress of the Committees and forums.

CONCLUSION

ECSA believes that the issues raised by the SS7 outages can be resolved by the industry most efficiently and that the interests of industry, government, and subscriber alike can be protected most effectively by the industry if a cooperative partnership is formed with regulators. Further, ECSA believes that it has the processes to undertake this endeavor and achieve sound, reliable results - whether the need is to set standards or resolve technical issues.

ECSA is confident that its Committees can provide effective forums for the efficient consideration of a wide variety of telecommunications issues, including SS7 issues, and can promote innovative responses to those issues involving telecommunications facilities, services, and equipment in a timely manner.

ATTACHMENT A

Exchange Carriers Standards Association At A Glance

Standards Committee T1-Telecommunications

T1E1
- Analog Access
- Wideband Access
- DSL Access
- Connectors and Wiring Arrangements

T1M1
- Internetwork Planning/Engineering
- Testing and Operations Systems and Protocols
- Architecture, Interfaces and Protocols

T1P1
- Personal Communications
- Wireless Access and Terminal Mobility
- Program Management and Standards

T1Q1
- 4kHz Voice and Voiceband Data
- Digital Packet and ISDN
- Survivability
- Digital Dedicated and Switched Circuit

T1S1
- Architecture and Services
- Switching and Signaling Protocols
- Common Channel Signaling
- Broadband ISDN

T1X1
- Synchronization Interfaces
- Metallic and Optical Hierarchical Interfaces
- Tributary Analysis Interfaces

T1Y1
- Specialized Audio and Video Services
- Specialized Voice and Data Processing
- Environmental Standards

Carrier Liaison Committee

Network Operations Forum
- Installation, Testing and Maintenance Guidelines
- CCS/SS7
- Digital Testing Workshop
- Toll Fraud Prevention

Industry Carriers Compatibility Forum
- Automatic Number Identification
- SS7 Point Code Workshop
- Operator Emergency Call Handling Workshop

Ordering and Billing Forum
- Customer Accounts Record Exchange
- Meet Point Billing
- Special Access

Telecommunications Industry Forum

Bar Code
- Bar Code Label Specifications
- Product Package Guidelines
- Cable Reel Specifications

Information Product Interchange
- Standard Generalized Markup Language
- Tabular Information Interchange
- Technical Illustrations Interchange

Standard Coding
- Product Identification Nomenclature Guidelines
- Telecommunications Industry Product Identifier
- Date of Manufacture Coding Guidelines

Electronic Data Interchange
- Data Interchange Standards
- EDI Methods and Procedures
- EDI Guidelines for Procurement

Information Industry Liaison Committee

- Open Network Architecture
- ONA Services User Guide

Protection Engineers Group

- Electrical Protection Equipment

Standards Committee 05 Wood Poles and Products

- Wood Crossarms and Timber for Utility Structures

Moderator, Rick Harrison
Secretary, Art Walsh

Room 4E201
290 W. Mt. Pleasant Avenue
Livingston, N.J. 07039

NOF

Network Operations Forum

August 6, 1991

To Industry participants:

As a result of the recent SS7 related service outages, the Network Operations Forum, SS7 Workshop has agreed to expand the scope of its work and pursue open industry discussions surrounding the topic of SS7 Integrity Assurance. The Workshop is eliciting the views and experience of **carriers and equipment manufacturers,** *with the goal of improving the reliability of CCS networks under various conditions of network stress. Drawing on the collective expertise of its participants, the SS7 Workshop will provide an avenue to exchange information and examine issues relative to continued reliability of the CCS network.*

Attached is a meeting announcement and the agenda for the October 2 & 3, 1991 SS7 Workshop. We have allocated specific time on the agenda to discuss SS7 Integrity Assurance. In order to facilitate discussion, the following concerns have been suggested, for your consideration:

- **Network failure scenarios - potential vulnerabilities**
- **Selection of protocol options (e.g. timers) within standards and requirements**
- **Enhancements to CCS network architecture and protocols**
- **Additional protocol performance objectives**
- **Interconnection considerations - congestion, emergency communications, etc.**
- **Operations recommendations for minimizing outages**

The objective of this discussion is to identify if concerns are already addressed by existing NOF issues and to develop new issues, where necessary, if they are not. Attached is a blank NOF Issue Identification Form.

I look forward to meeting you and for your input. The NOF has a successful track record in solving industry operational problems and documenting guidelines and procedures for use by interconnecting networks. With your help we hope to continue that success.

Sincerely,

Rick Harrison
NOF Moderator

NOF ISSUE IDENTIFICATION FORM

ISSUE TITLE:

ISSUE #:

COMMITTEE ASSIGNED:

DATE SUBMITTED:

ISSUE ORIGINATOR:

RESOLUTION DATE:

TEL #:

COMPANY:

FINAL CLOSURE:

1. ISSUE STATEMENT:

2. SUGGESTED RESOLUTION OR OUTPUT/SERVICE DESIRED:

3. OTHER IMPACTS:

4. ISSUE DISCUSSION:

5. RESOLUTION:

6. IMPLEMENTATION STATEMENT:

NETWORK OPERATIONS FORUM (NOF)

SS7 WORKSHOP

MEETING ANNOUNCEMENT

HOSTED BY: US TELEPHONE ASSOCIATION

Date: *October 2 - 3, 1991*

Times:
October 2, 1991
8:00 a.m. - 12.00 p.m. (Regular SS7 Workshop)
1:00 p.m. - 5:00 p.m. (SS7 Integrity Assurance)

October 3, 1991
8:00 a.m. - 12:00 p.m. (SS7 Integrity Assurance)

Where: *The Embassy Suites Hotel-Alexandria*
1900 Diagonal Road
Alexandria VA. 22314
(703)-684-5900

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RESERVATION DEADLINE: September 15, 1991

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Reservation: *Please contact the hotel direct on* **703-684-5900** *and mention you will be attending the Network Operations Forum, hosted by the USTA, to receive a room rate of $119.00 per nite (single or double).*

Transportation: METRO: *Take the* **Yellow** *line toward Huntington. Two (2) stops to* **KING ST.** *Exit at King St., hotel is directly across the street. Metro cost $1.05.*
TAXI: *Approximately $10. - $15.00, depending on rush hour traffic.*

To ensure adequate accommodations for the meeting, attendees are requested to contact Art Walsh, NOF Secretary, on 201-740-4313 or 201 740-3674, after making hotel arrangements.

Questions: *Please contact Art Walsh, NOF Secretary on 201-740-4313.*

NOTE:

Recent SS7 related outages have raised some new concerns in the industry. As a result, the SS7 Workshop has agreed to expand the scope of its work and is allocating the afternoon of October 2 and the morning of October 3, for open discussion surrounding the topic of **SS7 Integrity Assurance**. *This will allow the equipment manufacturers and other interested parties better scheduling flexibility to attend just this part of the meeting. However, participation at all NOF meetings is open to all interested parties.*

NOTE: This notice is being reissued to correct the Hotel contact telephone number from 703-684-1403 *to* 703-684-5900.

NETWORK OPERATIONS FORUM (NOF)

SS7 WORKSHOP

PROPOSED AGENDA

HOSTED BY: US TELEPHONE ASSOCIATION

(Wednesday 10/2/91) - *8:00 a.m. - 12:00 p.m. (SS7 Workshop meeting)*
1:00 p.m. - 5:00 p.m. (SS7 Integrity Assurance)

7:30 A.M. *Continental Breakfast*

8:00 A.M. Opening.....*Gary Beohmerle*

Review of Open Issues.....*Gary Beohmerle/Norb Lucash*

Issue #119 - Acceptance of Network Management Messages Across Network Boundaries

Issue #121 - STP Gateway Screening for Interconnecting Networks

Issue #127 - Compatibility Tests Severity Criteris - SS7 Interconnection

Issue #128 - Emergency Communications

Issue #129 - SCCP Routing/Management Control Tests

SS7 Integrity Assurance

New Business

5:00 P.M. Adjourn

NETWORK OPERATIONS FORUM (NOF)

SS7 WORKSHOP

PROPOSED AGENDA

HOSTED BY: US TELEPHONE ASSOCIATION

(Thursday 10/3/91) - *8:00 a.m. - 12:00 p.m. (SS7 Integrity Assurance)*

7:30 A.M. *Continental Breakfast*

8:00 A.M. Opening.....*Gary Beohmerle*

SS7 Integrity Assurance (cont.).....*Gary Beohmerle/Norb Lucash*

New Business

Next Meeting Agenda

12:00 p.m. Adjourn

ISSUE STATUS

ATTACHMENT

ISS NO.	ISSUE TITLE	ASSIGN	STATUS	NOTE	MOD DATE
001:	Advance Agreement on Responsibilities	S&F	Closed		9/22/89
002:	Communications #A	S&F	Closed	Ref. Iss. 001	1/9/90
003:	Communications #B	S&F	Closed	Ref. Iss. 001	1/9/90
004:	Pre-planning for SS7 Network Failures	S&F	Closed		9/22/89
005:	800 Network Management	S&F	Withdrawn	Non-Issue	7/21/88
006:	*Vacant*				
007:	Post Gateway	SS7	Withdrawn		7/23/91
008:	Documentation for SS7	ITM	Closed		4/11/89
009:	Test Access for SS7	ITM	Withdrawn		4/24/90
010:	Availability of Transmission Characteristics	ITM	Closed		1/9/90
011:	SS7 Syncronization specifications	ITM	Closed		1/9/90
012:	SS7 Test-Scripts Procedures	ITM	Withdrawn		4/11/89
013:	Timer Setting/Default for SS7	ITM	Closed		1/9/90
014:	Generic Upgrade Procedure for SS7	ITM	Withdrawn	Ref.#021,#029	4/11/89
015:	Alarm Reporting Procedures for SS7	ITM	Withdrawn		4/11/89
016:	SS7 Network and Trouble Reporting Procedures	SS7	Closed		9/25/90
017:	SS7 Network Administration Procedures	ITM	Withdrawn	Ref.to OBF	7/26/89
018:	SS7 Installation Procedures	SS7	Closed		7/23/91
019:	SS7 Network Management Procedures	SS7	Closed		7/23/91
020:	SS7 Network W/Multi ECs	SS7	Closed		9/25/90
021:	SS7 Inter-Network Testing	SS7	Closed		9/25/90
022:	SS7 Correlation of SS7 Trouble Reports/W the Signalling Network	ITM	Withdrawn		7/26/89
023:	SS7 Killer Trunk Procedures	ITM	Closed		4/24/90
024:	SS7 Trunk Trouble Reporting	ITM	Withdrawn	Ref.#022	
025:	SS7 Trunk Numbering Plans	ITM	Closed	Ref.to OBF	1/10/90
026:	SS7 Trunk Alarm Reporting Procedures	ITM	Withdrawn		4/12/89
027:	SS7 Trunk Installation and Acceptance Procedures	SS7	Closed		7/23/91
028:	Inband to SS7 Trunk Conversion Procedures	SS7	Closed		9/25/90
029:	SS7 Trunk Rearrangements Procedures	SS7	Closed	ref.to OBF	2/27/91
030:	SS7 Trunk Network Management Procedures	S&F	Closed		9/22/89
031:	SS7 Trunk Multi EC Procedures	SS7	Closed		9/25/90
032:	SS7 Trunk Inter-Network Testing Procedures	SS7	Withdrawn		4/24/90
033:	SS7 Trunk Switching Translations Procedures	ITM	Withdrawn		7/27/89
034:	Telecommunication Service Priority	ITM	Closed		1/9/90

ISSUE STATUS

ISS NO.	ISSUE TITLE	ASSIGN	STATUS	NOTE	MOD DA
035:	Remote Loopback Devices	ITM	Closed		8/17/8
036:	Disconnect Timing	ITM	Closed		8/17/8
037:	Call Waiting	ITM	Closed	ACT-ICCF	1/9/90
038:	Trunk Numbering	ITM	Closed		8/17/8
039:	ESF Digital Testing	ITM	Closed	Pending DTW	1/9/90
040:	Switched Access Software Services	ITM	Withdrawn		2/26/9
041:	Syncronization	ITM	Closed		1/9/90
042:	Emergency Call Trace	ITM	Closed		8/17/8
043:	Envelop Delay Distortion Test Methods	ITM	Closed	Pending DTW	9/25/9
044:	IC Trouble Referal Time	S&F	Closed		9/22/8
045:	Involved EC Reports	S&F	Closed		1/9/90
046:	Out of Band Data Base Troubles	S&F	Closed		4/24/9
047:	IC Trouble Referral	S&F	Withdrawn	Non-Issue	1/10/8
048:	Non-Involved EC Trouble Referral	ITM	Closed		9/25/9
049:	800 Directory Assistance	S&F	Closed		4/24/9
050:	EC Non Participation	S&F	Closed	On Hold	1/9/90
051:	Misdirected Trouble Reports	S&F	Closed		1/10/8
052:	Trouble Reporting Transition Plan	S&F	Closed		4/24/90
053:	900 Service Call Through Test Number	S&F	Closed		8/16/88
054:	900-NXX Trouble Reporting	S&F	Closed		8/16/88
055:	Recorded Announcement for No Trunk	S&F	Closed		4/24/90
056:	IEC Recorded Announcements Suffixes	S&F	Withdrawn		1/10/89
057:	LEC Recorded Announcement (No Wink)	S&F	Closed		1/10/89
058:	LEC Recorded Announcement (All Trunk Busy)	S&F	Closed		1/10/89
059:	Impact of clarification of ASC concept on NOF document Sp Acc, WATS & Sw'd Acc FG A, Sect 10 (Issue 4, Draft 2) and Sw'd Acc FG B, C, D, Sect 8 (Issue 3, Nov. '87)	ITM	Closed		1/9/90
060:	Implementation of New Technical requirements for Switched Exchange Access	ITM	Closed		4/24/90
061:	Acceptance Testing POT to EO	ITM	Closed		1/9/90
062:	Interface Standard for 64kbit	ITM	Withdrawn		1/11/8
063:	Testline Directories	ITM	Closed		9/22/8

ISS NO.	ISSUE TITLE	ASSIGN	STATUS	NOTE	MOD DA
064:	800 Directory Assistance	S&F	Withdrawn		4/12/8
065:	800 Database Trouble Reporting Procedures Required	S&F	Closed		9/22/8
066:	Digital Stress Testing - DS-1 Level	ITM	Closed		1/9/9
067:	End Office/SSP Call Treatment on Invalid CIC	S&F	Closed		4/12/8
068:	Special Information Tones (SIT)	S&F	Not accepted		3/21/8
069:	Glare Convention	ITM	Closed		9/22/8
070:	Assignment of Signaling Link Control	ITM	Closed	See B.S.Doc 2.1	9/22/8
071:	Assignment of Signaling ISDN-UP Trunk Control Office	ITM	Closed		4/11/8
072:	Time of Day Timing for SS7	SS7	Closed		2/27/9
073:	SS7 Links TSP	ITM	Closed	Ref.to OBF	9/22/8
074:	Identification of SS7 Links	ITM	Withdrawn	Ref.to OBF	7/27/8
075:	Universal EC-IC TL Access Numbering Plan	ITM	Closed		9/22/8
076:	Lineside Call Thru Testing Response	ITM	Closed		8/2/8
077:	Intelligent NCTE	ITM	Closed		6/15/9
078:	ANI of Lines(s) Making Call Thru Tests	ITM	Closed		1/9/90
079:	SS7 Network Element Acceptance Testing	ITM	Withdrawn		4/24/9
080:	*Acceptance Testing and Maintenance Parameters/Criteria for SS7 Links*	*SS7*	*Active*		7/26/8
081:	Acceptance Testing Levels for Link Completion/Turnup	SS7	Closed		9/25/9
082:	SS7 Inter-Network Connection Testing Procedures	SS7	Closed		7/23/9
083:	Changeout of E&M Channel Units when Converting to SS7	SS7	Closed		7/23/9
084:	SS7 Continuity-Check for Message Trunks	ITM	Closed		4/24/9
085:	800 Database Operator Assistance Procedures	ITM	Withdrawn		4/24/9
086:	Link Set Number Requirements	SS7	Closed	Ref.to OBF	7/23/9
087:	Emergency Communications Capabilities for SS7 Failures	SS7	Closed		9/25/9
088:	Trouble Referral/Testing Procedures for Connection Set Up Time	ITM	Closed		1/9/90
089:	Routing Verification for CIC Code Openings	ITM	Closed		1/9/90
090:	800/900 Routing Verification Call Thru Tests	ITM	Closed		1/9/90
091:	Long Term 800 Data Base Testing	ITM	Closed		4/24/9
092:	SS7 Compatibility Test Requirements	SS7	Closed		9/25/9
093:	DS-1 Loopback Devices	ITM	Closed	HIGH	4/24/9
094:	Acceptance of DS-1 Service Within Existing DS-3 Service	ITM	Closed	HIGH	9/25/9
095:	Responsible Organization Operations Responsibilities	SS7	Closed		4/24/9
096:	Switched Access Service Maintenance for DS-1	ITM	Closed		9/25/9

ISS NO.	ISSUE TITLE	ASSIGN	STATUS	NOTE	MOD DAT
097:	NOF Document Glossary Update	ITM	Closed		4/25/90
098:	Flash on Unanswered Calls	ITM	Active		2/13/90
099:	Operational Requirements for SS7 Link Diversity Assurance	SS7	Closed		9/25/90
100:	Vacant				
101:	Catastrophic SS7 Net. Failure/Restoration Broadcast/SS7 Contact Dir	SS7	Closed		7/23/91
102:	CCS Individual POP Serving Multiple Switches	SS7	Closed		9/25/90
103:	Vacant				
104:	Development of Text on 800 Service for NOF Document	ITM	Closed		9/25/90
105:	Manual Call Gapping 800-900 NXX/Data Base	ITM	Closed		9/25/90
106:	SS7 ISUP Testing	SS7	Closed		2/27/91
107:	SS7 Testing - Signalling Control Compatability Part (SCCP)	SS7	Closed		7/23/91
108:	Tones and Announcements in SS7 Environment	SS7	Closed		2/27/91
109:	Testing in a 800 Data Base Environment	ITM	Withdrawn		2/26/91
110:	Responsible Organization ID 800 Data Base Transitional	ITM	Closed		2/26/91
111:	800NXX/Data Base End Office Test Access Capability	ITM	Closed		2/26/91
112:	Operational SPOI Definition	SS7	Closed		2/27/91
113:	Using NCTE for Acceptance and Maintenance	ITM	Active		9/25/90
114:	800 Data Base Disconnect Referral Announcements	ITM	Closed		7/23/91
115:	Network Management - Call Gapping	ITM	Active		10/31/90
116:	Resp Org Responsibilities - 800 Data Base	ITM	Closed		7/23/91
117:	Trouble Reporting During Resp Org Changes	ITM	Closed		2/26/91
118:	800 Data Base National Test Number Availibility	ITM	Closed		7/23/91
119:	Acceptance of Net. Mgmt. Messages Across Network Boundaries	SS7	Active		11/1/90
120:	Net. Mgmt. Associated w/Network Interconnect (TCAP)	SS7	Closed		7/23/91
121:	STP Gateway Screening for Interconnecting Networks	SS7	Active		2/27/91
122:	Announcements for Unassigned or Disconnected 800 NXX Lines	ITM	Active		2/26/91
123:	800 Data Base National Test Number Availibility	ITM	Closed		7/23/91
124:	Prior Notification of Media Stimulated Calling Events	ITM	Active		2/26/91
125:	Simplification of AMI/B8ZS Line Code Verification	ITM	Closed		7/23/91
126:	Interconnecting Net.(ICN) Identification in NOF Proc.	SS7	Closed		7/23/91
127:	Compatibility Tests Severity Criteria - SS7 Interconn.	SS7	Active		4/10/91
128:	Emergency Communications	SS7	Active		4/10/91
129:	SCCP Routing Management Controls Tests	SS7	Active		6/5/91
130:	DS1 Service Riding DS3 Interfaces or DS1 Service on DS1	ITM	Active		6/6/91
131:	800/900 Call Blocking Data	ITM	Active		6/6/91

ISSUE STATUS

ISS NO.	ISSUE TITLE	ASSIGN	STATUS	NOTE	MOD DA
132:	800/900 Routing Verification	ITM	Active		6/6/91
133:	800/900 New Translation Code Test requirements-Multi EC	ITM	Active		7/23/9
134:	Switched Digital Data Testing	ITM	Active		7/23/9
135:	Inter Connection Testing - ISDN Service	ITM	Active		7/23/9

Attachment D

Signalling System No. 7 Standards: Developed by Committee T1, And Approved and Published by ANSI

The following SS7 Standards have been developed by Committee T1, and have been approved and published by the American National Standards Institute:

- Signalling System No. 7, General Information (ANSI T1.110-1987)
- Signalling System No. 7, Message Transfer Part (ANSI T1.111-1988)
- Signalling System No. 7, Signalling Connection Control Part (ANSI T1.112-1988)
- Signalling System No. 7, ISDN User Part (ANSI T1.113-1988)
- Signalling System No. 7, Transaction Capabilities (ANSI T1.114-1988)
- Monitoring and Measurements for Signaling Systems No. 7 Networks (ANSI T1.115-1990)
- Signaling Systems No. 7 Operations, Maintenance and Administrative Parts (ANSI T1.116-1990)
- Interworking Between the ISDN User-Network Interface Protocol and the Signaling System No. 7 ISDN User Part (ANSI T1.609-1990)