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Public Service Commission

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Docket No. : 960847-TP

Docket Title: Petition by AT&T Communications of the Southern States, Inc. for arbitration of certain terms and conditions of a proposed agreement with GTE Florida Incorporated concerning interconnection and resale under the Telecommunications Act of 1996.

DN 08677-96

MOVED AS EXHIBIT 6 AS RC-3, FOR THE 10/14/96 HRG.
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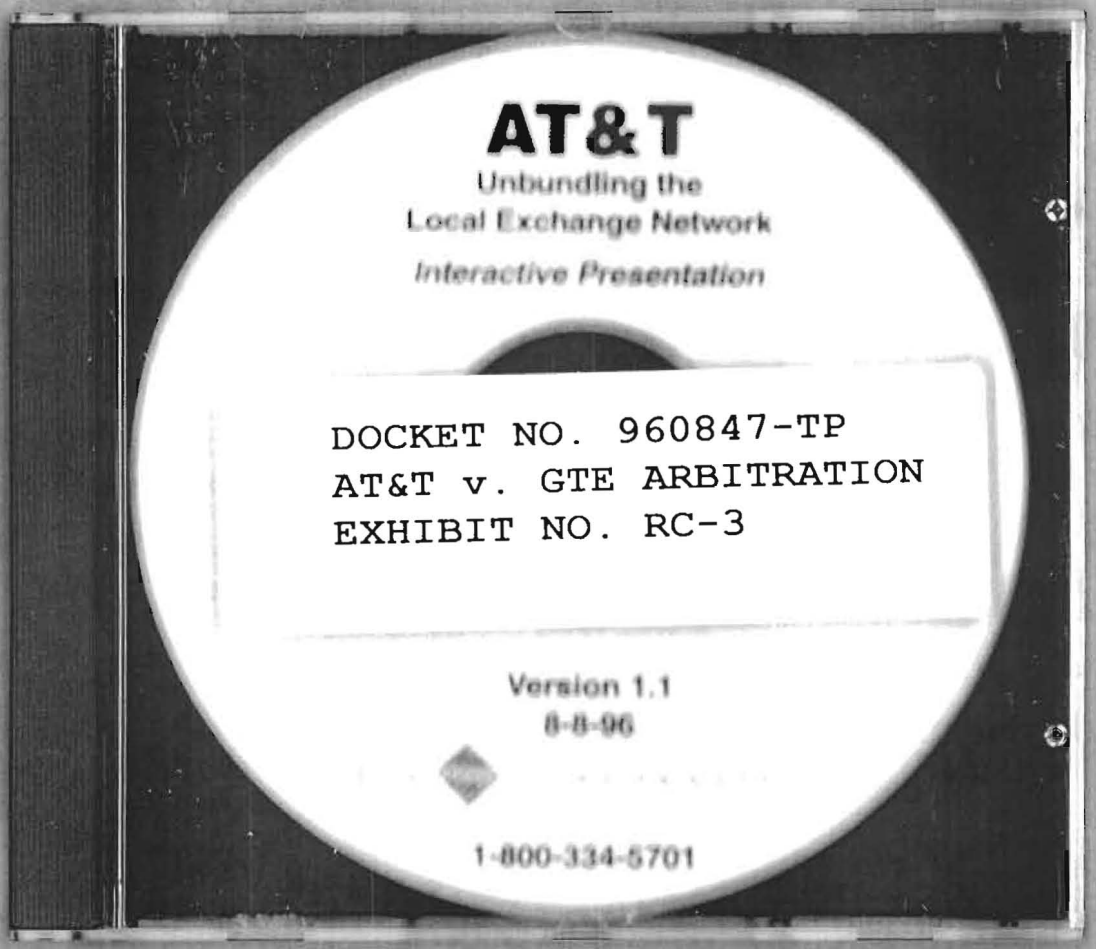
AT&T
Unbundling the
Local Exchange Network
Interactive Presentation
DOCKET NO. 960847-TP
AT&T v. GTE ARBITRATION
EXHIBIT NO. RC-3
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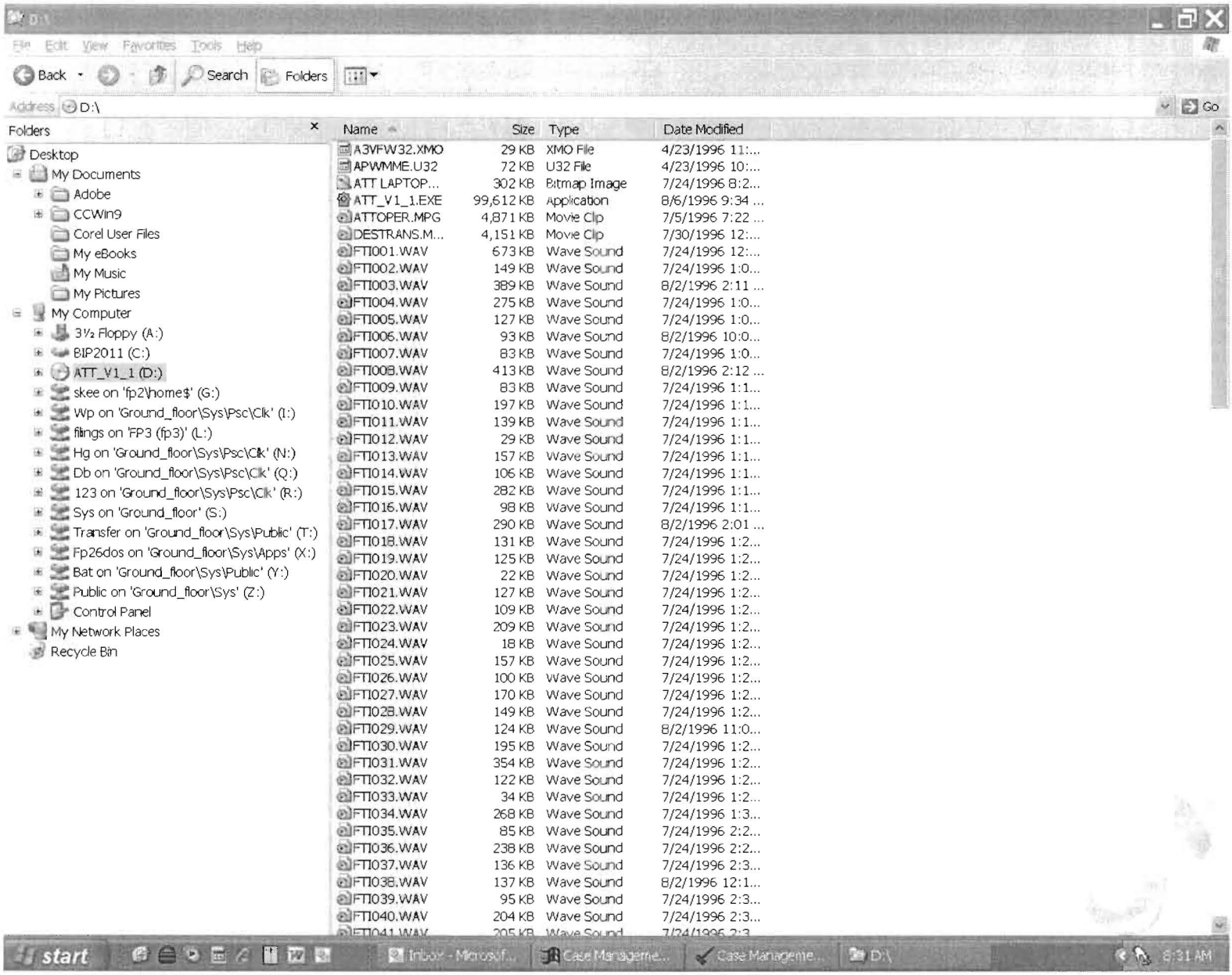
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DIRECT TESTIMONY OF

RAY CRAFTON

AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC.

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 960847-TP

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ray Crafton. My business address is 1200 Peachtree Street, NE, Atlanta, Georgia, 30309-3579.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND AND EXPERIENCE.

A. I earned a Bachelor of Science degree in Mathematics with a Minor in Computer Science at the University of Maryland in 1972. In 1973 I joined Bell Laboratories as a member of the technical staff, where I was responsible for designing telephone operator systems and performing economic and financial analyses on those designs. And in 1974, I earned a Master of Science in Operations Research, a field in which mathematical techniques are applied to solving complex business problems.

From that time until 1980, I continued as a member of the technical staff of Bell Laboratories, where I participated in the design of various telephone operator system enhancements such as Automated Coin Toll Service (which automates the quotation of rates and collection of coins on coin sent paid calls); automatic calling card service (which allows customers to dial their own calling card calls using a personal identification number without operator assistance); and the operator systems enhancements necessary to handle cellular mobile customers' operator calls.

In late 1980, I joined the Traffic Network Planning Department of the AT&T

General Departments, where I led the development of computerized planning tools used by the Bell Operating Companies to plan the optimal deployment of telephone operator systems. In 1981 I was promoted to District Manager - Traffic Network Planning and began to lead the development of planning guidelines and computer tools for the toll switched network. I also became responsible at that point for project management of Dynamic Non-Hierarchical Routing (DNHR). DNHR allowed AT&T to reduce the number of trunk groups and facility mileage in its inter-toll network by more flexibly routing traffic over idle paths in the network. While project managing DNHR, I was also responsible for AT&T's joint planning and joint ownership program with independent telephone companies. This ended in 1983 on the eve of AT&T's divestiture of the Regional Bell Operating Companies. To be successful in this array of assignments, I had to develop a strong knowledge of local networks. After divestiture, I became responsible for AT&T network architecture and recommended applications and enhancements in the 4ESS, 5ESS, Digital Access and Cross-connect System and other systems to support AT&T's switched and dedicated services. During this assignment I developed technical regulatory analyses to support Computer Inquiry II and the Open Network Architecture concept for enhanced services. From 1988 to 1993 I led the project management of all technology for AT&T's Signaling System No. 7 network and conducted the first interconnection of an inter-exchange carrier and a local exchange carrier signaling network between AT&T and BellSouth. In 1993 I became responsible for strategic access planning, an assignment focused on improving the quality and cost of interexchange access. In 1994 I earned a Masters degree in Business Administration from Columbia University. And in 1995 I was promoted to Division Manager - Customer Connectivity Planning, a position responsible for

developing the strategies, methods, computer tools, and plans for AT&T's local and access business.

Q. PLEASE DESCRIBE YOUR CURRENT EMPLOYMENT AND THE SCOPE OF YOUR RESPONSIBILITIES.

A. I am the Business Manager for AT&T's Southern States Local Service Organization. My division is responsible for managing the portfolio of local and access products AT&T is introducing in the 9 states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee. My current position is responsible for negotiations with BellSouth and other suppliers and partners that support our local market entry; for the profit and loss of the local product portfolio; and for project management of our local market entry program.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE ANY STATE PUBLIC SERVICE COMMISSIONS? IF SO, BRIEFLY DESCRIBE THE SUBJECT(S) OF YOUR TESTIMONY.

A. I testified before the California commission in the late 1980s on the subject of technological obsolescence. This was related to the setting of accelerated depreciation rates as competition in the inter exchange industry drove faster network modernization.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe the unbundled network elements that AT&T has requested that GTE make available to AT&T, and which GTE, as an incumbent local exchange carrier ("ILEC"), must make available to satisfy the requirements of the Federal Telecommunications Act of 1996 (the "Act").

Specifically, I will: (1) describe unbundling and its role under the Act; (2) identify the twelve elements of GTE's network which AT&T has requested be unbundled and explain why AT&T needs the functionalities of these unbundled network elements in order to be competitive in the provision of local services; (3) explain why AT&T must be allowed to combine unbundled network elements as needed to provide consumers with choices for local service; and (4) identify those network elements and other requirements that GTE has refused to make available to AT&T, and discuss why each is technically feasible and necessary to effectuate the Act's procompetitive purpose.

I. INTRODUCTION

Q. WHY DID AT&T REQUEST ARBITRATION ON UNBUNDLED NETWORK ELEMENTS?

A. AT&T requested arbitration on unbundled network elements because GTE refuses to provide access to all of the unbundled network elements and combinations that AT&T requested in its proposed Interconnection Agreement. AT&T's proposed Interconnection Agreement is Attachment 2 to AT&T's Petition For Arbitration, filed today. GTE's position rests in large part on the belief that it is not required under the Act to provide unbundled network elements and interconnection under terms and conditions which are equal to those GTE provides itself. GTE also refuses to offer certain unbundled network elements to AT&T because GTE claims that it is not technically feasible to do so. In addition, GTE has placed restrictions on how AT&T may use the unbundled network elements, and on the collocation of equipment in GTE's offices. These restrictions not only are contrary to what the Act explicitly requires of GTE, but also would prevent AT&T from offering consumers a choice in local telephone services. Lastly, GTE refuses to provide AT&T with

several additional requirements AT&T needs to utilize these unbundled network elements in the provision of local services.

In summary, GTE's position will result in a scenario that is wholly insufficient and inadequate to meet the business needs for the provision of services AT&T seeks to offer. AT&T intends to buy unbundled network elements and to use those elements either alone, or together with services purchased for resale, or with AT&T's own facilities or with third party-owned facilities, to provide retail services in Florida. Were the Commission to adopt GTE's position on unbundled network elements, it would make it impossible for AT&T to compete fully in the local market, leaving consumers without the benefits Congress intended.

Q. WHAT DOES "UNBUNDLED NETWORK ELEMENT" MEAN?

A. Under the Act, GTE is obligated "to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms and conditions that are just, reasonable and nondiscriminatory." 47 U.S.C. § 251(c)(3). This section further directs GTE to "provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service." Id. The Act defines a network element to be " a facility or equipment used in the provision of a telecommunications service," including the "features, functions, and capabilities that are provided by means of such facility or equipment, including subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service." 47 U.S.C. § 153(29).

An unbundled network element results from identifying and disaggregating the local

exchange network into a set of elements or basic network functions, which can be individually provided, costed, priced, maintained, and combined in such a way as to provide service offerings. The unbundled network elements either can be physical facilities and/or features, functions, and capabilities provided by those facilities. Unbundled network elements are the piece parts of the network whose functionality is required to provide AT&T the network features and capabilities it needs to offer competitive services for the benefit of consumers.

Q. WILL THE DESCRIPTION OF UNBUNDLED NETWORK ELEMENTS PROVIDED IN THIS TESTIMONY CHANGE OVER TIME?

A. Yes. While AT&T's present minimum set of network elements are described below, unbundling is not a static concept. As local competition develops, specific carrier needs, market developments, or advances in technology used to provide services will create additional circumstances warranting further unbundling. Thus, AT&T's list of unbundled network elements is not meant to be exhaustive, but instead should be viewed as the "baseline" unbundling immediately required under the Act.

II. AT&T'S REQUESTS FOR UNBUNDLED NETWORK ELEMENTS

Q. WHAT ARE THE UNBUNDLED NETWORK ELEMENTS THAT AT&T HAS REQUESTED FROM GTE?

A. AT&T has requested that GTE make the following unbundled network elements available under the terms of AT&T's Interconnection Agreement. Attached as Exhibit RC-1 to my testimony is a schematic depicting the local network. Attached as Exhibit RC-2 is a series of graphic representations of the twelve requested unbundled network elements and the use of each in providing local services to consumers. Exhibit RC-3 is a CD-ROM presentation depicting the local network, its component unbundled elements, and the functionality of each element. Today, these

elements are available exclusively or almost exclusively from GTE, and must be unbundled and made available for use by AT&T either individually or in a combination with other elements:

1. Network Interface Device
2. Loop Distribution
3. Loop Concentrator/Multiplexer
4. Loop Feeder
5. Local Switching
6. Operator Systems
7. Dedicated Transport
8. Common Transport
9. Tandem Switching
10. Signaling Link Transport
11. Signal Transfer Points
12. Service Control Points/Databases

Q. PLEASE DESCRIBE THE LOCAL LOOP FACILITY.

A. The Local Loop Facility provides a transmission pathway between the subscriber's residence or business and his or her local central office. The Local Loop Facility can be subdivided into four sub-loop network elements: (1) the Network Interface Device, (2) Loop Distribution, (3) the Loop Concentrator/Multiplexer, and (4) the Loop Feeder.

1. <u>NETWORK INTERFACE DEVICE</u>

Q. PLEASE DEFINE THE NETWORK INTERFACE DEVICE AND ITS FUNCTION.

A. The Network Interface Device ("NID") is the physical location where facilities from

the customer's local service provider connects to the inside wiring at the customer premises. The NID also provides a protective ground connection for the Loop. For further description and the technical and interface requirements for the NID, see AT&T's Interconnection Agreement, § 33.9.1, and Attachment 2, § 2.1.

Q. PLEASE EXPLAIN THE NEED FOR UNBUNDLING THE NID.

A. AT&T requires access to the NID to connect efficiently with the inside wiring at the customer premises. Without access to GTE's NID, AT&T and other new entrants will not be able to make use of any existing spare terminals in GTE's NID, or lift GTE's Loop Distribution wire within the NID in order to ground that wire, thereby making terminals available for use by the new entrants. Without unbundling the NID, AT&T and other new entrants that provide their own Loop Distribution facilities would be required to install their own NID on the customer premises (including hanging a new box and fishing for the wires in the walls) each time the customer changed his or her local service provider. Access to the unbundled NID also is necessary to connect AT&T with the electrical grounding of the telecommunications interface to the customer premises.

2. LOOP DISTRIBUTION

Q. PLEASE DEFINE LOOP DISTRIBUTION AND ITS FUNCTION.

A. Loop Distribution is the network element that connects the customer to the local network by connecting the customer's NID to either the Feeder Distribution Interface or the Loop Concentrator/Multiplexer. The Feeder Distribution Interface is a device that terminates the Loop Distribution and the Loop Feeder, and cross-connects them in order to provide a continuous transmission path between the NID and a telephone company central office. For loop plant that contains a Loop Concentrator/Multiplexer, the Loop Distribution may terminate at the Feeder

Distribution Interface (if one exists), or at a termination and cross-connect field associated with the Loop Concentrator/Multiplexer. This termination and cross-connect field may be in the form of an outside plant distribution closure, remote terminal or fiber node, or an underground vault. The Loop Distribution may be copper twisted pair cable, coax cable, or single or multi-mode fiber optic cable. For further description and the technical and interface requirements for Loop Distribution, see AT&T's Interconnection Agreement, § 33.9.1, and Attachment 2, § 2.2.

Q. EXPLAIN THE NEED FOR UNBUNDLING LOOP DISTRIBUTION.

A. AT&T requires unbundling of Loop Distribution, for example, where AT&T deploys local fiber rings and its own switches, but does not own the facilities to span the "last mile" to the customer premises. In this scenario, AT&T could use its fiber rings to transport traffic between its central office and GTE's Loop Distribution, in conjunction with a Loop Concentrator/Multiplexer, to deliver traffic between AT&T's central office and the customer premises. In addition, in some settings, particularly apartment developments and office buildings, the Loop Concentrator/Multiplexer is located in the building itself. Accordingly, use of GTE's Loop Concentrator/Multiplexer and Loop Distribution plant may be the most efficient way for AT&T to reach individual customers in these situations.

3. LOOP CONCENTRATOR/MULTIPLEXER

Q. PLEASE DEFINE THE LOOP CONCENTRATOR/MULTIPLEXER AND ITS FUNCTION.

A. The Loop Concentrator/Multiplexer is the network element that provides several functions needed to assist in transmitting calls across the network. It converts analog signals coming in from customers to digital signals that are sent across the

network. It also concentrates the traffic from the many lines coming in from end-users to fewer lines going out to the central office. Lastly, to accommodate large volumes of traffic using fewer facilities, the Loop Concentrator/Multiplexer intersperses the digital signals from calls into one high speed digital signal. For further description and the technical and interface requirements for the Loop Concentrator/Multiplexer, see AT&T's Interconnection Agreement, § 33.9.2, and Attachment 2, § 3.

Q. EXPLAIN THE NEED FOR UNBUNDLING THE LOOP CONCENTRATOR/MULTIPLEXER.

A. AT&T needs access to GTE's unbundled Loop Concentrator/Multiplexer because it provides capabilities that are crucial to AT&T's ability to efficiently access its customers in various circumstances. In order to assure that carriers which need only the concentrator/multiplexer and feeder functionality (for example, where AT&T buys distribution from a cable television provider) do not pay for the loop distribution functions, and also to assure that carriers which need only the concentrator/multiplexer and loop distribution functions (for example, where AT&T uses its fiber rings to transport traffic between its central office and the customer) are not required to pay for the loop feeder functions, GTE should be required to unbundle the Loop Concentrator/Multiplexer element from each of the other loop elements. This will effectively permit AT&T to purchase only the specific functions required to provide local services to consumers.

4. LOOP FEEDER

Q. PLEASE DEFINE THE LOOP FEEDER AND ITS FUNCTION.

A. The Loop Feeder connects the customer lines at the Feeder Distribution Interface or the Loop Concentrator/Multiplexer, if one is in place, with the local central office.

For further description and the technical and interface requirements for the Loop Feeder, see AT&T's Interconnection Agreement, § 33.9.3, and Attachment 2, § 4.

Q. EXPLAIN THE NEED FOR UNBUNDLING THE LOOP FEEDER.

A. AT&T needs unbundled access to the Loop Feeder to gain access to its customers in situations where it has deployed its own distribution plant or has purchased that functionality from another vendor, but will use GTE's Feeder capabilities (with or without GTE's Loop Concentrator/Multiplexer) to transport traffic to and from GTE's central office . This might occur, for example, where AT&T wires a new housing subdivision or corporate campus complex, but does not have its own switch or its own transmission facilities to that switch.

5. LOCAL SWITCHING

Q. PLEASE DEFINE LOCAL SWITCHING AND ITS FUNCTION.

A. Local Switching is the network element that provides many of the fundamental functionalities of the local network. Among other key functions, it provides the customer with dialtone for each line; provides customer features such as call waiting and call forwarding; provides for the proper routing of a call; provides access to Advanced Intelligence Network ("AIN") triggers to customize call processing; and creates data necessary to compile a customer's bill. Local Switching also provides the functionality to connect the appropriate originating lines or trunks to a desired terminating line, platform, or trunk. Local Switching thus includes all of the features, functions, and capabilities that any GTE switch is capable of providing.

In addition to this voice transmission capability, the Local Switching network element also provides a second capability -- data switching. Data switching is used to terminate, concentrate, and switch data traffic from customer premise equipment to its final destination in a digital format. Access to the unbundled Local Switching

network element includes the freedom for AT&T, as needed, to buy access to either of the two capabilities this element provides. For further description and the technical and interface requirements for Local Switching, see AT&T's Interconnection Agreement, § 33.9.4, and Attachment 2, § 5.

Q. EXPLAIN THE NEED FOR UNBUNDLING LOCAL SWITCHING.

A. Unbundled Local Switching is key to the efficient creation of new and improved services for consumers. Local Switching is the entity within the network that holds many of the functionalities that will allow AT&T to provide innovations to consumers and differentiate itself from its competitors. Therefore, AT&T needs the option either to buy this unbundled network element from GTE or, alternatively, to provide its own local switch element when building such a facility is the most efficient solution.

6. OPERATOR SYSTEMS

Q. PLEASE DEFINE OPERATOR SYSTEMS AND ITS FUNCTION.

A. Operator Systems provides operator and automated call handling and billing, special services, customer telephone listings, and optional call completion services. Operator Systems provides two types of capabilities: Operator Services and Directory Services, each of which are described in detail below.

Operator Services provides: (1) operator handling for call completion (for example, collect, third number billing, and manual credit card calls); (2) operator or automated assistance for billing after the customer has dialed the called number (for example, credit card calls); and (3) special services including, but not limited to, Busy Line Verification and Emergency Line Interrupt, Emergency Agency Call, Operator-assisted Directory Assistance, and Rate Quotes.

Directory Services includes storing and maintaining customer information and

providing local customer telephone number listings with the option to complete the call at the caller's discretion. For further description and the technical and interface requirements for Operator Systems, see AT&T's Interconnection Agreement, § 33.9.5, and Attachment 2, § 6.

Q. EXPLAIN THE NEED FOR UNBUNDLING OPERATOR SYSTEMS.

A. Unbundled Operator Systems will benefit consumers by allowing AT&T to create new services (such as foreign language dependent services and innovations based on voice recognition capabilities) as well as by combining AT&T's world-class operator services platform with GTE's switches. In order for AT&T to attract customers, it must provide a full complement of local services, including services that rely upon Operator Systems. Many new entrants may not be able to duplicate the entire range of GTE's Operator Systems functionality and therefore would require the use of GTE's unbundled Operator Systems platforms. At the same time, some new entrants, such as AT&T, that have already invested or will choose to invest in Operator Systems should be permitted to maximize the value of such investments and not be required to purchase the use of GTE's Operator Systems when using the unbundled GTE Local Switching element.

Q. PLEASE DESCRIBE THE TRANSPORT NETWORK ELEMENTS.

A. The next three network elements are Transport elements. Transport elements provide the functionality to connect, for example, a central office or Tandem Switch with another central office, Tandem Switch or a interexchange carrier's Point of Presence. The central offices, Tandem Switches and Points of Presence may belong to the subscribing new entrant, other entrants, interexchange carriers, and/or the incumbent LEC. This allows subscribers to reach each other even when they are not served out of the same central office or by the same carrier. There are three

Transport network elements that must be made available on an unbundled basis -- Dedicated Transport, Common Transport, and Tandem Switching.

7. DEDICATED TRANSPORT

Q. PLEASE DEFINE DEDICATED TRANSPORT AND ITS FUNCTION.

A. Dedicated Transport is an interoffice transmission path between AT&T designated locations, such as GTE's central offices or other equipment locations, AT&T network components, and other carrier network components. Dedicated Transport is used exclusively by a single carrier for the transmission of its traffic. For further description and the technical and interface requirements for Dedicated Transport, see AT&T's Interconnection Agreement, § 33.9.7, and Attachment 2, § 8.

8. COMMON TRANSPORT

Q. PLEASE DEFINE COMMON TRANSPORT AND ITS FUNCTION.

A. Common Transport is an interoffice transmission path that links together unbundled network elements and carries the traffic of more than one carrier. It provides this path only for the duration of the connection. For further description and the technical and interface requirements for Common Transport, see AT&T's Interconnection Agreement, § 33.9.6, and Attachment 2, § 7.

9. TANDEM SWITCHING

Q. PLEASE DEFINE TANDEM SWITCHING AND ITS FUNCTION.

A. Tandem Switching is the network element that establishes a communications path between two central offices through a third central office (the Tandem Switch). This path lasts only for the duration of the connection. Tandem Switching is used when it is either impractical or uneconomical to connect multiple central offices and/or Points of Presence directly to each other. For further description and the technical and interface requirements for Tandem Switching, see AT&T's

Interconnection Agreement, § 33.9.11, and Attachment 2, § 12.

Q. EXPLAIN THE NEED FOR UNBUNDLING THE TRANSPORT NETWORK ELEMENTS.

A. Unbundling the three Transport network elements described above will benefit consumers by allowing AT&T and other new entrants to make economically efficient decisions concerning investment in network interconnections and facilities needed to exchange traffic with GTE, other local exchange carriers, and interexchange carriers. AT&T and other new entrants may use the various Transport network elements to connect any two network components to one another, be they GTE's unbundled network elements, AT&T facilities, or third-party facilities. The choice AT&T will make between buying Dedicated Transport, on the one hand, and Common Transport and Tandem Switching on the other, will be driven by the relative cost of the options and the amount of traffic that will be carried.

Q. PLEASE DESCRIBE THE SIGNALING NETWORK ELEMENTS.

A. Signal System 7 ("SS7") signaling is used in the call set-up process to pass information on the routing and billing of calls within a carrier's network and between carriers. For example, signaling systems are used to provide validation and other information for calling card and other operator services calls, and to route 800 number calls to the correct carrier and end user. Signaling systems also enable carriers to efficiently create and provide AIN services which will add calling features and value to consumers. Network signaling is provided through the use of three network elements that should be made available on an unbundled basis -- Signaling Link Transport, Signal Transfer Points, and Service Control Points/Databases.

10. SIGNALING LINK TRANSPORT

Q. PLEASE DEFINE SIGNALING LINK TRANSPORT AND ITS FUNCTION.

A Signaling Link is a set of Dedicated transmission paths which carry signaling messages between carriers' central office switches and signaling networks. For further description and the technical and interface requirements for Signaling Link Transport, see AT&T's Interconnection Agreement, § 33.9.8.1, and Attachment 2, § 9.

11. SIGNAL TRANSFER POINTS

Q. PLEASE DEFINE SIGNAL TRANSFER POINTS AND THEIR FUNCTION.

A. Signal Transfer Points are signaling message switches that interconnect Signaling Links to route signaling messages between central office switches and databases. For further description and the technical and interface requirements for Signal Transfer Points, see AT&T's Interconnection Agreement, § 33.9.9, and Attachment 2, § 10.

12. SERVICE CONTROL POINTS/DATABASES

Q. PLEASE DEFINE SERVICE CONTROL POINTS/DATABASES AND THEIR FUNCTION.

A. Databases are the network elements that provide the functionality for storage of, and access to, information required to offer a particular basic telecommunications service and/or capability. A Service Control Point (SCP) is a specific type of database that contains customer and/or carrier-specific routing, billing, or service instructions to be acted on by carriers' central office switches and operator systems. The SCP executes the services application logic in response to SS7 queries sent to it by a central office switch. SCPs also provide operational interfaces to allow for provisioning, administration, and maintenance of subscriber data and service

application data (e.g., an 800 database stores customer record data that provides information necessary to route 800 calls). For further description and the technical and interface requirements for Service Control Points/Databases, see AT&T's Interconnection Agreement, § 33.9.10, and Attachment 2, § 11.

Q. EXPLAIN THE NEED FOR UNBUNDLING NETWORK SIGNALING.

A. SS7 signaling is critical in the provision of modern telecommunications services because it enables different providers' networks to set up calls to one another, thereby allowing a customer on one provider's network to communicate with a customer on another provider's network. Unbundling the Signaling network elements will allow AT&T to provide signaling capabilities using combinations of GTE's, AT&T's, and potentially, third-party owned signaling elements to support AT&T's end user's originating and terminating traffic and advanced features. The unbundled Signaling network elements are particularly important to consumers in the competitive local services market because they permit efficient interconnection and calling between networks without additional Post Dial Delay and will enable AT&T to introduce innovative, competitive services with shorter development and delivery time.

AT&T must be able to determine how it will obtain its signaling network. Because of the high costs of deploying, maintaining and interconnecting a signaling network, AT&T requires the option to purchase these elements, either alone or in combination, from GTE or from other suppliers.

Q. WHAT ARE THE FCC MINIMUM PRESCRIBED ELEMENTS AND HOW DO THEY COMPARE TO AT&T'S REQUEST FOR 12 ELEMENTS?

A. The FCC, in its Report and Order No. 96-325 ("Order"), requires incumbent LECs to provide a minimum of seven (7) unbundled network elements and any additional

unbundling requirements beyond those specified that a state commission might impose. The seven network elements that the FCC specified correspond to the network elements that AT&T has requested to be unbundled in the following fashion:

Network Interface Device (NID): The FCC has required the NID to be an unbundled network element as AT&T has requested.

Local Loop: The FCC has ordered this element, which consists of a combination of the three sub-loop elements (other than the NID) that AT&T has requested access to as unbundled network elements.

Switching Capability: The FCC has included in this unbundled network element two functionalities requested by AT&T. The first functionality includes local switching, including all vertical features and any technically feasible customized routing functions. The FCC declined to include data switching in its definition of Local Switching as a national network element due to the limited number of commenters on the issue. This offers an opportunity for the Florida Commission to demonstrate its ability to provide for the competitive needs of the citizens of Florida by identifying data switching as an additional unbundled network element for the state of Florida. The second functionality is Tandem Switching.

Operator Systems: The FCC has required this to be an unbundled network element as AT&T requested.

Interoffice Transmission: The FCC has included in this unbundled network element the functionalities of Dedicated and Common Transport requested by AT&T.

Signaling Networks and Call-Related Databases: The FCC has included in this unbundled network element the functionalities of Signaling Link Transport, Signaling Transfer Point (STP), and Signaling Control Point (SCP)/Databases

requested by AT&T. The FCC has required incumbent LECs to provide access to their call-related databases for the purpose of switch query and database response through the SS7 network. These call-related databases include the LIDB, Toll Free Calling and AIN databases This interconnection, however, must be through the call-related database's associated STP. The FCC also has required unbundled access to the service management systems (SMS), which allow competitors to create, modify, or update information in call-related databases. Additionally, the FCC ordered the incumbent LECs to provide new entrants with the same access to design, create, test, and deploy AIN-based services at the SMS that the incumbent LEC provides for itself. As for third party call-related databases, the FCC declined to require a national unbundled network element, again due to the small number of commenters on that issue. However, the FCC stated that state commissions could find such an arrangement to be technically feasible.

Operations Support Systems: The FCC has ordered that they be treated as a separate unbundled network element. Although AT&T had not requested access to these systems and the information that they contain as a separate network element, AT&T has requested that GTE provide the functionalities of the FCC's designated element as a necessary requirement to support AT&T's access to other unbundled network elements and services.

Thus, the FCC Order establishes the reasonableness of the unbundled network elements requested by AT&T

III. USE OF UNBUNDLED NETWORK ELEMENTS

Q. SHOULD THERE BE ANY RESTRICTIONS ON AT&T'S ABILITY TO COMBINE GTE'S UNBUNDLED NETWORK ELEMENTS IN AT&T'S PROVISION OF LOCAL SERVICES?

A. No. GTE must not be allowed to place any restrictions on AT&T's use of GTE's unbundled network elements, either alone, in combinations, or in conjunction with services purchased for resale or with AT&T's or a third-party's facilities. The Act mandates that GTE "shall provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service." 47 U.S.C. § 251(c)(3). The FCC has reinforced this requirement by specifying the incumbent's duty not to "impose limitations, restrictions, or requirements on requests for, or the use of, unbundled network elements that would impair the ability of a requesting telecommunications carrier to offer a telecommunications service in the manner the requesting telecommunications carrier intends." 47 C.F.R. § 51.309(a). Consistent with the Act and regulation, AT&T must have the greatest possible flexibility in using GTE's unbundled network elements to address the features, functions, and services needs of its customers. This is so for several reasons.

First, AT&T must have the ability to provide a former GTE customer with the same services that customer received from GTE, if the customer so chooses. The most efficient way to accomplish this may be for AT&T to combine the functionality of several of GTE's unbundled network elements to provide such services.

Second, AT&T must be able to purchase and combine GTE's unbundled network elements to foster innovation in the provision of services to consumers. By combining functionalities of these elements, AT&T may be able to create new and improved services that GTE was unable or unwilling to provide to its customers.

Third, AT&T must be able to purchase individual unbundled network elements and/or combinations of elements to supplement its own network with the network functionality AT&T cannot yet provide economically itself or through a third party.

The purchase of the functionality of these unbundled network elements will allow AT&T to compete in a given market without the expenditure needed to duplicate GTE's network capabilities.

Lastly, restrictions on AT&T's ability to combine GTE's unbundled network elements are unnecessary because existing industry standards will be utilized in combining these elements. Thus, there are no technical impediments to combinations of technically feasible elements.

Q. PLEASE PROVIDE SOME EXAMPLES OF COMBINATIONS OF GTE'S UNBUNDLED NETWORK ELEMENTS AT&T MAY CHOOSE TO UTILIZE.

A. One example of a combination of unbundled network elements AT&T may utilize to bring the benefits of competition to consumers is the Loop/Switching combination, sometimes called the "platform." The Loop/Switching combination is made up of the four sub-loop elements (the Network Interface Device, Loop Distribution, the Loop Concentrator/Multiplexer, and the Loop Feeder), the Local Switching element, and selected Signaling and Transport elements. AT&T will order this combination of contiguous network elements on an individual line/customer basis. For this example, AT&T must have the option to purchase or not purchase GTE's Operator Systems network element as warranted.

For existing GTE customers who simply want AT&T as their local service provider, the Loop/Switching combination will allow the change without requiring any physical change in the existing GTE network infrastructure. In addition, use of the Loop/Switching combination will not require AT&T to collocate any equipment in GTE's central office for customers served via this example.

A second example of a combination of unbundled network elements AT&T may

choose to purchase from GTE is the combination of the four sub-loop elements (a "contiguous loop"). This combination will allow AT&T to reach the customer premises when, for example, AT&T is providing its own central office switch, transport, and signaling. The FCC's rules accommodate this combination in the definition of the "NID" and "Local Loop" elements. 47 C.F.R. § 51.319(a), (b). Another combination that AT&T may need to purchase would include the NID, Transport, and Signaling elements. This combination would be needed where AT&T provides its own loop and central office switch.

IV. ISSUES IN DISPUTE

Q. PLEASE DESCRIBE THE DISPUTE BETWEEN AT&T AND GTE REGARDING AT&T'S ACCESS TO GTE'S UNBUNDLED NETWORK ELEMENTS.

A. Although GTE and AT&T have reached agreement on a limited number of issues with regard to the identification of network elements, GTE refused to address seriously AT&T's request for unbundled network elements because AT&T would not agree, in the first instance, to GTE's position regarding pricing. GTE has agreed to provide access only to those unbundled network elements which GTE is already providing through tariffs.

Beyond these elements, GTE claims, first, that the functionalities requested by AT&T are not unbundled network elements under the Act. This position is simply wrong. Each element requested by AT&T fits the Act's definition of "feature, functions, and capabilities...used in the transmission, routing or other provision of a telecommunications service." 47 U.S.C. § 153(29). GTE's second argument is that it is not technically feasible to unbundle some of the network elements requested by AT&T. The fallacy in this position lies in GTE's definition of technical feasibility,

which appears to be that providing access to unbundled network elements is technically feasible only when GTE can provide such access without doing anything at this time. Thus, in GTE's view, the need for GTE to make any logistical, procedural, or operational adjustment to its routine practices in order to provide AT&T access to an unbundled network element renders that access technically infeasible.

Q. WHAT IS THE CORRECT DEFINITION OF TECHNICAL FEASIBILITY?

A. The FCC, in its recent revisions to Title 47 of the Code of Federal Regulations pursuant to the Act, defines technical feasibility in this way:

> "Interconnection, access to unbundled network elements, collocation, and other methods of achieving interconnection or access to unbundled network elements at a point in the network shall be deemed technically feasible absent technical or operational concerns that prevent the fulfillment of a request by a telecommunications carrier for such interconnection, access, or methods. A determination of technical feasibility does not include consideration of economic, accounting, billing, space, or site concerns, except that space and site concerns may be considered in circumstances where there is no possibility of expanding the space available. The fact that an incumbent LEC must modify its facilities or equipment to respond to such request does not determine whether satisfying such request is technically feasible. An incumbent LEC that claims that it cannot satisfy such request because of adverse network

reliability impacts must prove to the state commission by clear and convincing evidence that such interconnection, access, or methods would result in specific adverse network reliability impacts." 47 C.F.R. § 51.5.

Thus, GTE's notion that it can claim technical infeasibility based simply on its unwillingness to make any necessary logistical, procedural, or operational adjustment is incorrect.

Q. HOW DID AT&T ADDRESS TECHNICAL FEASIBILITY IN SELECTING THE UNBUNDLED NETWORK ELEMENTS IT REQUESTED FROM GTE?

A. Aside from being the basic building blocks required to provide customers with a local network, AT&T recognized the need to develop a list of unbundled network elements that would meet the test of technical feasibility, and be uniform across networks and consistent with existing network architectures. Accordingly, AT&T used the following requirements to identify the network elements:

1. Each network element must be measurable and billable or have the potential to be measurable and billable.
2. Each network element must utilize transmission or switching protocol and physical interconnection standards, either existing or under development, that are recommended by an acknowledged industry body.
3. Each network element must have the potential to be provisioned by a competitive service provider -- that is, they represent discrete, stand-alone physical or logical elements.
4. Each network element must have the potential to be ordered in combination with any other network elements to facilitate the development of a competitive service offering.

Q. WHICH UNBUNDLED NETWORK ELEMENTS DOES GTE REFUSE TO PROVIDE TO AT&T?

A. The following are the elements, capabilities, or combinations of elements GTE refuses to provide to AT&T, along with GTE's reasons for its refusal, and AT&T's position with respect to each.

1. Local Loop Facility: AT&T proposed that the local loop be divided into four sub-loop elements which can be offered separately or in combination. These elements are the NID, Loop Distribution, Loop Concentrator/Multiplexer, and the Loop Feeder. GTE has agreed to provide the NID, but has not provided any pricing for that element.

On July 18, GTE and AT&T subject matter experts reached tentative agreement that GTE would initially provide a combination of the other three sub-loop elements, and that it would in the future provide the three individually as the market demand is ascertained on an individual case basis. GTE acknowledged that it was technically feasible to provide the requested sub-loop elements. However, GTE asserted that it would be very expensive to do so (although GTE provided no costs or proposed rates) and expressed its doubt that there was a sufficient market demand to justify the cost of providing these elements. GTE later withdrew its tentative proposal, and took the position that it is technically infeasible to provide access to the sub-loop elements AT&T has requested.

Under the FCC's definition of technical feasibility, GTE has failed to demonstrate that unbundling each of these network elements is not technically feasible. In fact, of this technical feasibility exists because the technical specifications for establishing interconnection with the sub-loop network elements are documented in various existing industry technical publications. See AT&T's Interconnection Agreement,

Attachment 2, § 2.1.3.

2. Access to Local Switching: GTE has taken the position that it will provide only limited switching capabilities as a part of its "port" offer. The "port" offer would limit the available switching features to those that GTE chooses to offer to its own retail customers, even though other capabilities are provided by software that is resident in GTE's local switch and thus are a part of the functionality of the switch. The Act requires GTE to make available to AT&T nondiscriminatory access to all of the features, functions, and capabilities of the GTE's switch, including vertical features, routing, and advanced call management capabilities. See AT&T's Interconnection Agreement, Attachment 2, § 5.1.

Data switching is an additional capability provided by Local Switching. AT&T requires interconnection between local data networks and other data networks so AT&T can transport its customers' data traffic. This network-to-network transport of data is accomplished through a defined industry standard called a Network to Network Interface (NNI). GTE has agreed to unbundle only the User Network Interface (UNI) interconnect function for data switching not the NNI. This is analogous to providing local calls but blocking toll calls.

GTE must provide the routing capabilities resident in its central office switch in order for traffic to be routed to the desired destination. For example, the routing capability in the central office switch would permit the routing of Operator Services and Directory Assistance calls to AT&T's operator services and directory assistance platforms. Thus, an AT&T customer dialing zero, when served via the GTE Local Switching element, would be sent to GTE's Operator System rather than to AT&T's.

3. Transport Elements: GTE has refused to unbundle either Dedicated or Common Transport from GTE's switching on the ground that the unbundling of

these local transport network elements from GTE's switching element is not technically feasible. GTE has stated that AT&T must order Dedicated and Common Transport from the access tariff. GTE will provide Tandem Switching to AT&T, except that it will not permit Tandem to Tandem switching on the grounds that GTE will lose billing data. GTE has agreed to provide Tandem to Tandem switching when it resolves the billing data issue. AT&T requires Tandem to Tandem switching for the efficiency of transporting customer calls from one exchange to another, just as GTE does for their customer calls in their local calling area.

Again, GTE mistakes a procedural or administrative issue for technical feasibility. The provision of these network elements on an unbundled basis is technically feasible. This is supported by the fact that Common and Dedicated Transport are already provided as separate elements in the access tariffs. In addition, GTE's offer does not permit the routing of traffic that AT&T has requested.

4. Operator Systems: GTE has taken the position that Operator Systems are not network elements that GTE is required to unbundle under the Act. GTE does not contest the technically feasibility of providing access to Operator Systems. Contrary to GTE's belief, both Operator and Directory Assistance Services are considered a "capability" under the Act. Network elements consist of "features, functions, and capabilities . . . used in the transmission, routing or other provision of a telecommunications service." 47 U.S.C. § 153(29) (emphasis added). Without question, as the FCC has ruled, GTE Operator Systems is such a network element. See 47 C.F.R. § 51.319(g).

5. Signaling Elements: GTE's position is that access to the Signal Control Point databases and Signaling Link Transport must be through the Signal Transfer Point and that further unbundling is not technically feasible. Again, as the

FCC has ruled, GTE is required to provide the requested unbundled signaling elements. 47 U.S.C. § 51.319(e). The unbundling of each signaling element is technically feasible. For example, AT&T is interconnected to STP pairs belonging to local exchange carriers, including GTE and alternative signaling network providers, in 191 LATAs. Most of those interconnections were accomplished during the two year period beginning October 1991, coincident with the FCC's order on 800 Number Portability. Thus, the industry has had considerable experience in unbundling signaling interconnection.

6. Use of Unbundled Network Elements: GTE contends that new entrants such as AT&T should not be permitted to combine network elements so as to "substantially replicate" any services GTE separately offers for resale under Section 251(c)(4). As I explained above, GTE's position is plainly in conflict with the Act. AT&T is free to use any of GTE's unbundled network elements, either alone, in combinations, or in conjunction with services purchased for resale, or with AT&T's or a third party's facilities. This freedom is required by and crucial to, the pro-competitive purpose of the Act.

V. ADDITIONAL REQUIREMENTS

Q. IS THE FUNCTIONALITY OF GTE'S UNBUNDLED NETWORK ELEMENTS ALL THAT AT&T REQUIRES TO COMPETE IN THE LOCAL MARKET?

A. No. The unbundling of GTE's network elements, and allowing AT&T to combine the functionality of these elements in any manner necessary to meet customer needs, will expedite robust competition in the marketplace. Without it, the barriers to entry are too substantial to ever envision competition thriving anytime in the near future. However, the unbundling of network elements, while necessary to the development

of local competition, is not by itself sufficient to ensure the development of a competitive local market that will benefit consumers. There are a variety of additional requirements and capabilities that GTE must provide AT&T. See AT&T's Interconnection Agreement, Attachment 2, § 13.

Q. ARE ANY OF THESE ADDITIONAL REQUIREMENTS IN DISPUTE?

A. Yes. The following are those that GTE refuses to provide to AT&T:

1. Access to Rights of Way, Conduits, and Pole Attachments: A right of way is the right to place poles, conduits, cables, or other equipment on the property of another, as well as to obtain physical access to that equipment. See AT&T's Interconnection Agreement, Attachment 3. A right of way may run under, to, on, or above public or private property (including air space), and may include the right to use discrete spaces in buildings or at other locations. Pole attachments are the connection of facilities, such as mechanical hardware, grounding and transmission cable, and equipment boxes, to a utility pole. Currently, most poles are owned and maintained by monopoly telecommunications providers. In some cases, they are jointly owned by telecommunications and electric utilities. Conduit is protected tubing or piping used to house communications or electrical cables. It can be either above or below ground and may contain one or more inner ducts. Conduit systems are found within buildings, under road and rail crossings, under rivers and streams, and in other locations where repeated excavation for maintenance or replacement of cable facilities is not desirable or where added protection for the cables is needed.

As a monopoly provider of telecommunications services, GTE has been able to obtain access to the public and private pathways necessary for its construction of critical network facilities. In fact, it has had decades in which to accumulate these

pathways. Moreover, because they are a limited resource, by virtue of the finite amount of space available as well as limitations on the extent that local governing authorities and residents are willing to tolerate the inconveniences and intrusions that constructing and accessing these pathways can cause, these pathways are a limited resource.

For these reasons, AT&T often has no alternative but to use GTE's pathways. For example, in many areas GTE owns and maintains riser-cabling (cables which connect floors and rooms inside a large building). The denial of access to these facilities will make it literally impossible to serve large blocks of customers except through resale of GTE's services. Similarly, GTE can effectively deny access to customers located in multiple dwelling units, such as condominiums or apartment complexes, by refusing to provide AT&T space in the GTE equipment room located in that building.

GTE interprets the "non-discriminatory access" requirement of Section 224(f)(1) to require the owners of facilities to apply the same "just and reasonable" rates, terms, and conditions to all third parties obtaining access to poles, conduits, and rights-of-way. GTE asserts it has the right to refuse access due to capacity constraints, including constraints based on GTE's 5 year planning horizon, and for reasons of safety, reliability, and generally applicable engineering purposes. GTE claims the 5 year planning horizon is justified because it is consistent with the time frames the FCC previously found reasonable for reserving central office space for the owner's own use related to collocation requests. GTE is unwilling to negotiate any time frames for providing additional capacity because GTE believes that the rates established pursuant to the Act are not sufficiently compensatory. GTE believes that the provisions of Section 251(c)(6) have no impact upon the FCC's prior

Rulemaking, and that its restriction on availability of collocation space based upon its five year plan is therefore justified.

The Act imposes a specific duty on the owners and holders of poles, conduits, and rights-of-way who are "utilities" to provide non-discriminatory access to competing telecommunications carriers. 47 U.S.C. §224(f)(1). "Non-discriminatory access" means that GTE must take reasonable steps to ensure that AT&T has access to and ability to use the poles, conduits and rights-of-way on the same terms and conditions as GTE itself. GTE should not be permitted to first satisfy all of its existing and projected five year spare capacity needs before allowing others to share the pathways. Rather, GTE must free up or create such capacity. Failure to impose such a requirement would permit GTE to easily erect barriers for its competitors simply by claiming that any spare capacity will be required for use within GTE's five year planning horizon.

2. Interim Number Portability: "Number portability" is the ability of customers to keep their telephone numbers when changing service providers ("Service Provider Local Number Portability"). Currently, there are four predominant "interim" portability arrangements: 1) remote call forwarding (RCF); 2) Directory Number-Route Indexing (DN-RI); 3) Route Indexing-Portability Hub (RI-PH); and 4) Local Exchange Routing Guide (LERG). AT&T has requested that GTE support all four types of interim number portability. These options will permit interim portability to be deployed more efficiently and enable AT&T to better meet its customers' requests. However, while they offer some relief, local competition cannot fully develop under any of these interim arrangements. See AT&T's Interconnection Agreement, Attachment 8.

GTE has taken the position that it will provide interim number portability only

through RCF and DID/Flex DID (a form of Route Indexing that has only limited use for AT&T). In addition, GTE states that it is still investigating other methods such as flex-direct inward dialing, Directory Number-Route Indexing, Route Indexing-Portability Hub, and LERG reassignment for technical feasibility. GTE's position on interim number portability and their inability to respond to AT&T's request for the other forms of number portability places serious limitations on AT&T.

First, RCF requires all calls placed to these "ported" customers to be routed first to GTE's network, effectively keeping the incumbent monopoly in the path of calls to AT&T's customers. This seriously constrains the ability of AT&T to efficiently route and terminate calls and by requiring additional transport over incumbent facilities, diminishes network reliability, transmission quality, and network maintenance capabilities, and increases post-dialing delay and costs of call completion. Second, because RCF relies on number translation, RCF typically disables many custom local area signaling services (CLASS) type features. RCF's reliance on number translation also means that two North American Numbering Plan numbers are required for every "ported" customer, placing undue strain on numbering resources and exacerbating number exhaust. Finally, RCF is of limited utility to many business customers with call center applications, because it limits the number of calls that may be placed simultaneously to a single "ported" number. DID/Flex DID limits AT&T in many of same ways that RCF does. The DID/Flex DID arrangement provides portability by causing GTE's end office switch to treat AT&T's switch as if it were a private branch exchange connected to GTE's network. Like RCF, DID/Flex DID requires that calls be routed through the incumbent's network, thereby similarly diminishing network reliability, transmission quality, and network maintenance capabilities, and increasing post-dialing delay and

the costs of call completion. Indeed, because DID/Flex DID requires that AT&T switches supporting "ported" customers be directly trunked to GTE end offices, it constrains engineering of alternative carrier networks to an even greater degree than RCF. Moreover, DID/Flex DID does not allow the calling party number to be delivered to AT&T's switch, preventing AT&T from providing vertical features such as Caller Identification to its customers.

3. Permanent Number Portability: AT&T has requested that GTE support the development of an industry wide permanent number portability solution within a geographic area based on a location routing number method and service provider number portability with limited location portability. For this purpose, AT&T has requested that GTE agree to the establishment of an industry wide service management system managed by an independent third party. AT&T further requests that GTE agree to service provider number portability with limited location portability and one database solution with one local number portability dip per call. GTE has taken the position that it is premature for GTE to commit to any long term number portability solution. GTE further has stated that it will provide only service provider number portability and that it will not agree to any limited location portability. See AT&T's Interconnection Agreement, Attachment 8, § 3.

4. Interconnection Between Two Carriers Collocated On GTE's Premises: Collocation is a method for implementing interconnection between carriers. Through physical collocation, an interconnecting carrier obtains dedicated space in GTE's premises and places equipment in that space in order to interconnect with GTE's and other ALECs' networks. The term "collocation" also encompasses virtual collocation. See AT&T's Interconnection Agreement, Attachment 3, § 2. GTE believes that the Act only requires that GTE permit collocation for carriers that

intend to interconnect with GTE and that it does not require GTE to permit multiple collocators to interconnect with one another on its premises. GTE claims that such interconnections would have to be made using GTE's facilities, at GTE's access rates. There are likely to be instances where AT&T and another non-GTE carrier happen to be collocated at the same GTE premise and want to interconnect with one another on GTE's premises. Those interconnections can be as simple as connecting a cable from one collocator's space to another. In that circumstance, the most efficient way for the two carriers to interconnect with one another is through trunks going directly from one carrier to the other. Such interconnections will facilitate competition because it gives new carriers options, thus mitigating GTE's monopoly position. Provided that space is available and that doing so would not harm GTE's facilities or services, there should be no limitations on non-GTE carriers interconnecting with one another on GTE's premises.

5. Other Restrictions On Collocation: GTE has proposed other restrictions on collocation that are inconsistent with the Act. It wants to limit the type of equipment that AT&T can install on GTE's premises to include only equipment required to interconnect with GTE's facilities. If that equipment performs any other function—for example, if the equipment served as a remote switching unit—then GTE would preclude the equipment from being collocated on its facilities, even though GTE has space available on its premises and it would be technically efficient to engineer the equipment for collocated space. GTE also has proposed to restrict the use of the collocated space to the interconnection of only switched or special transport services and connections to unbundled local loops. GTE has not explained why it believes these restrictions are appropriate or necessary. These restrictions appear unreasonable and are perceived to have been

proposed for no other reason than to make it more difficult for GTE's would-be competitors to operate efficiently. See AT&T's Interconnection Agreement, Attachment 3, § 2.

6. Advanced Intelligent Network (AIN): GTE refuses to unbundle access to its AIN in such a way that AT&T can achieve parity in the creation and offering of AIN based services. AIN will allow AT&T to offer consumers a variety of innovative, competitive advanced features and services independent of GTE. See AT&T's Interconnection Agreement, Attachment 2, § 12.2.10. For example, AIN triggers would enable a carrier to offer "voice recognition," a service that allows a customer to dial a call by speaking the name of the party the customer wishes to call. AT&T's access to GTE's AIN triggers will provide AT&T with call control capability within the GTE local switch that would allow AT&T to customize offerings without having to duplicate GTE's network. Such access is critical to AT&T's ability to provide competing services to its customers now and in the future. GTE has taken the position that providing unmediated access to AIN is not technically feasible. GTE states that it will work with AT&T to jointly develop and test AIN services that will execute on GTE's platforms, thus permitting AT&T "virtual" access to AIN capabilities. GTE's refusal to provide AT&T access to GTE's AIN in such a way that AT&T can achieve parity in the creation and offering of AIN based services prevents AT&T from offering consumers a variety of innovative, competitive advanced features and services independent of GTE.

GTE also has not agreed to interconnect their SS7 network with AT&T's SS7 network for the purpose of exchanging AIN TCAP messages from their switch to AT&T's AIN SCP. GTE's position is that the access to their AIN platform and interconnection of GTE's SS7 network and AT&T's SS7 network for the purpose of access to AT&T's

AIN SCP is not technically feasible at this time. This position is ironic in light of the fact that the incumbent carriers and Bellcore viewed AIN as a chance for the incumbents to break through a vendor bottleneck on switch software feature development that inhibited them from quickly meeting customer needs. AT&T is now in essentially the same position GTE was a few years ago in its struggle to wrestle control of centralized switch intelligence from switch vendors, in that the new entrant's ability to define new services are constrained by GTE.

7. Unused Transmission Media: AT&T has requested that GTE lease to AT&T GTE's unused transmission media. See AT&T's Interconnection Agreement, Attachment 3, § 4. GTE has refused. AT&T needs the ability to lease this media to facilitate its ability to efficiently build its own network transmission facilities. Without the ability to lease this media, AT&T faces yet another capital investment barrier to developing its own network.

VI. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. AT&T is asking this Commission for a decision that will approve AT&T's requests for access to GTE's unbundled network elements and combinations of elements, including the additional requirements necessary for efficient use of these elements, as described in this testimony and enumerated in AT&T's proposed Interconnection Agreement with GTE. Access to the unbundled network elements and combinations of elements that AT&T has requested is technically feasible. GTE's refusal to provide AT&T access is based on an incorrect application of the concept of technical feasibility and on policy positions that conflict with the pro-consumer purposes of the Act. AT&T's Interconnection Agreement sets forth a business

arrangement between AT&T and GTE, tailored to AT&T's individual needs, that will provide such access, and thereby make it possible for AT&T to diversify its presence in the local market and quickly bring the benefits of competition to consumers.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

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CRAFTON EXHIBIT RC-1
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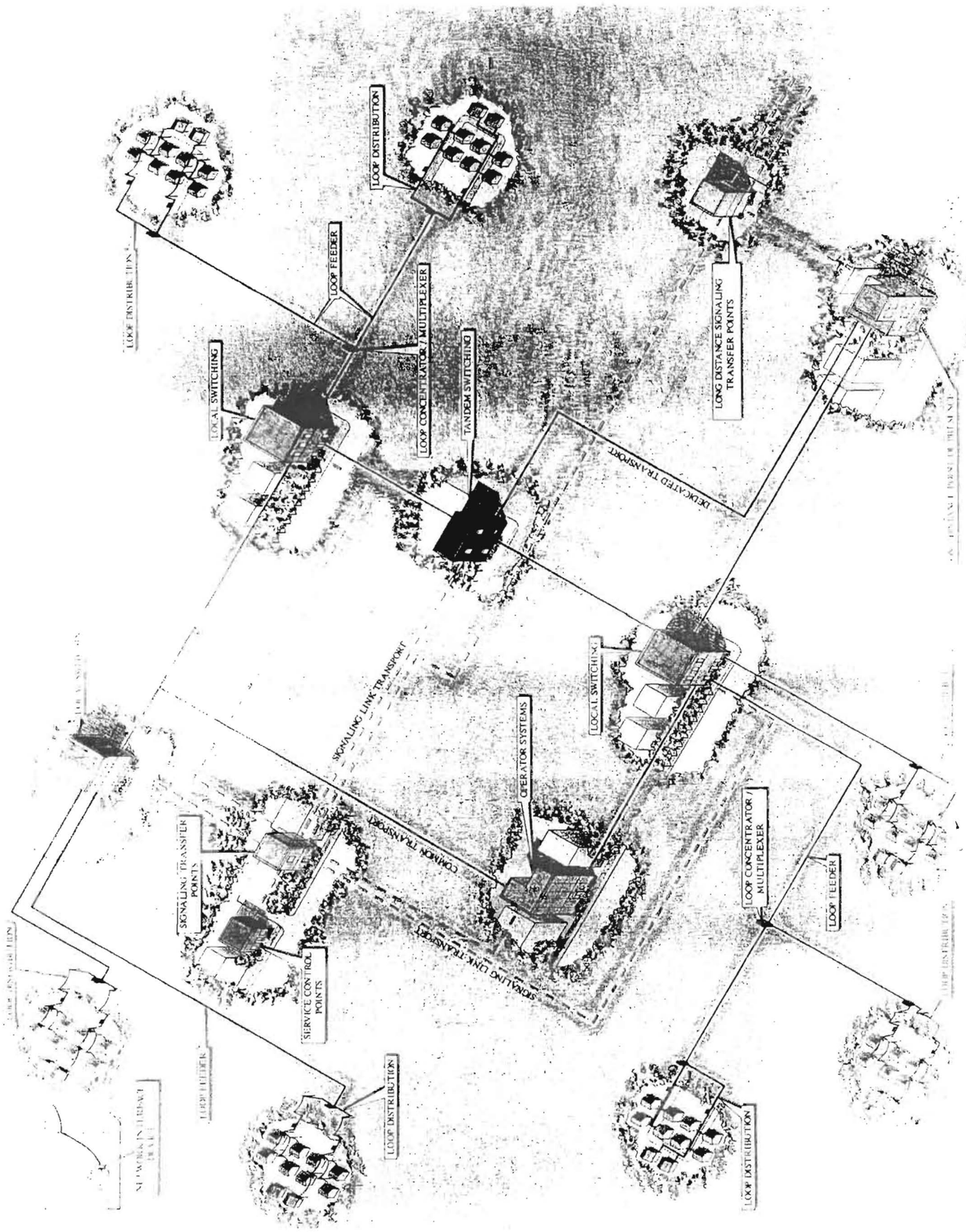

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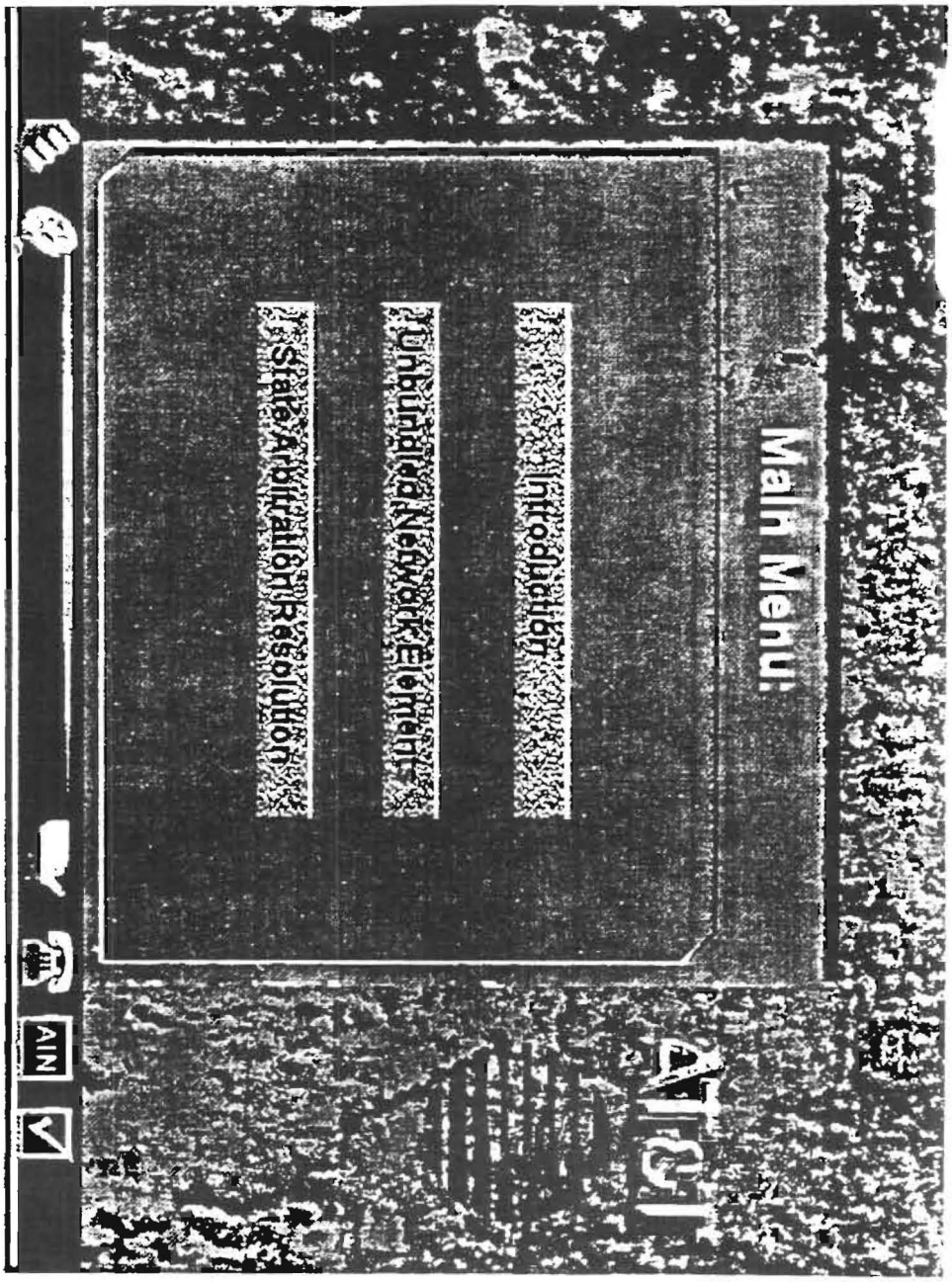

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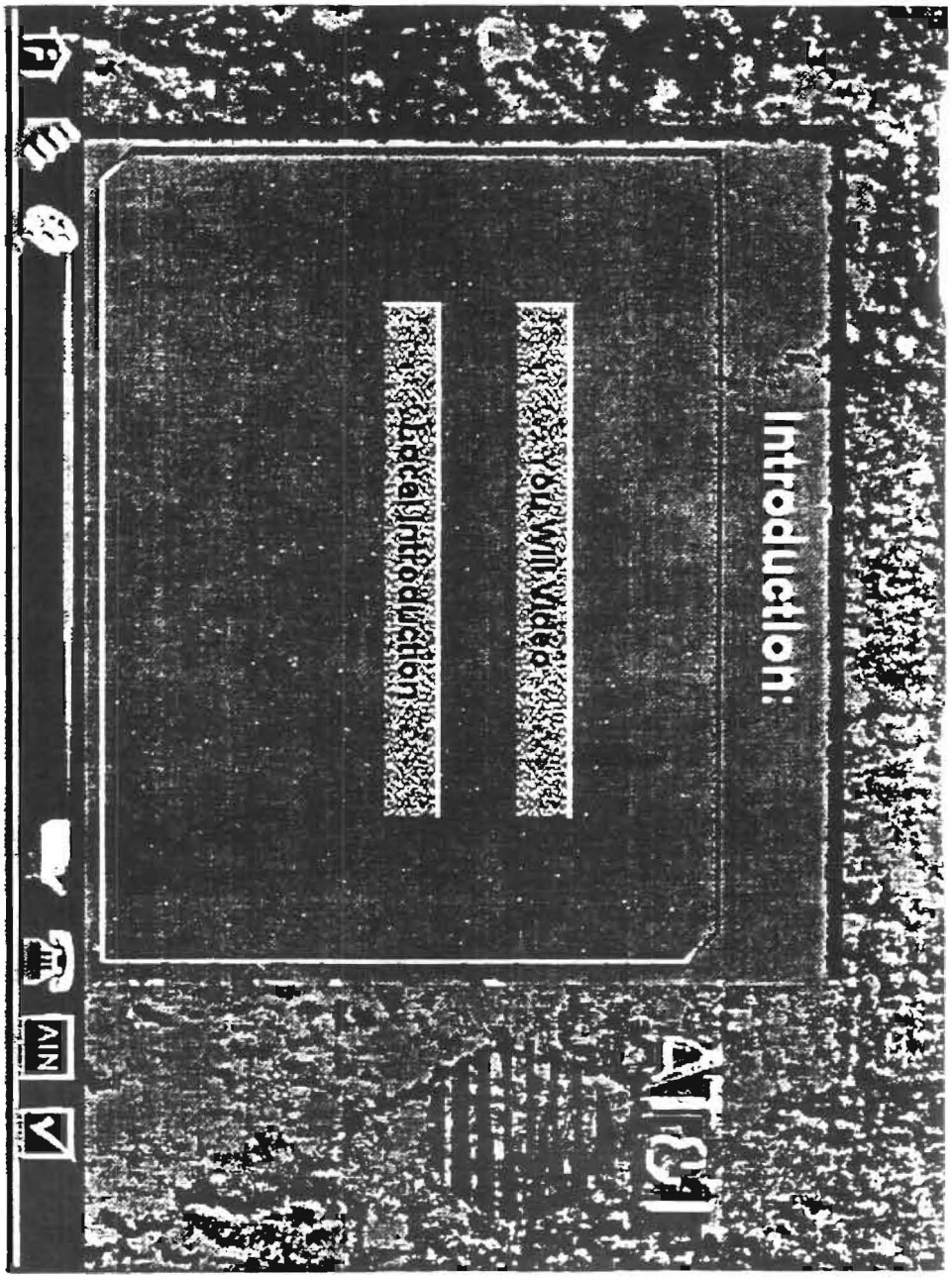

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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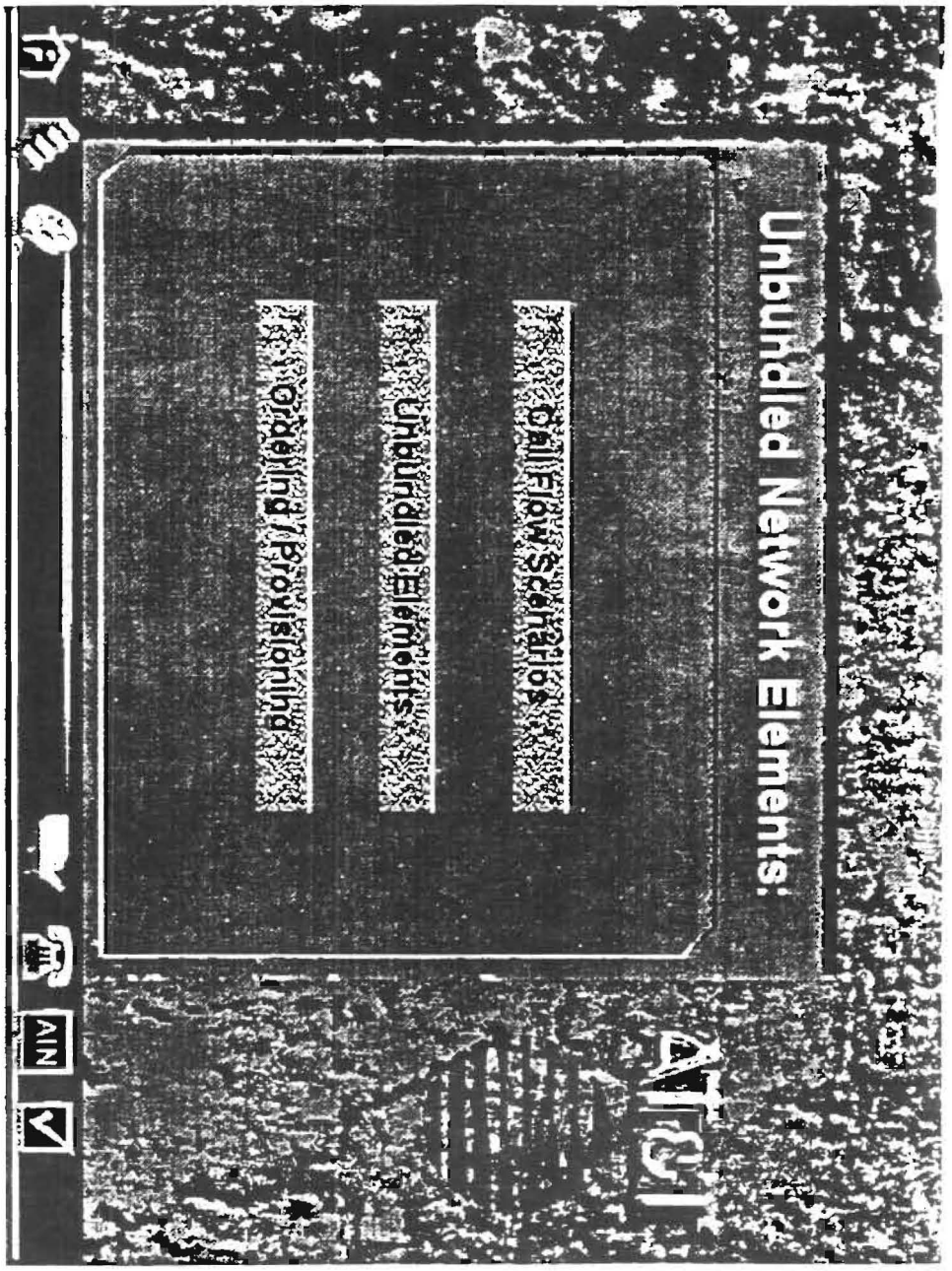

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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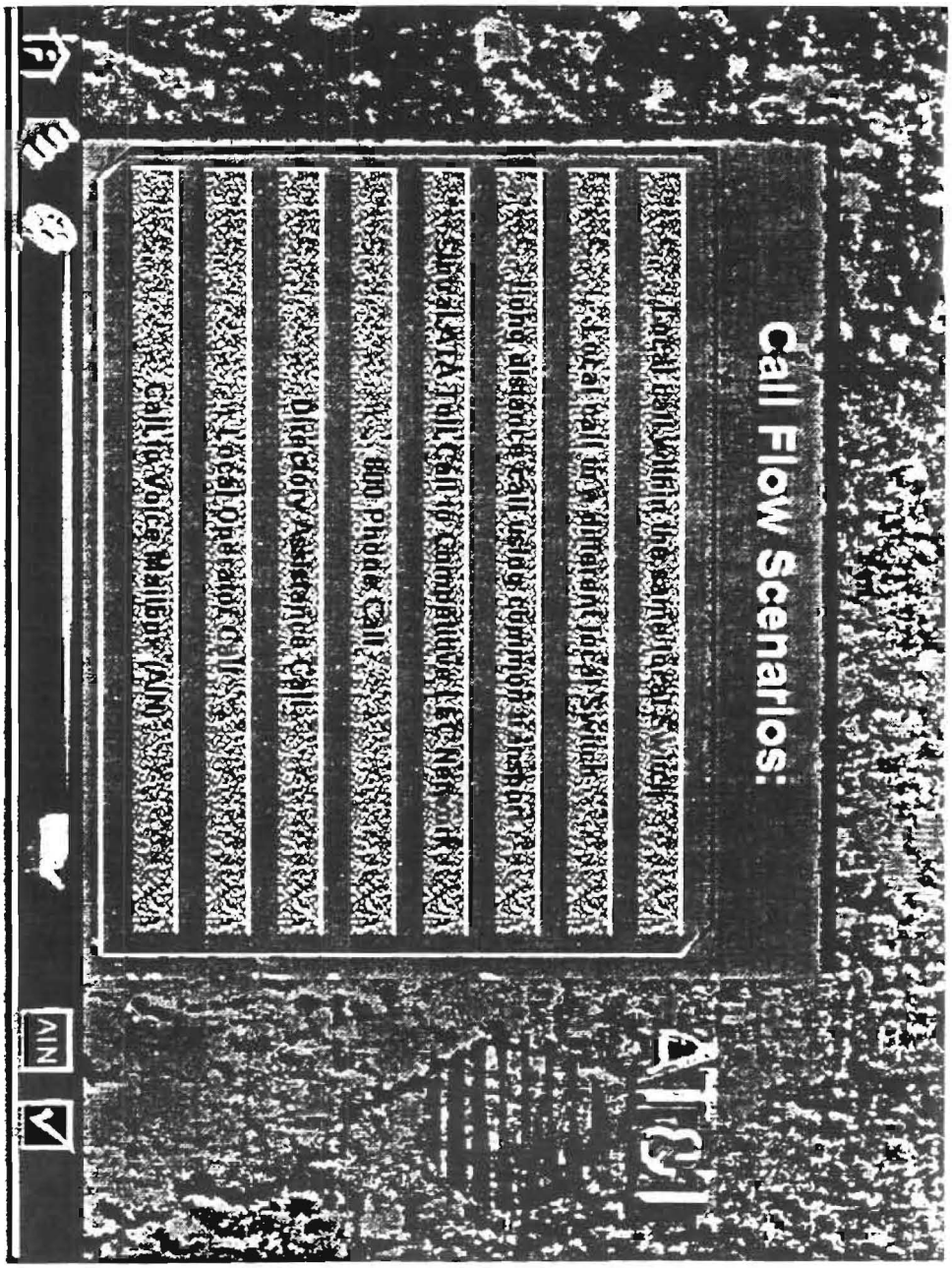

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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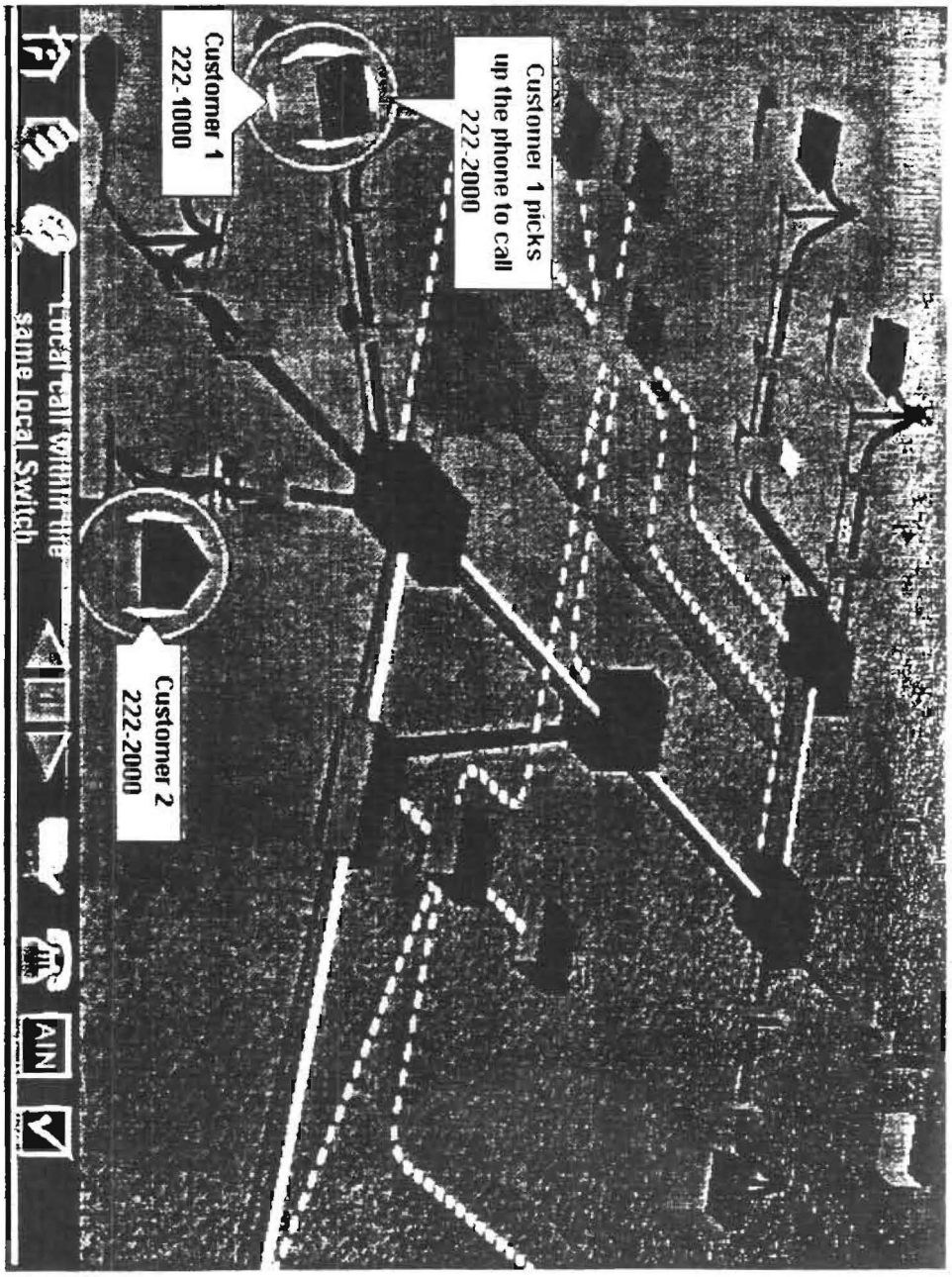

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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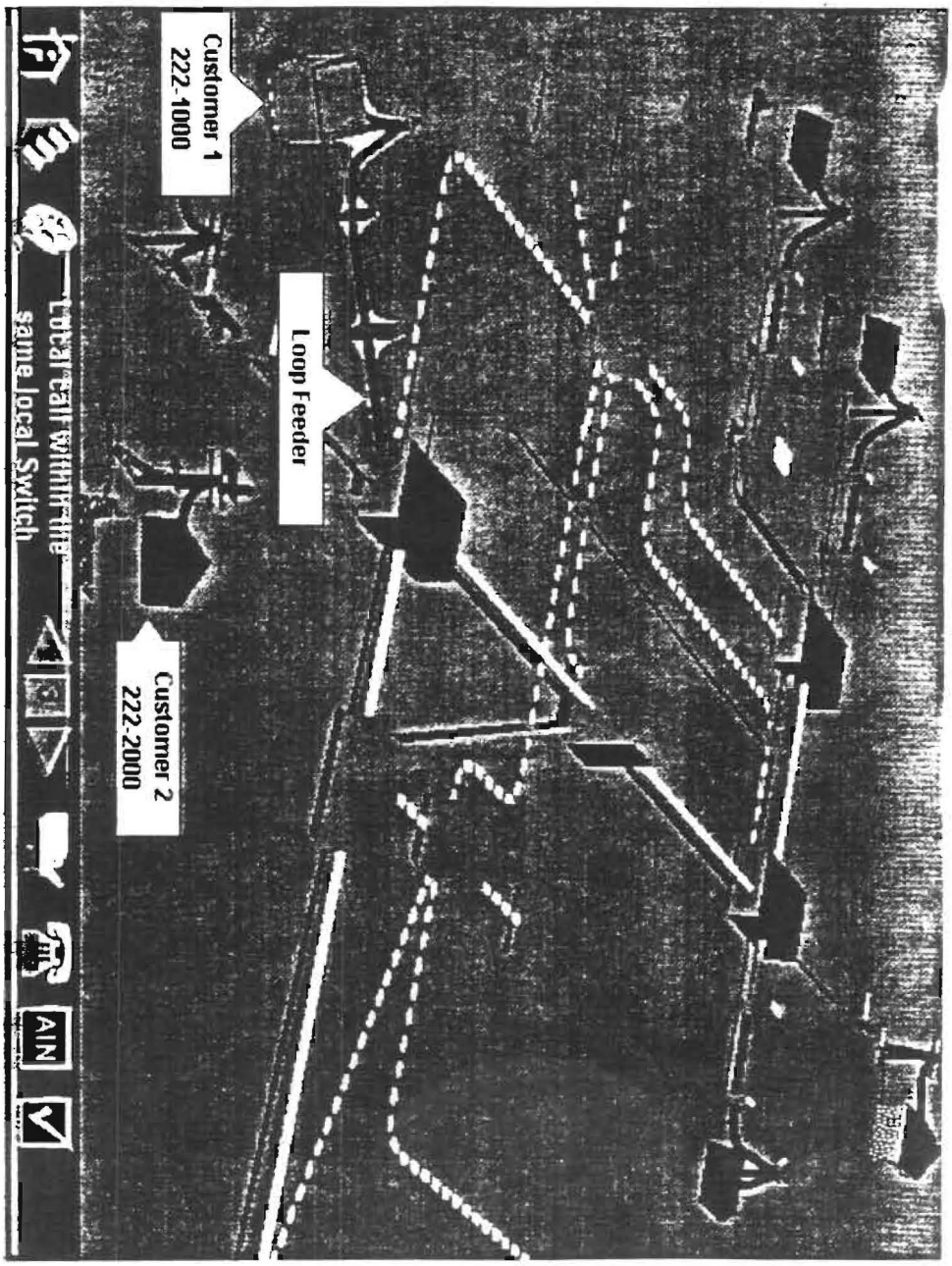

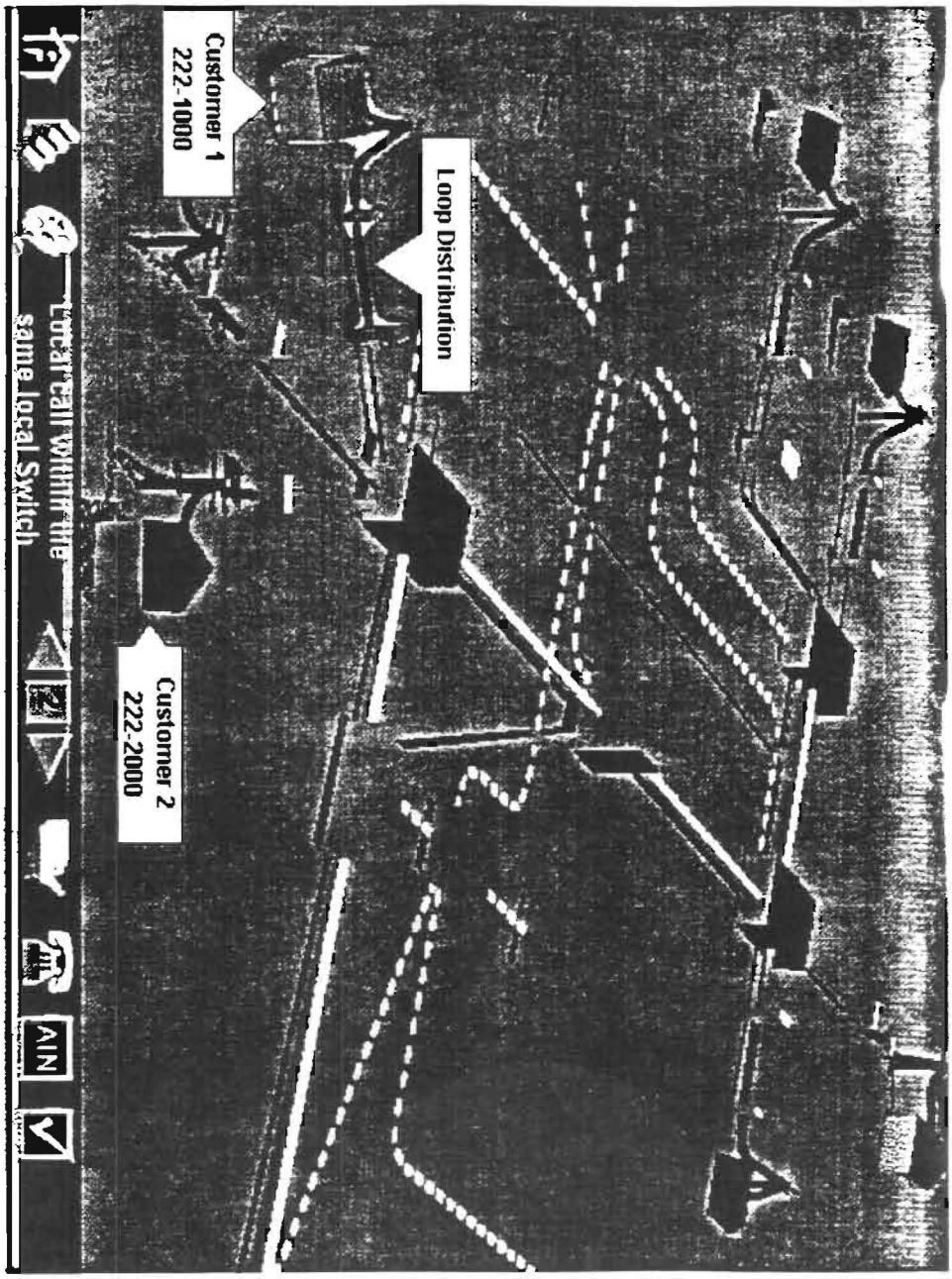
Customer 1
222-1000
Loop Distribution
Customer 2
222-2000
Local call within the same local Switch
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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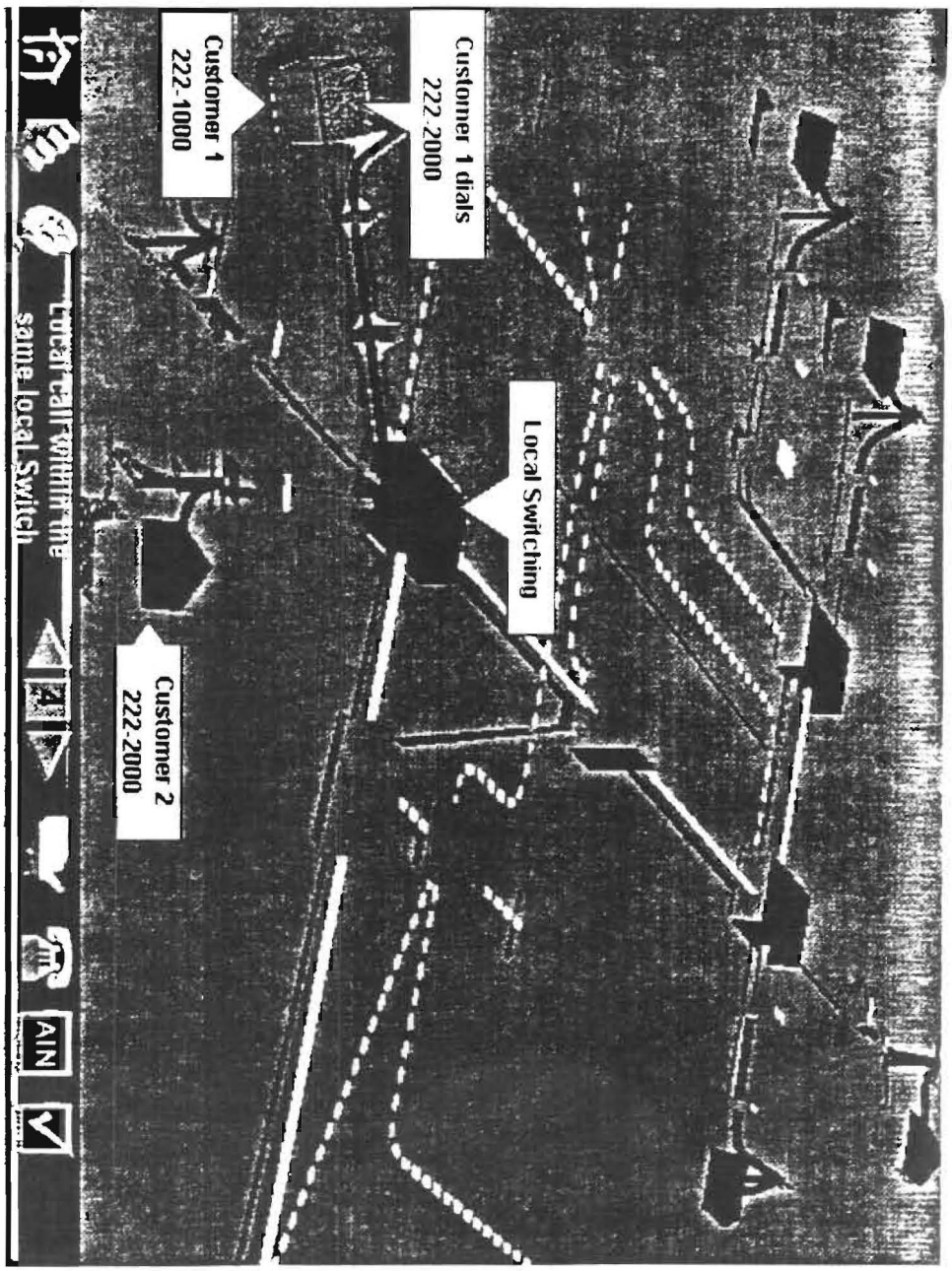

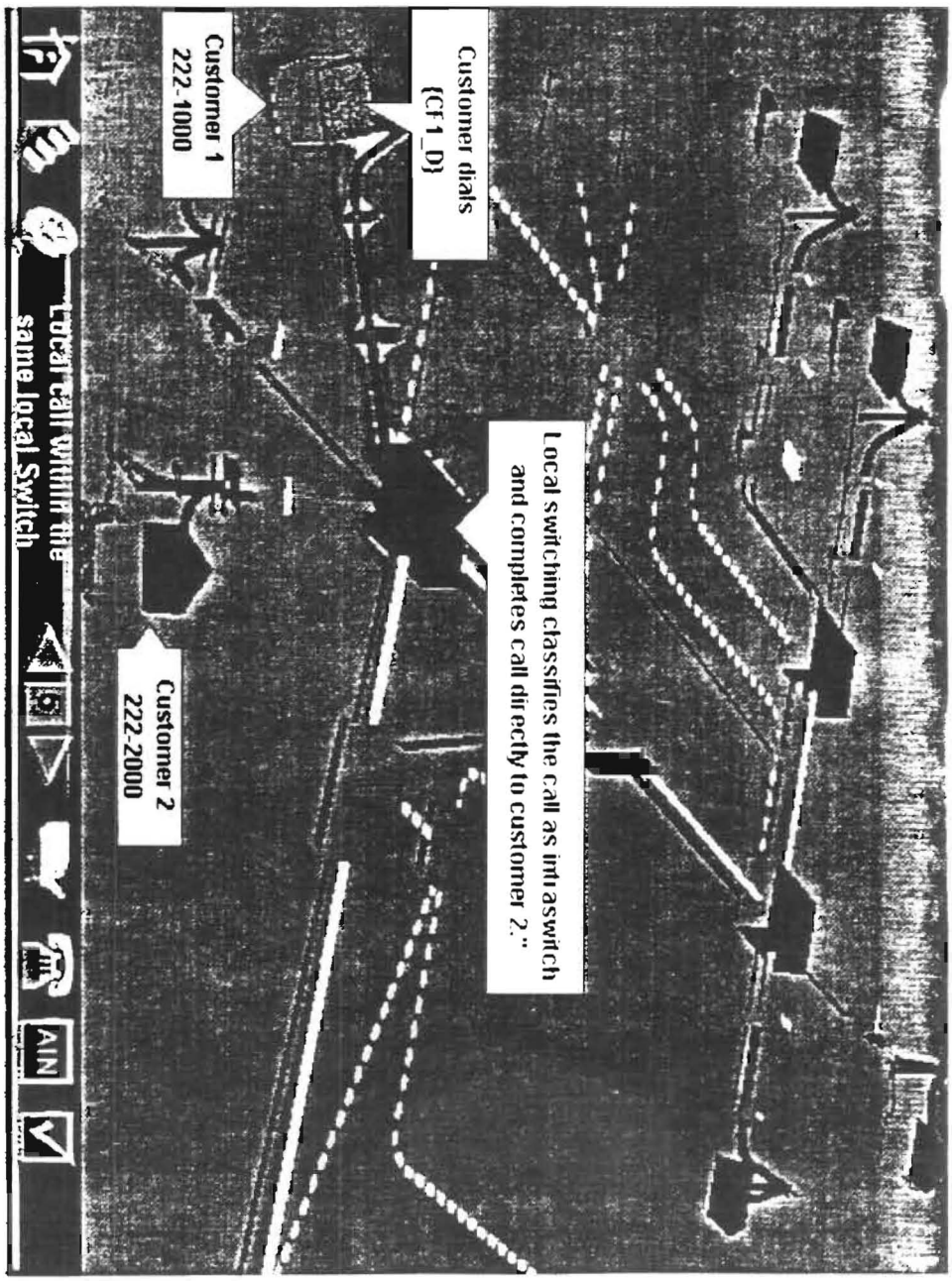
Customer dials
{CF1_D}
Customer 1
222-1000
Local switching classifies the call as intraswitch
and completes call directly to customer 2."
Customer 2
222-2000
Local call within the
same local Switch
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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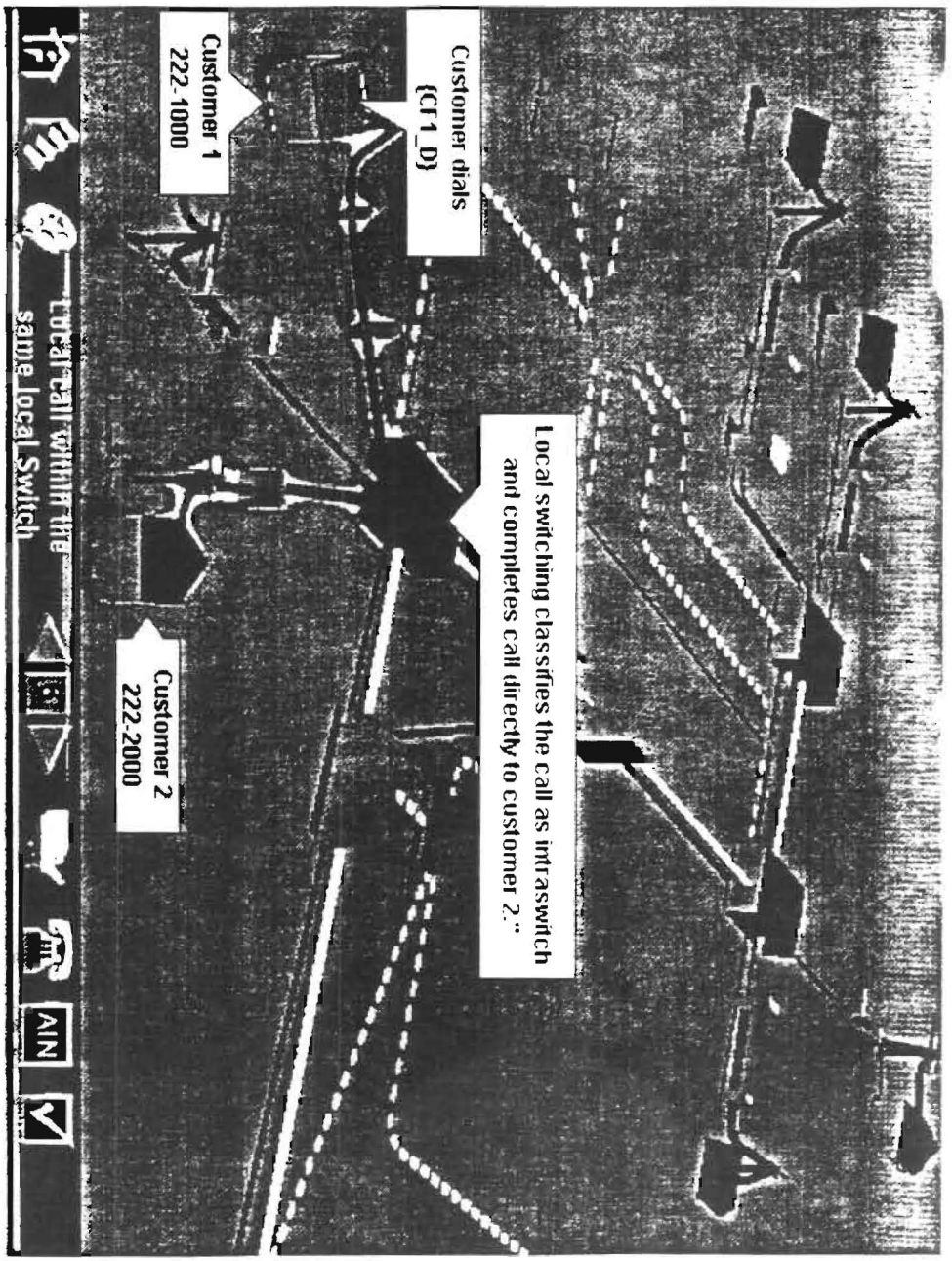

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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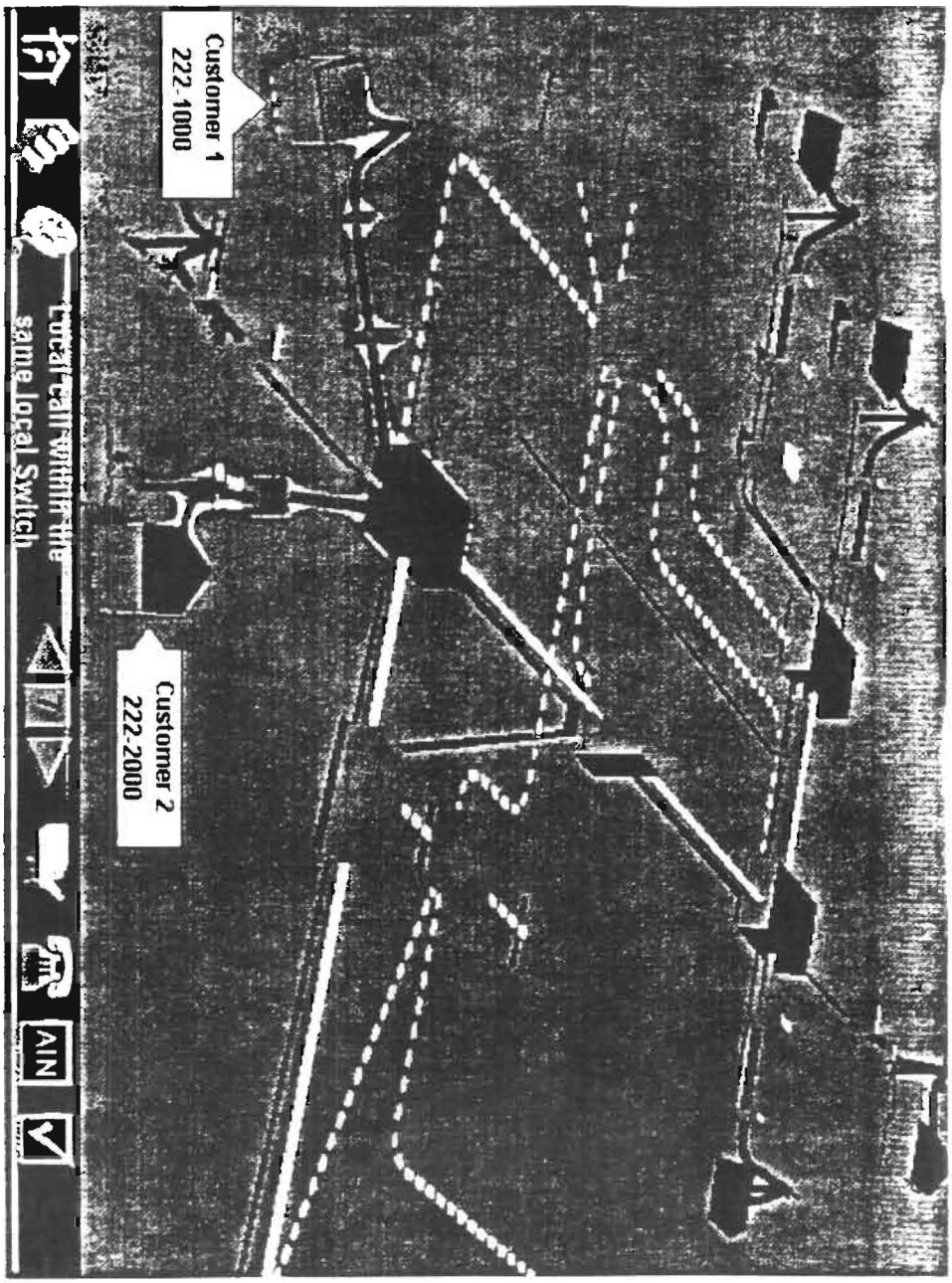

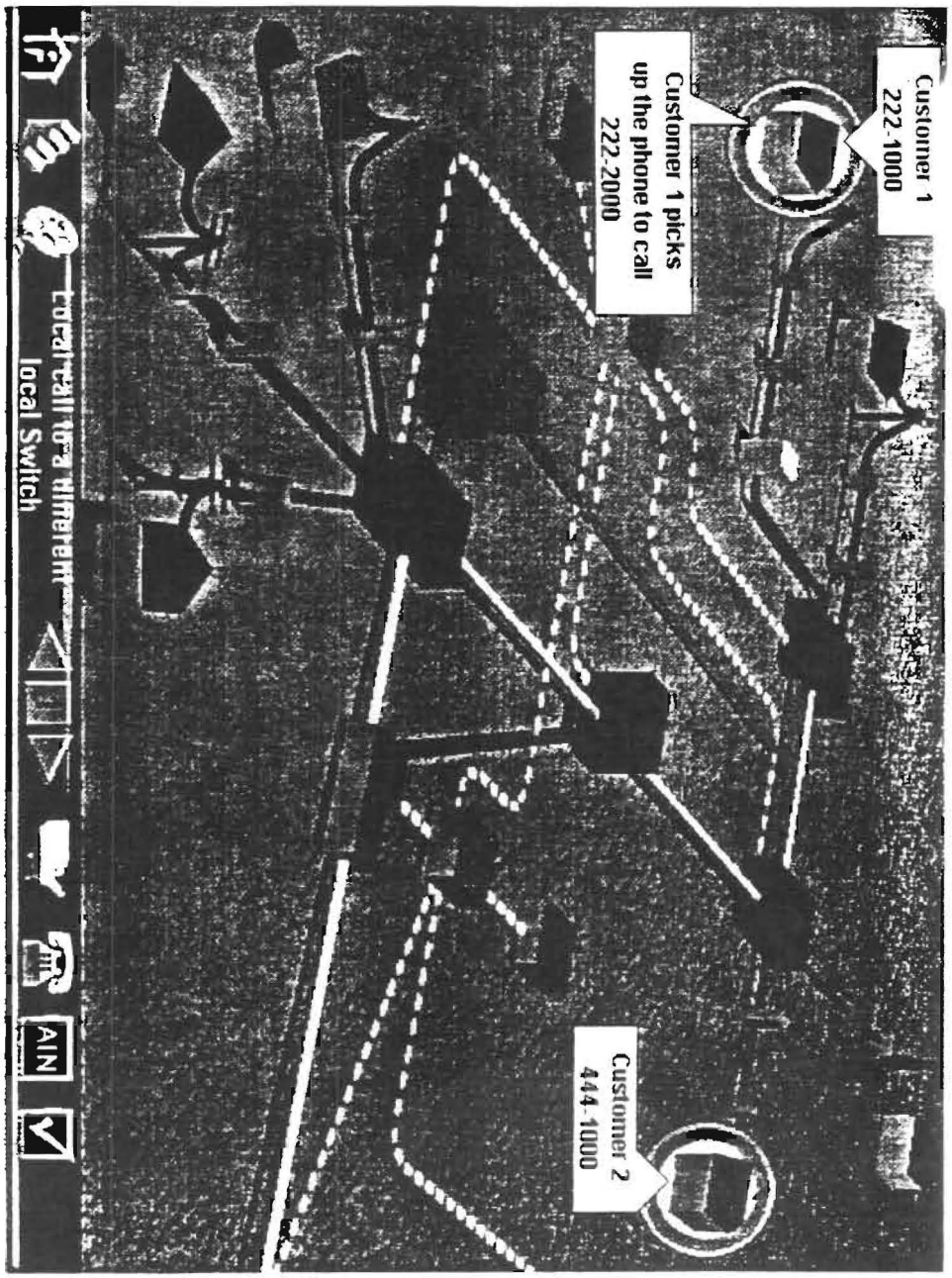
Customer 1
222-1000
Customer 1 picks up the phone to call 222-2000
Customer 2
444-1000
Local call to a different local Switch
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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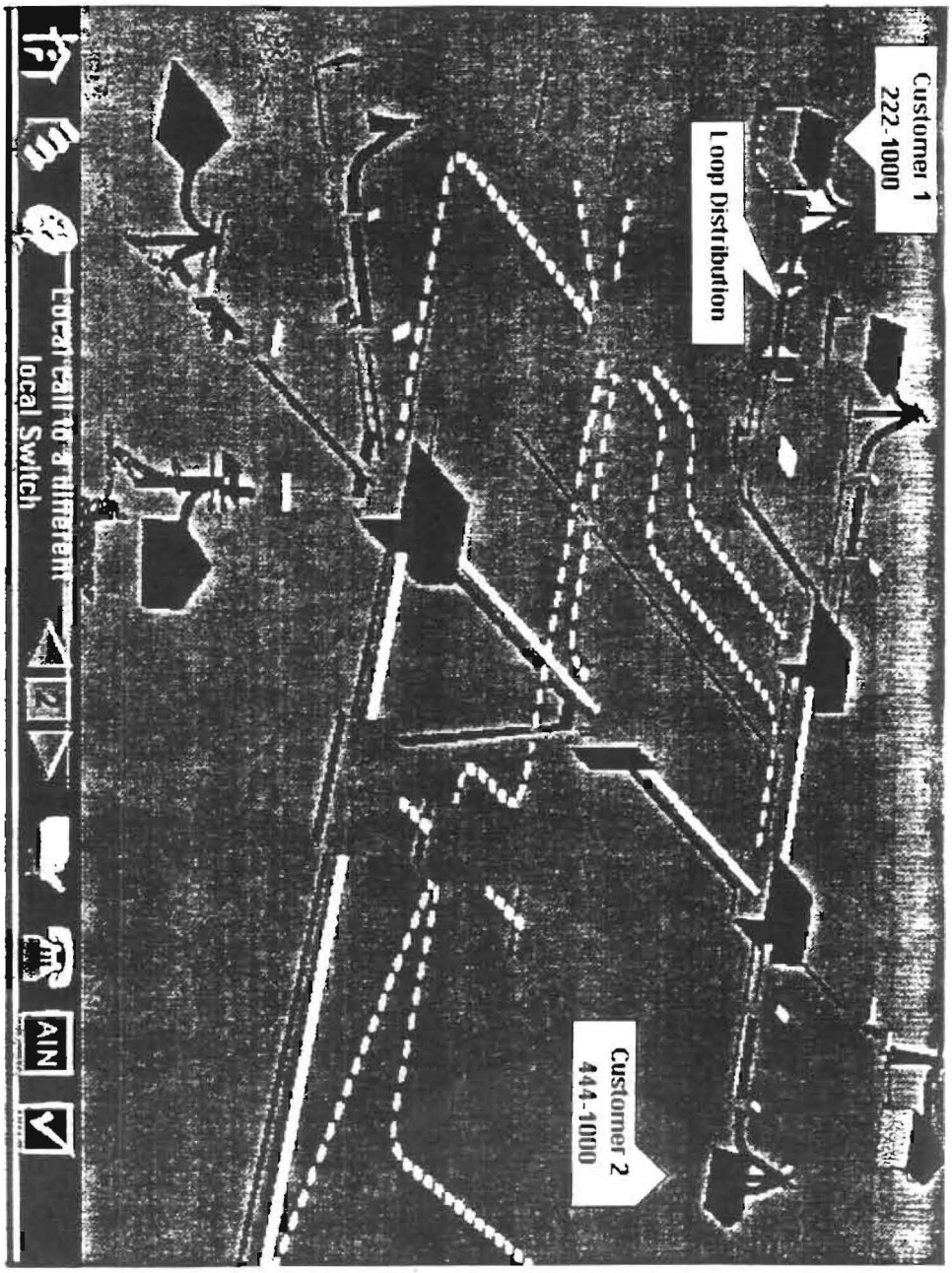

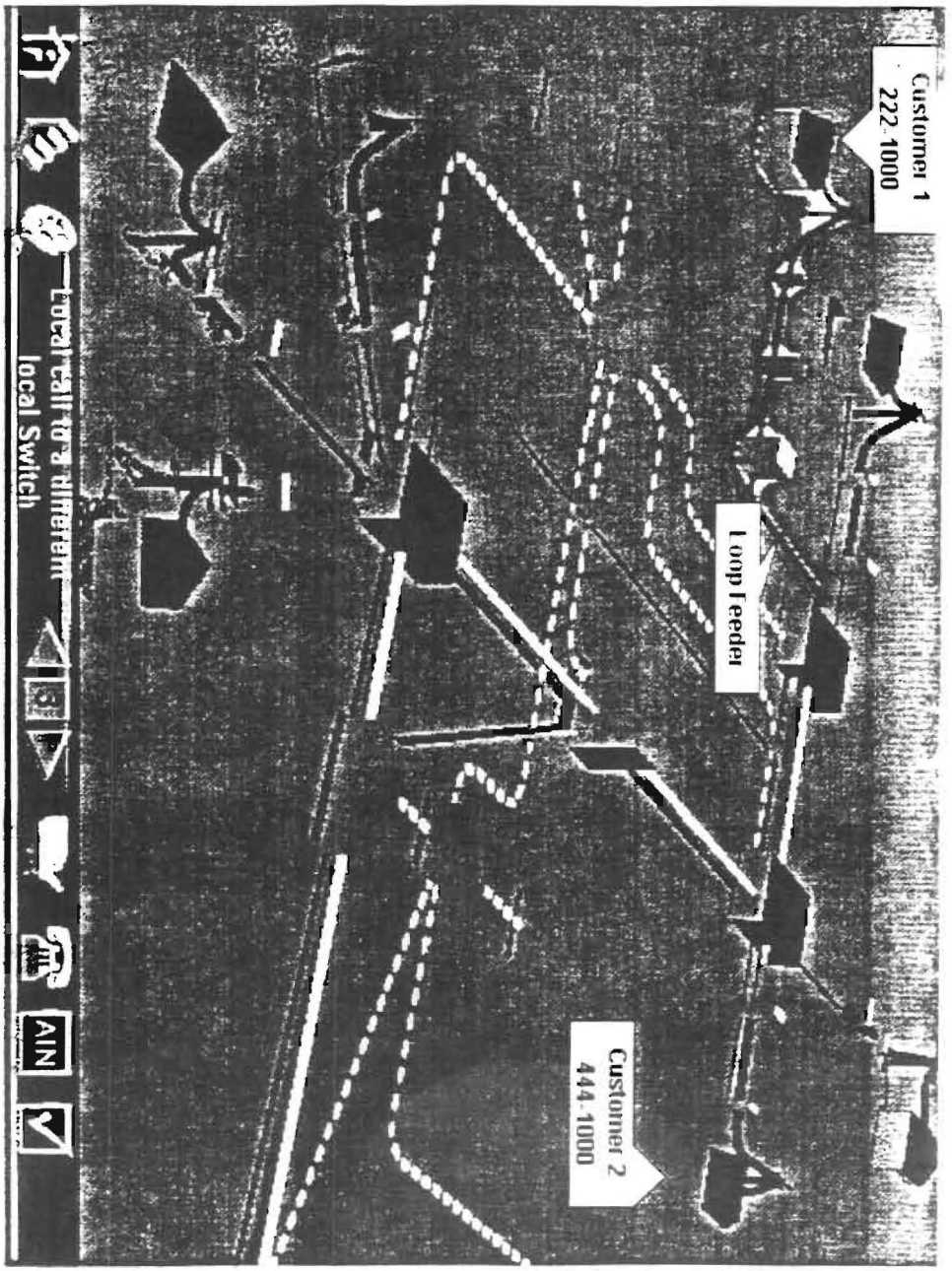
Customer 1
222-1000
Loop Feeder
Customer 2
444-1000
Local Tandem
Local Switch
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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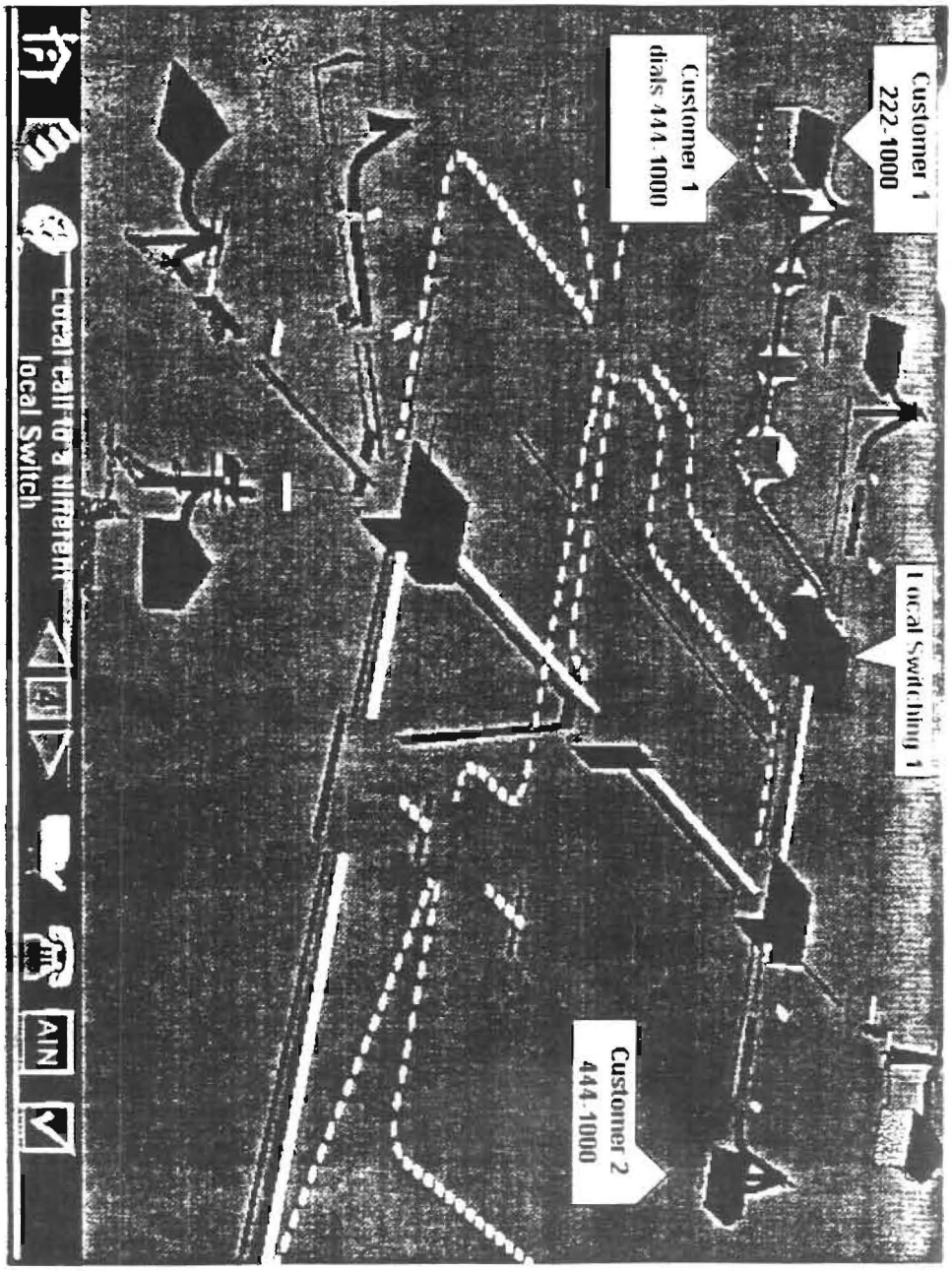

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
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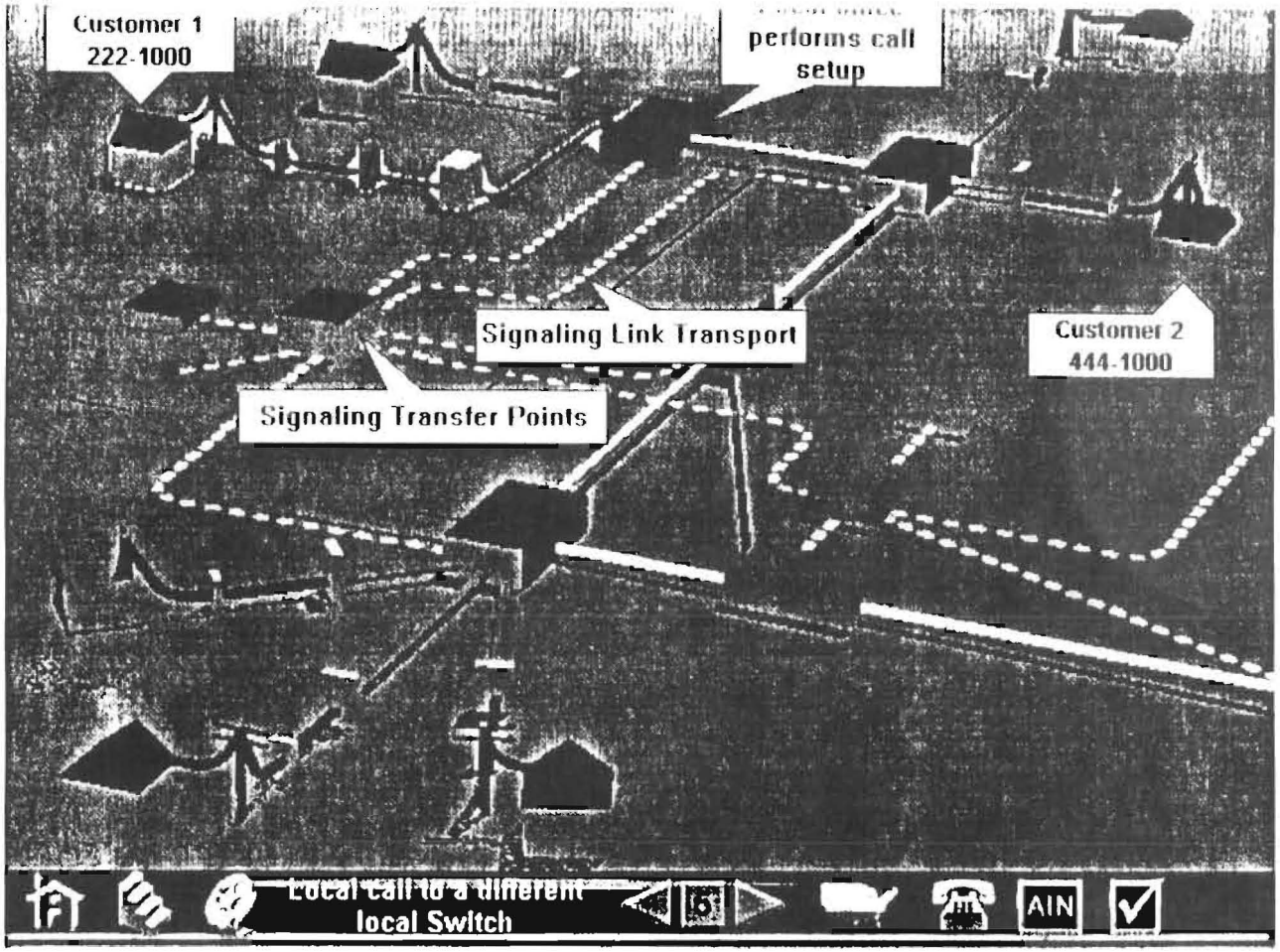

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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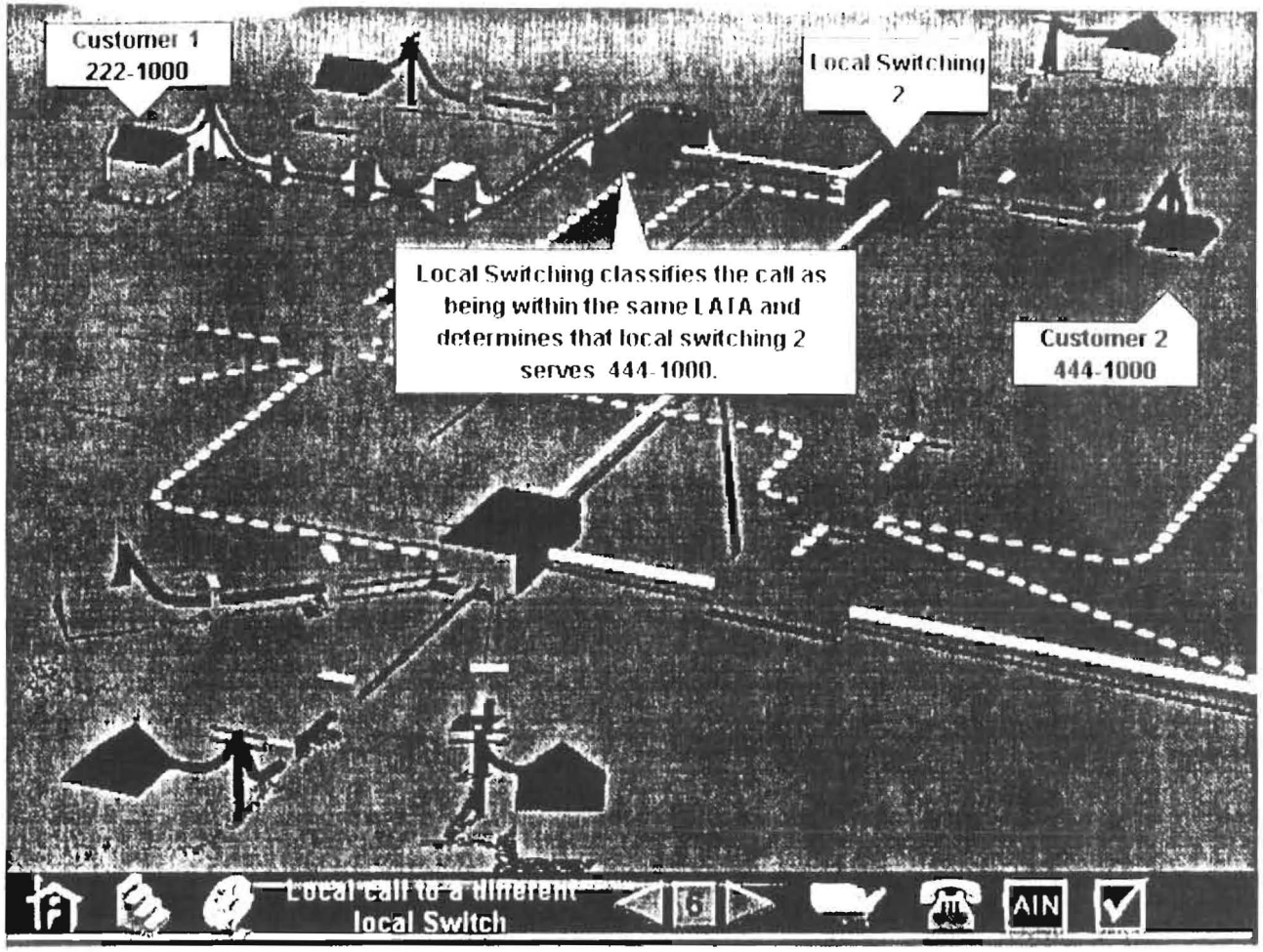

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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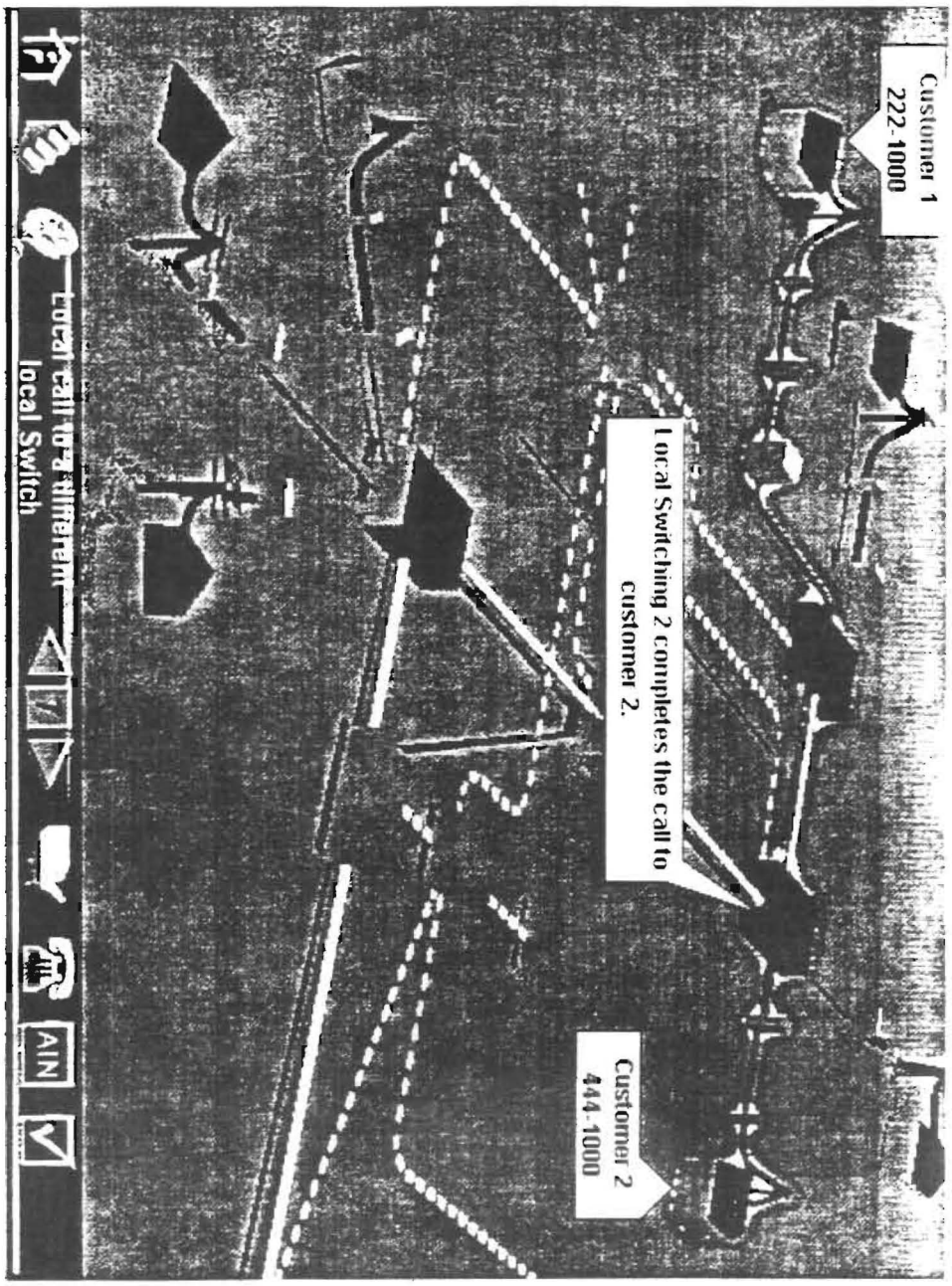

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FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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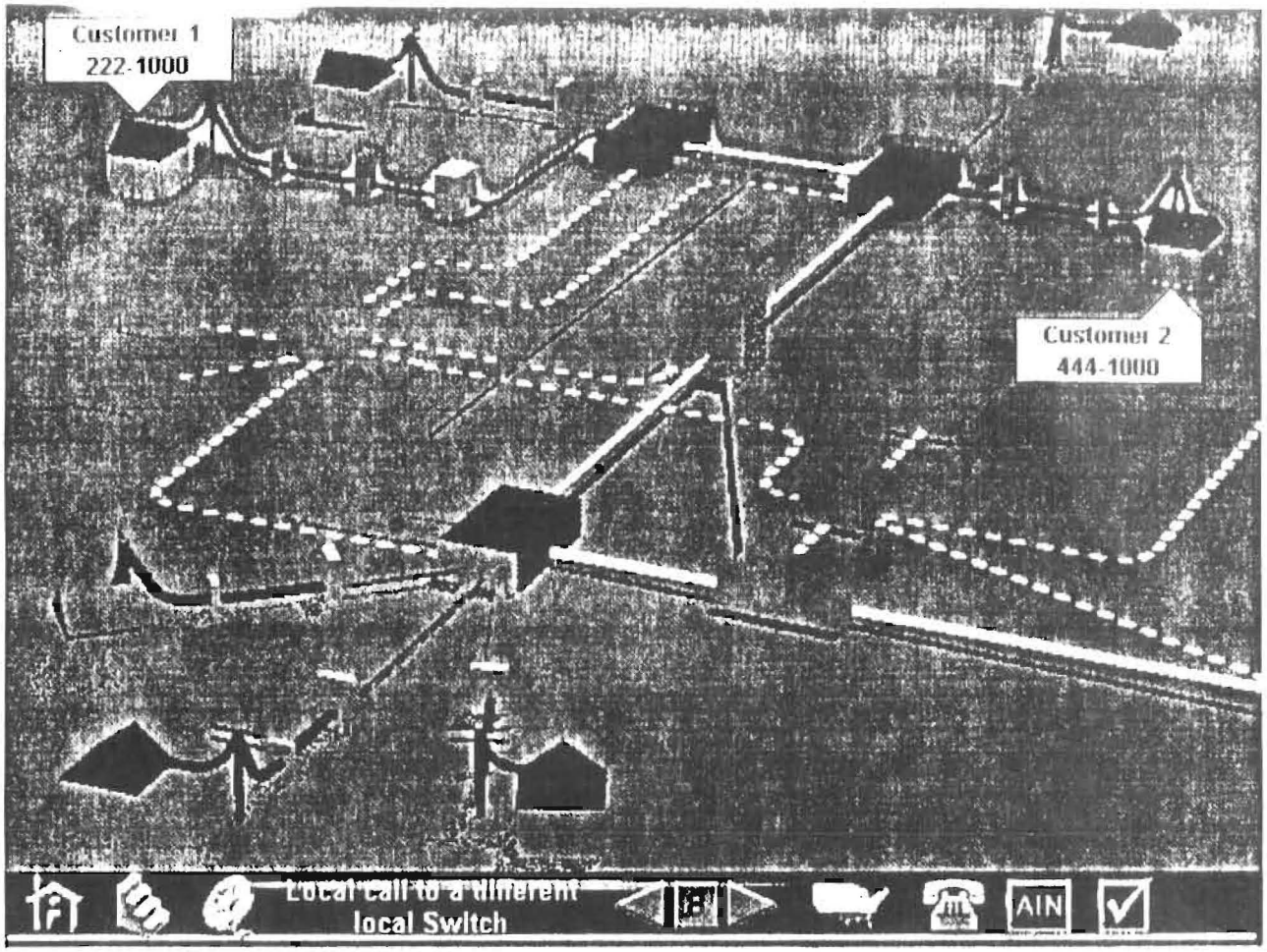

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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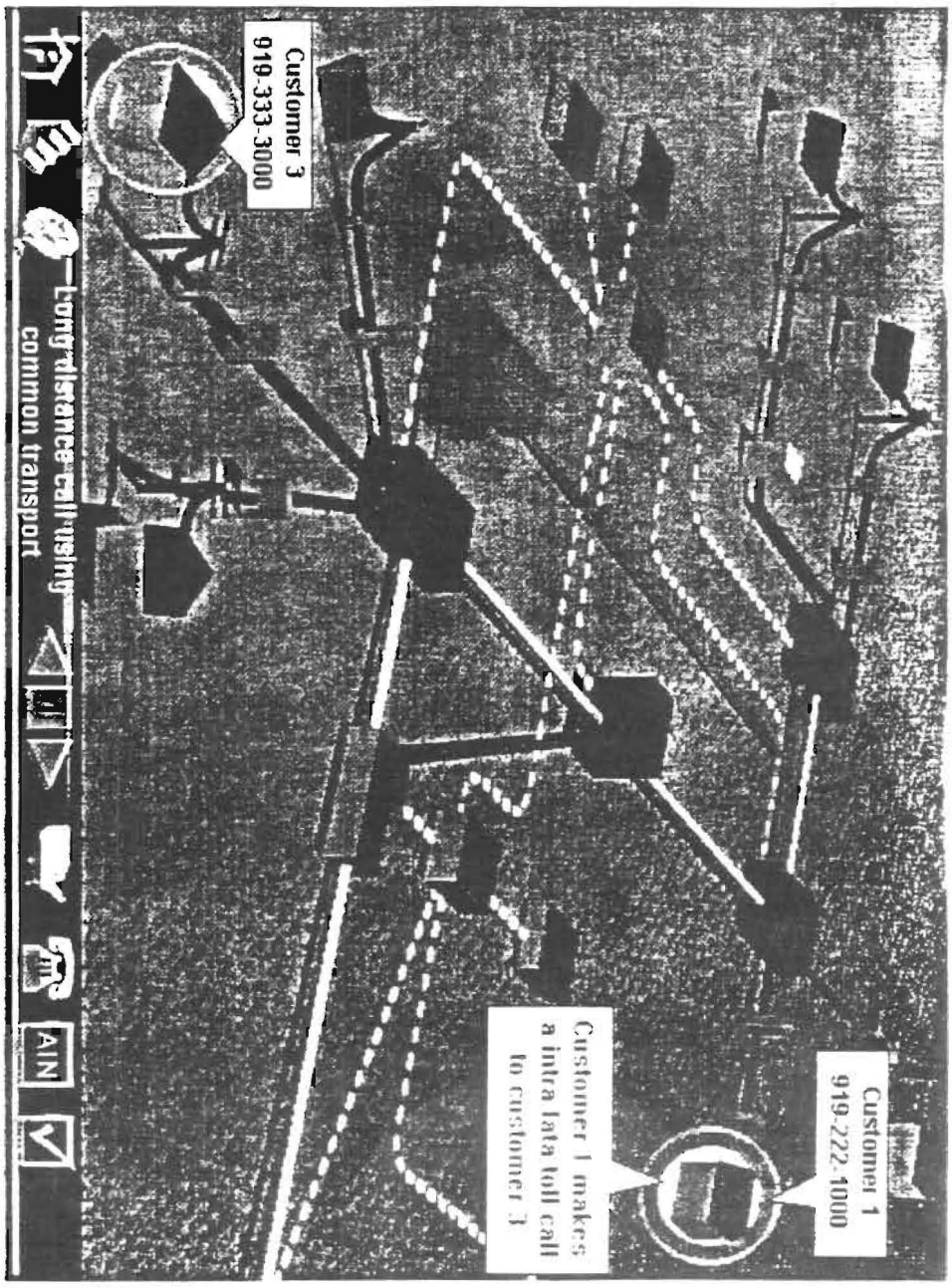

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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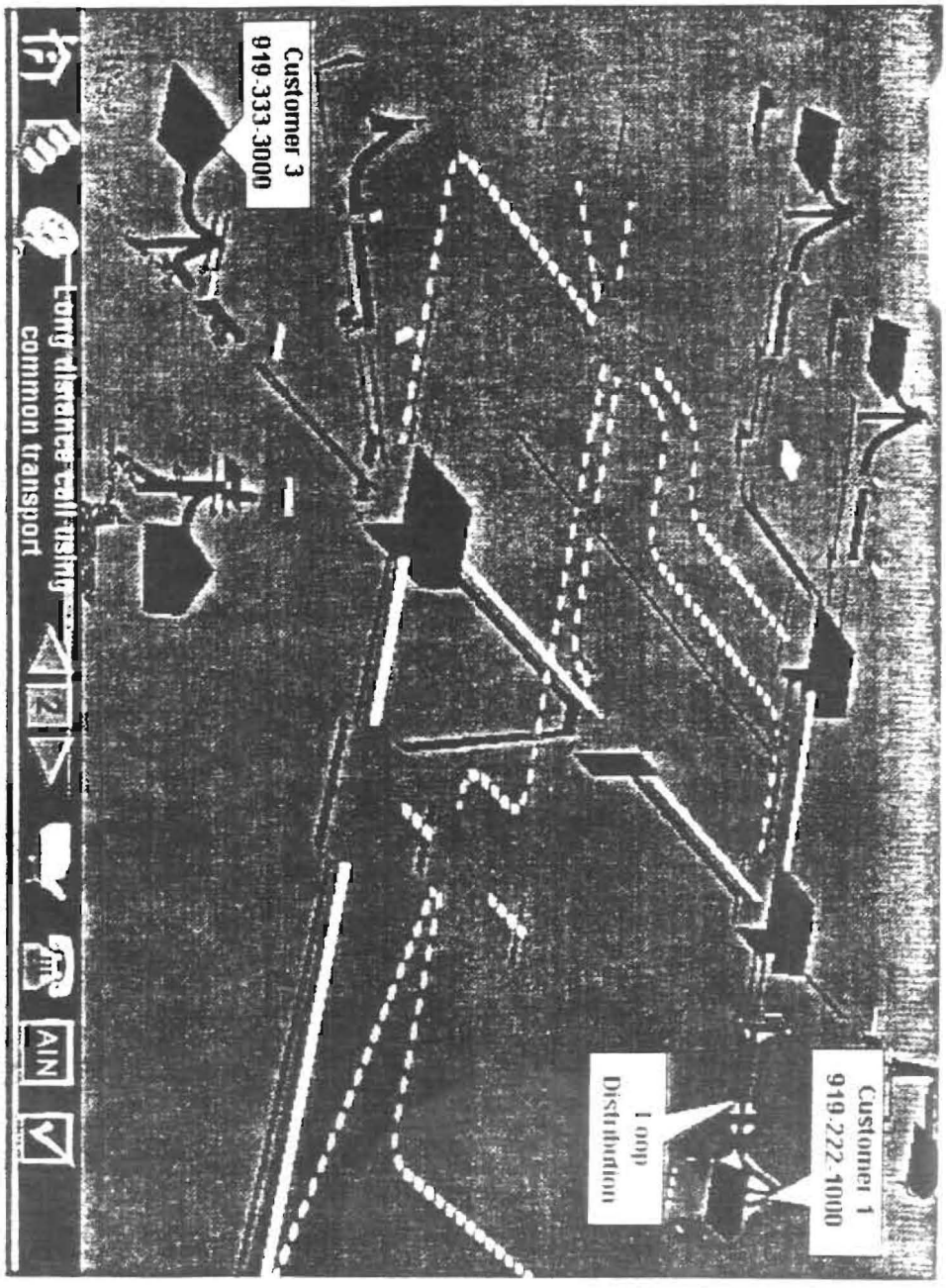

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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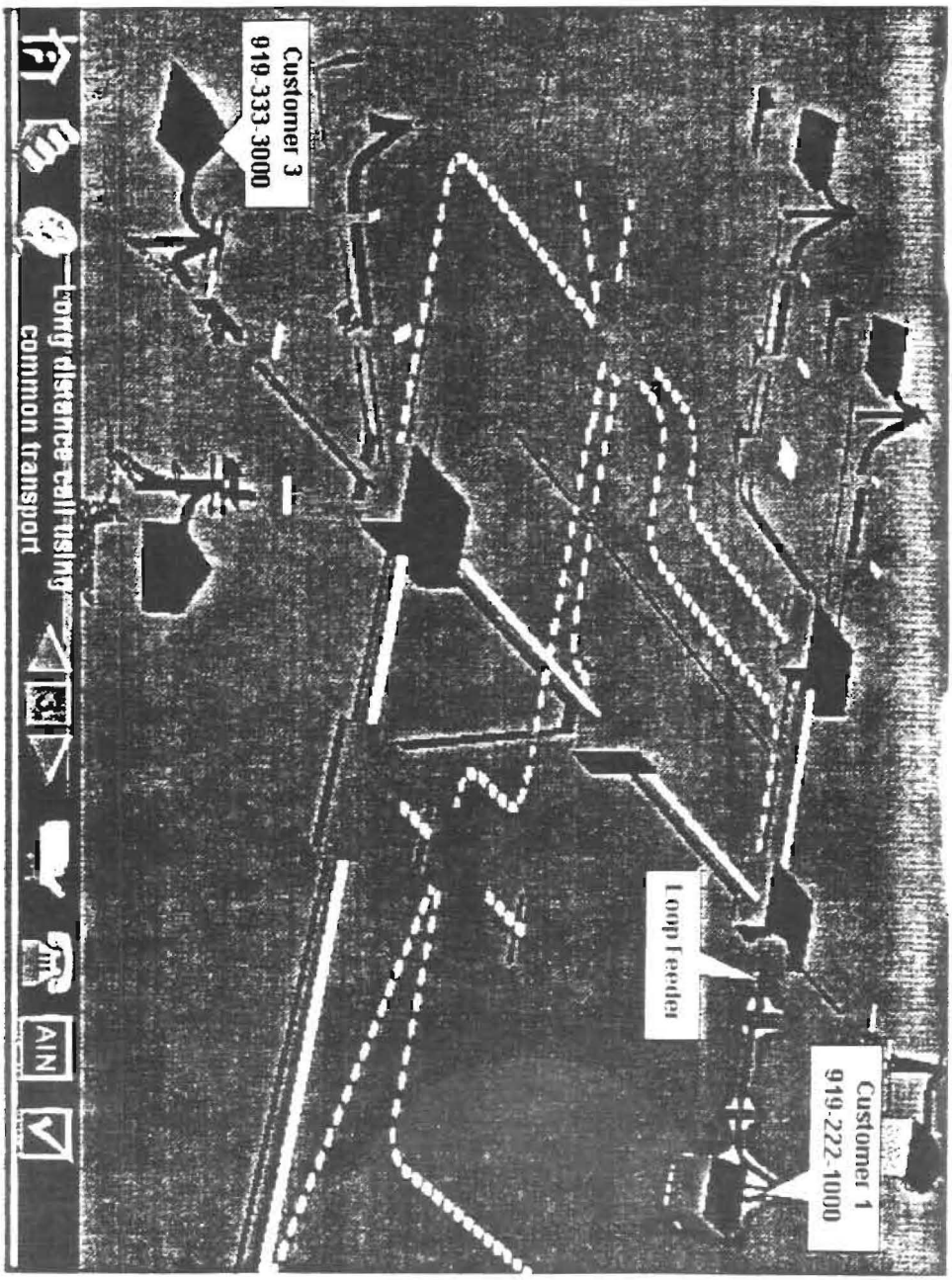

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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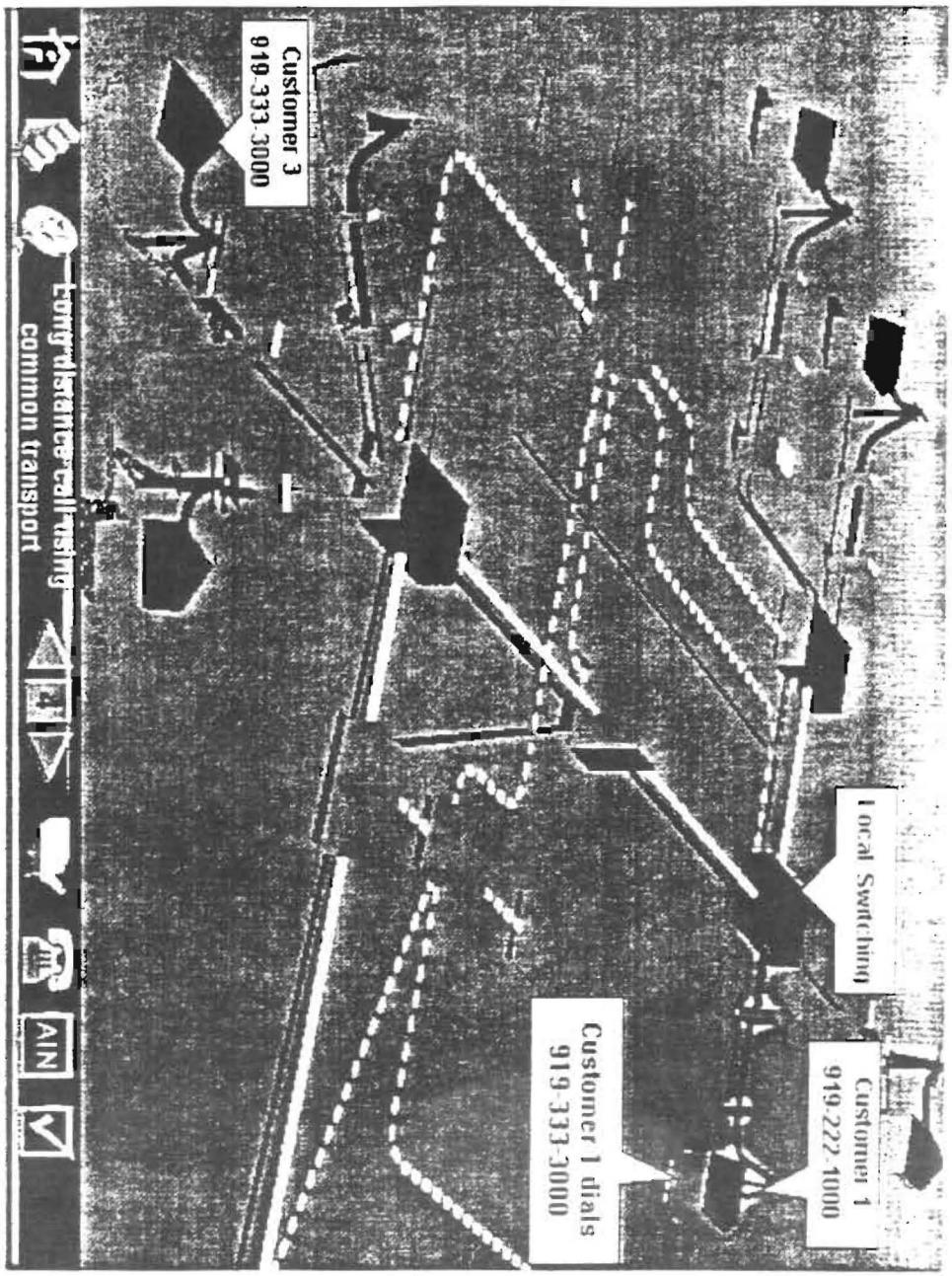

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
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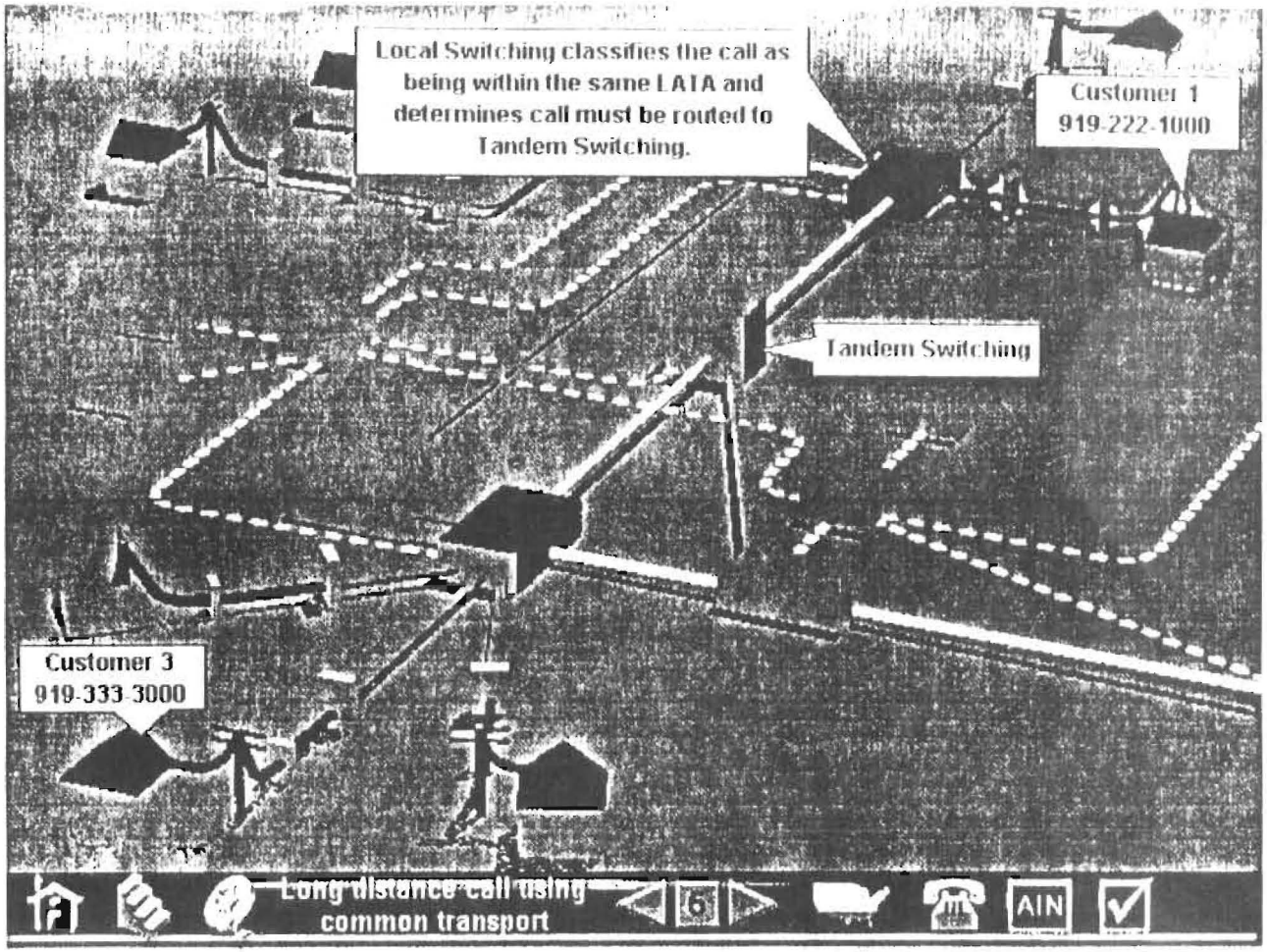

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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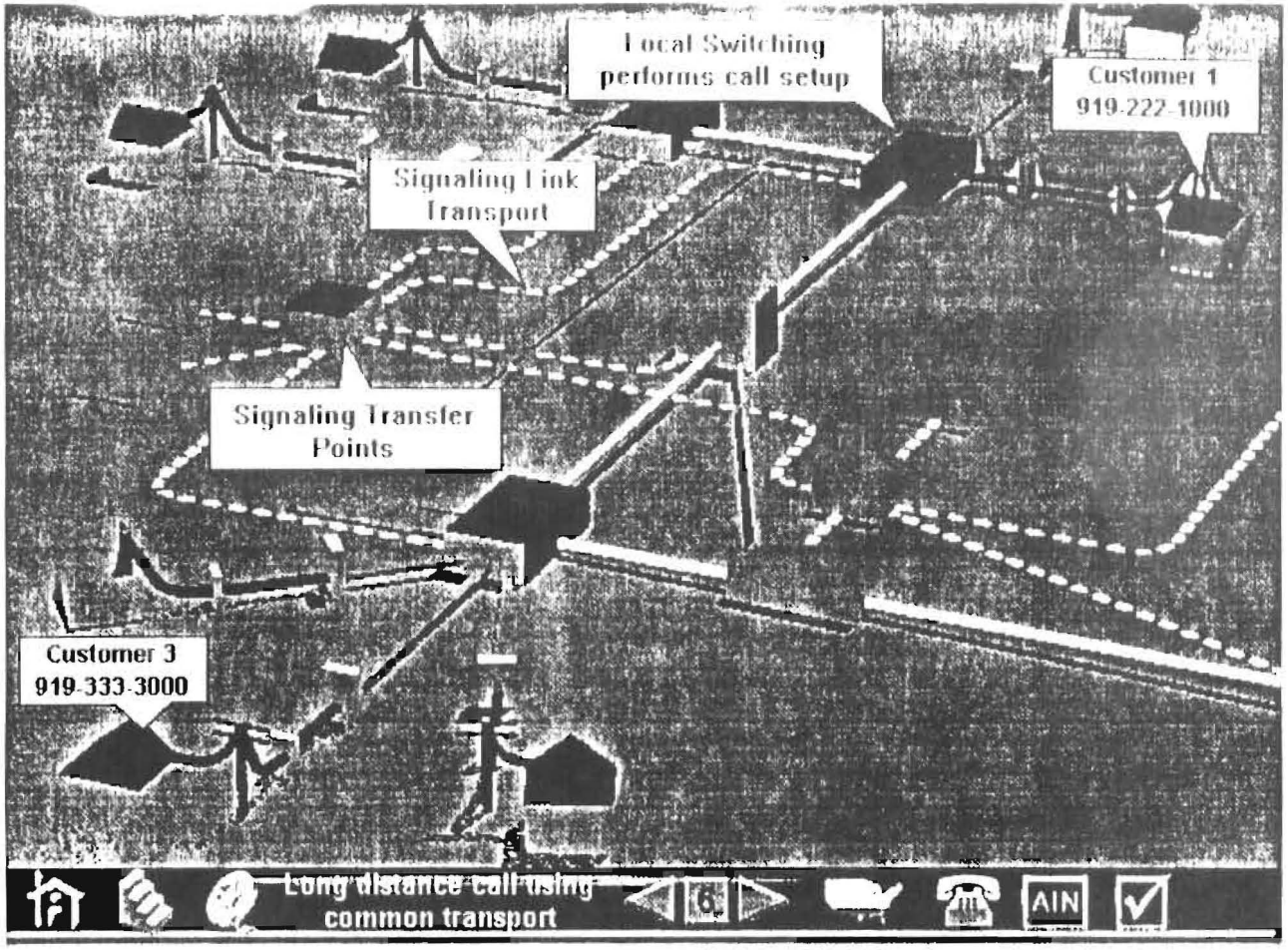

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
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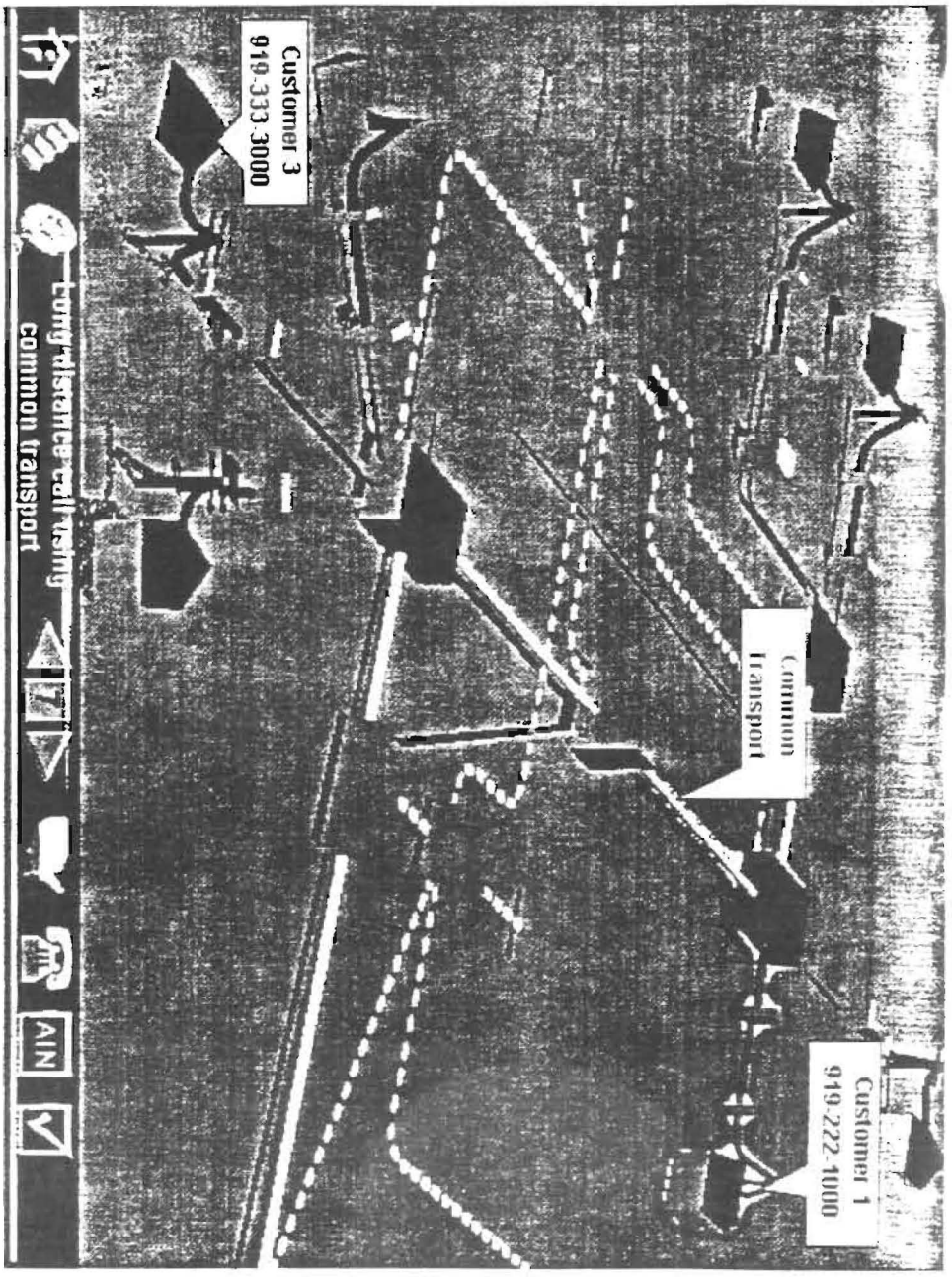

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
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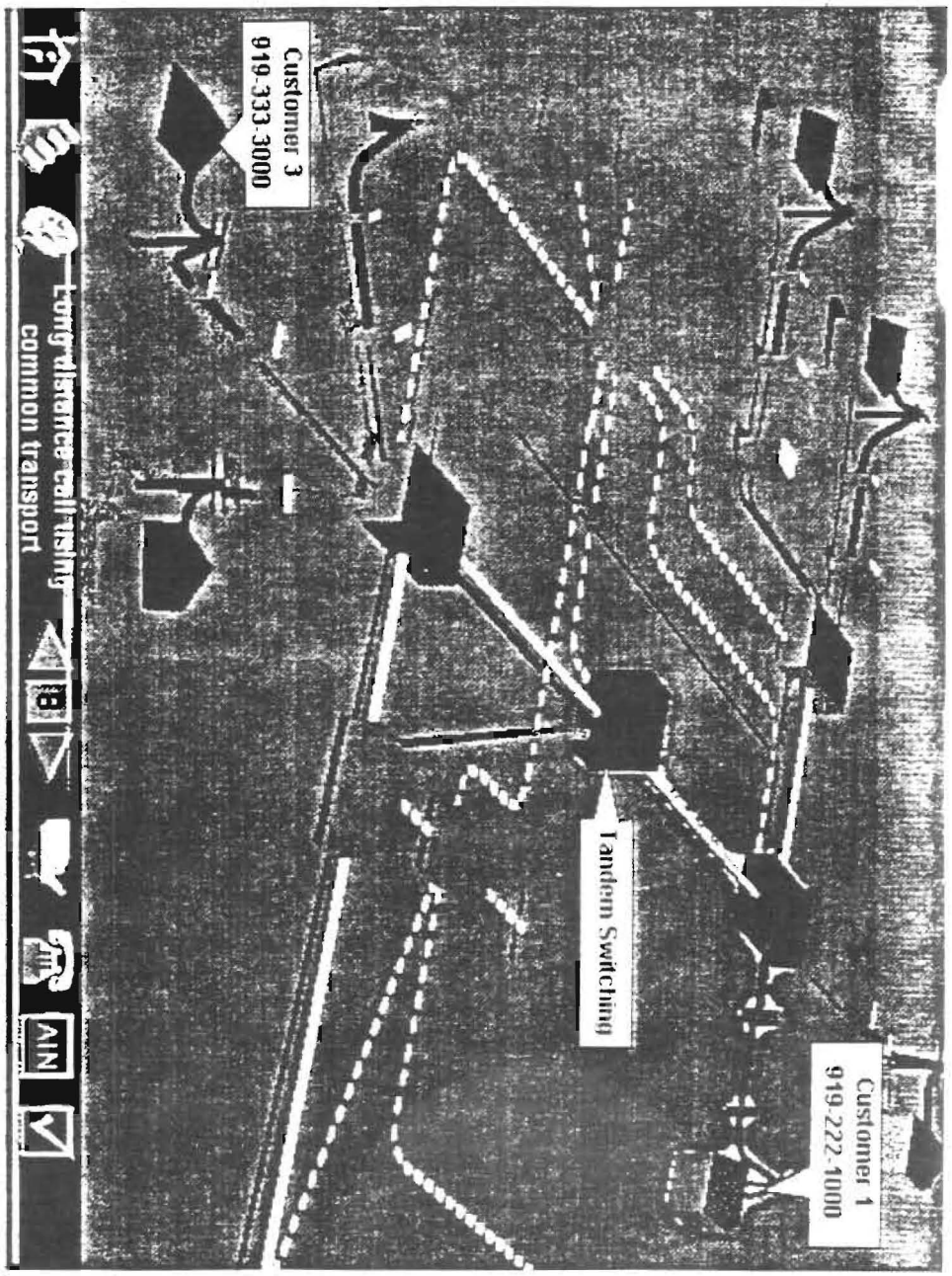

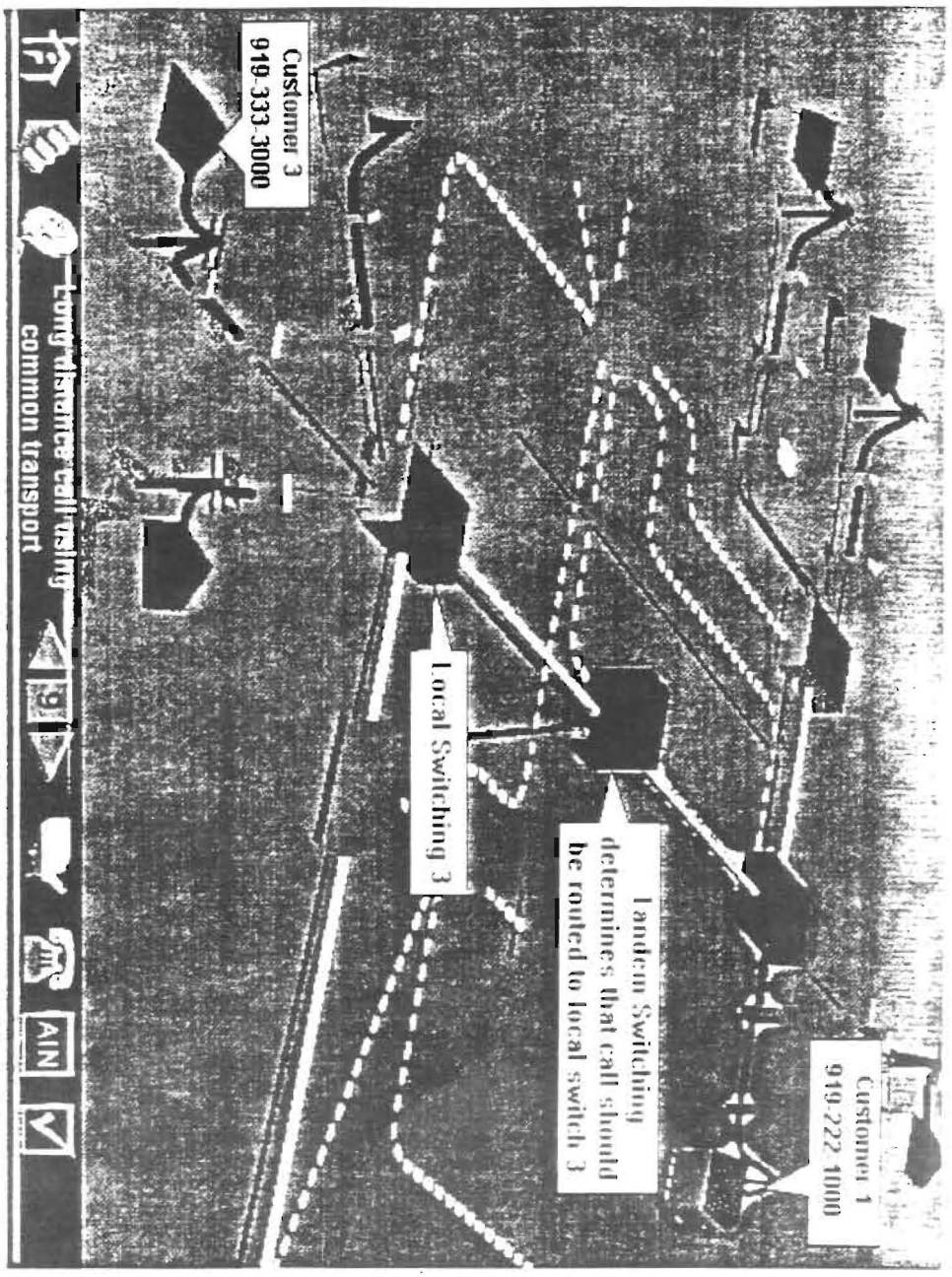
Customer 1
919-222-1000
Tandem Switching
determines that call should
be routed to local switch 3
Local Switching 3
Customer 3
919-333-3000
Long distance call using
common transport
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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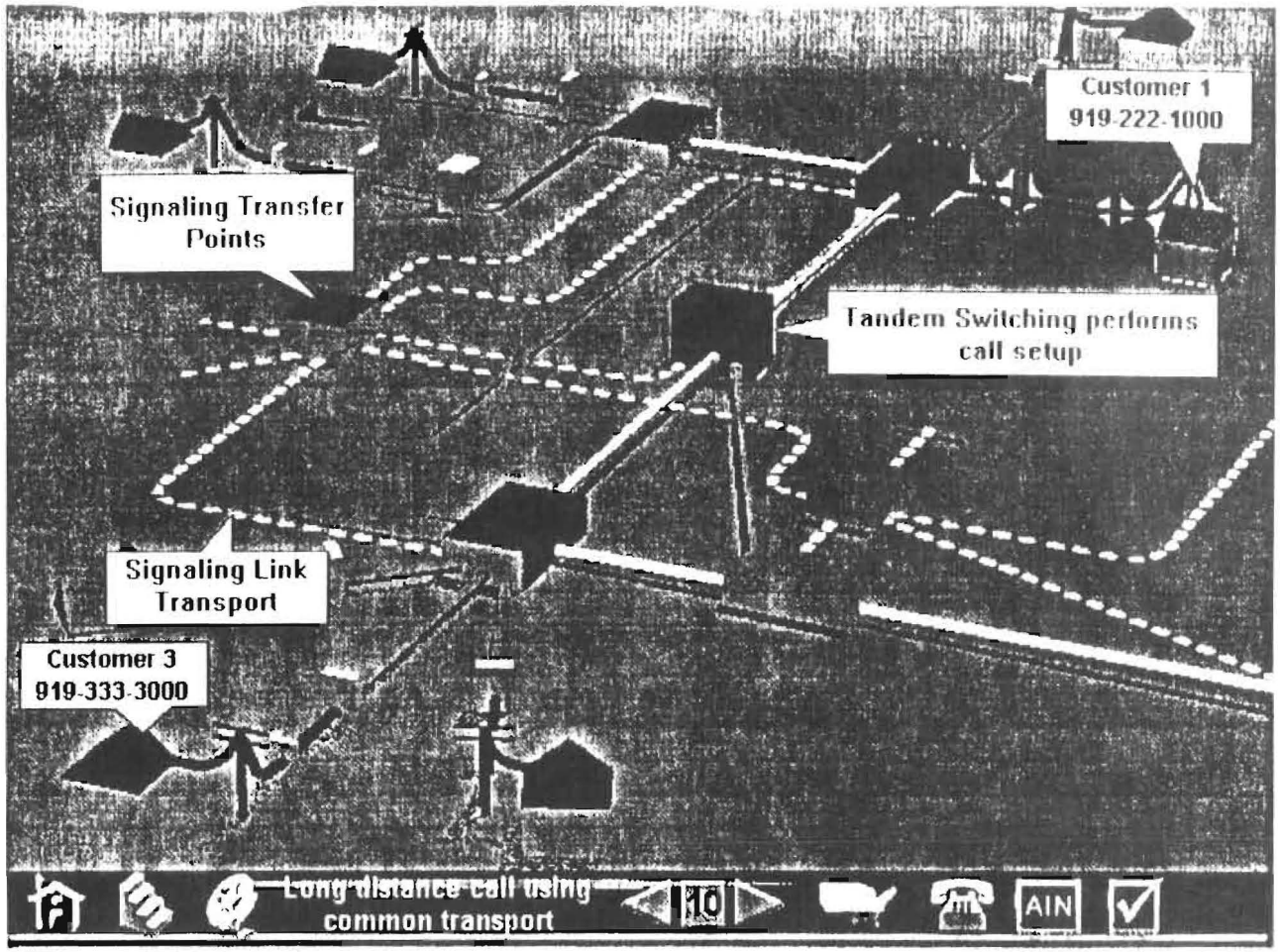

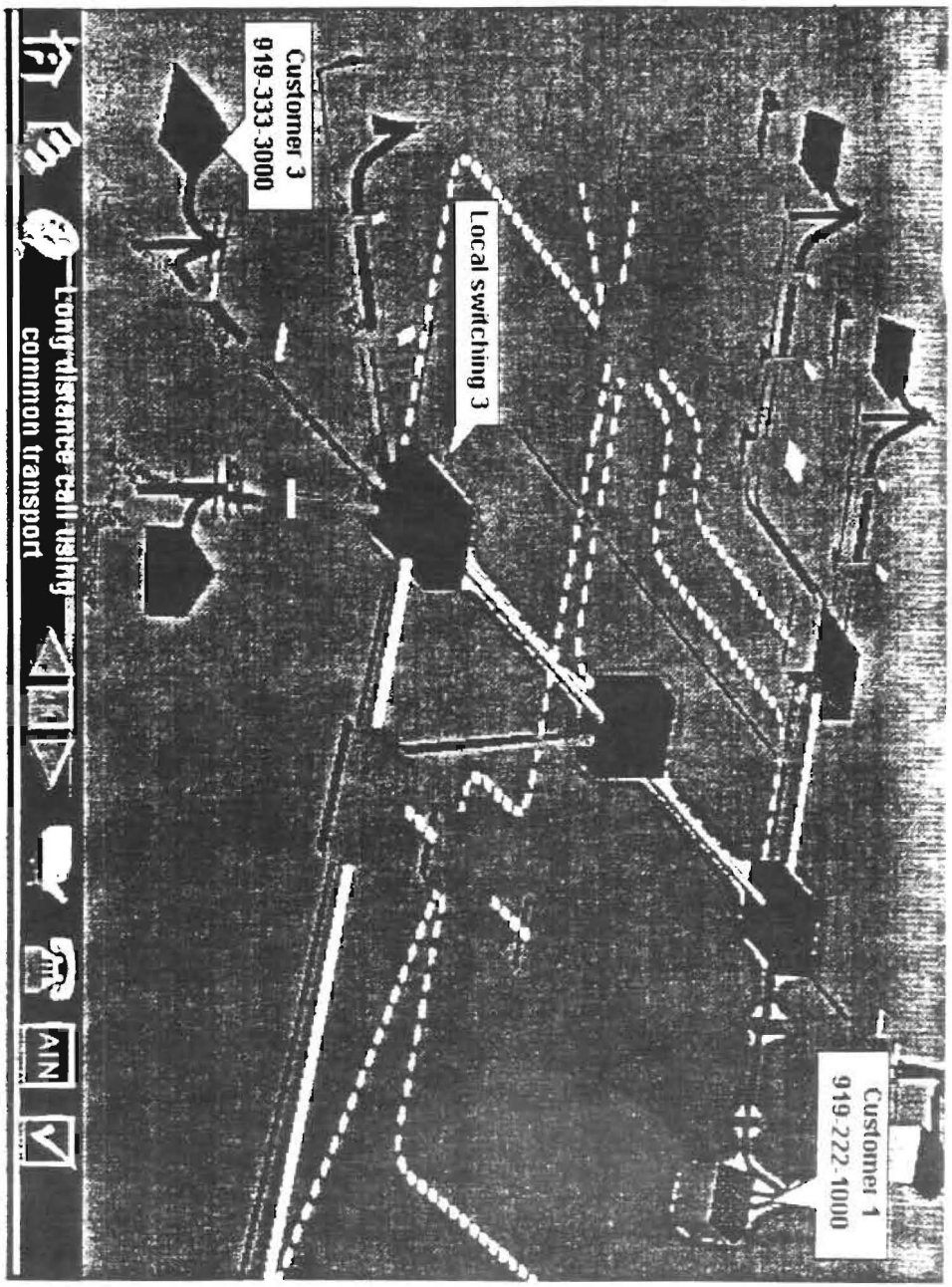
Customer 1
919-222-1000
Local switching 3
Customer 3
919-333-3000
Long distance call using common transport
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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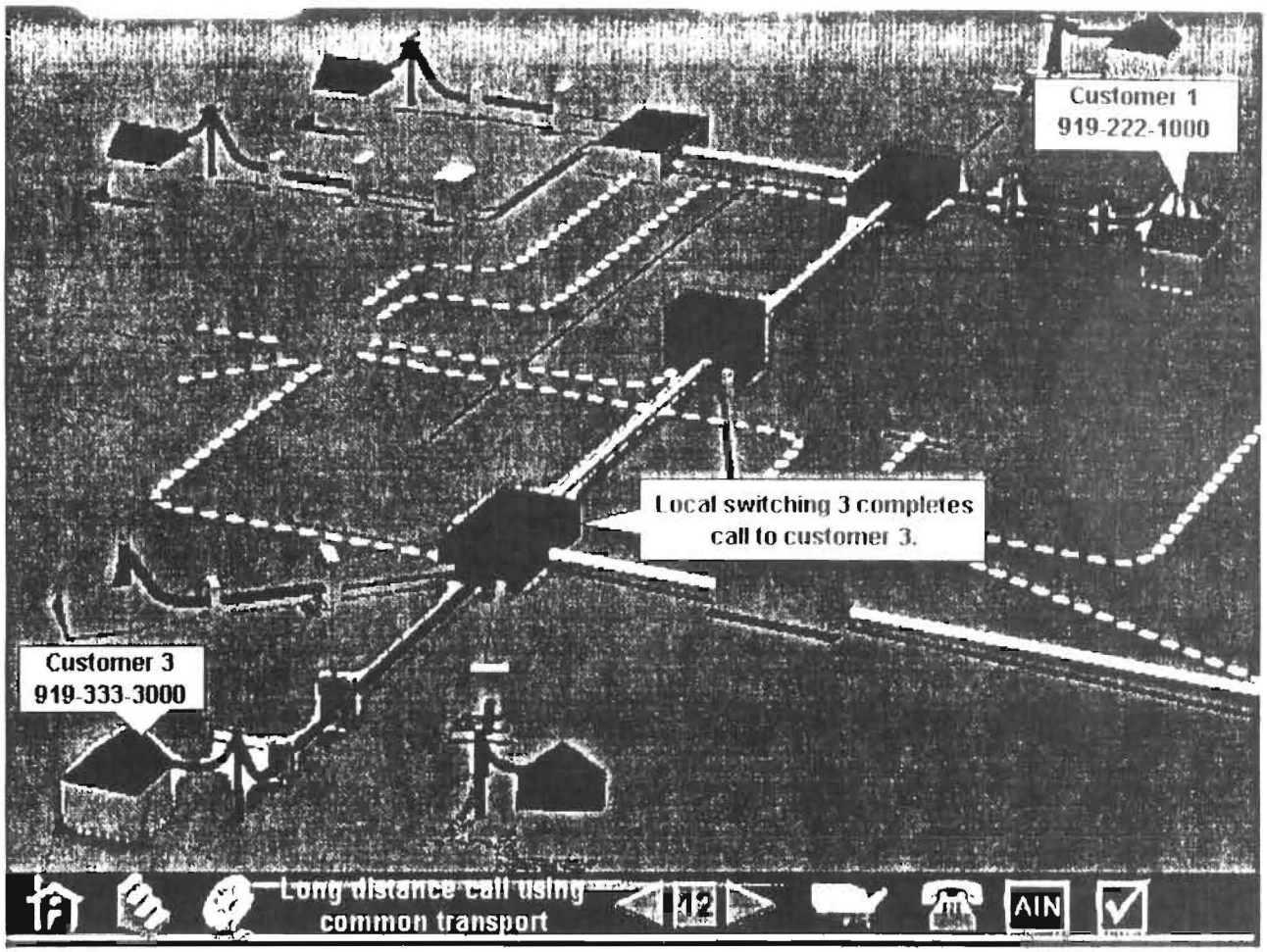
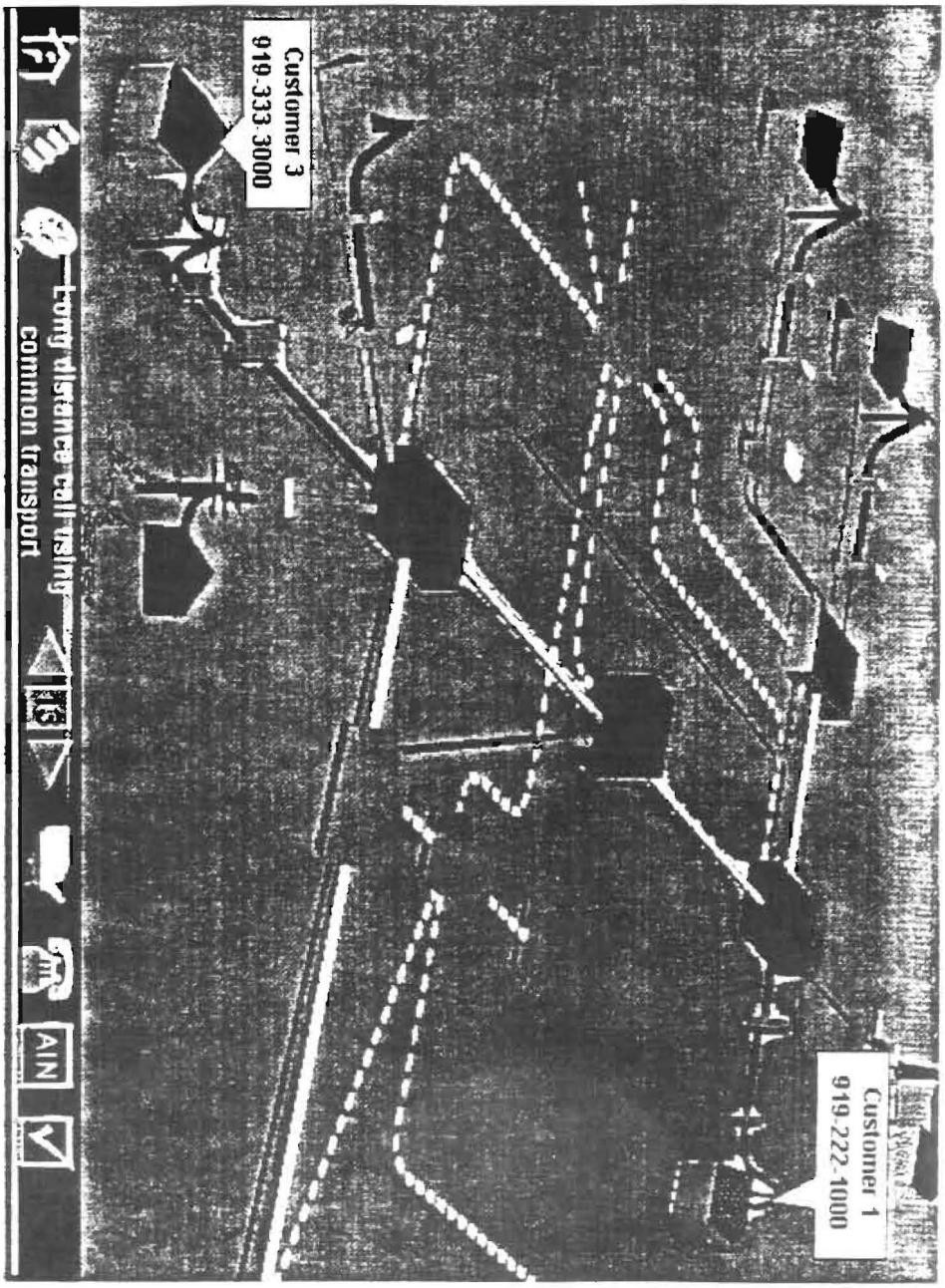
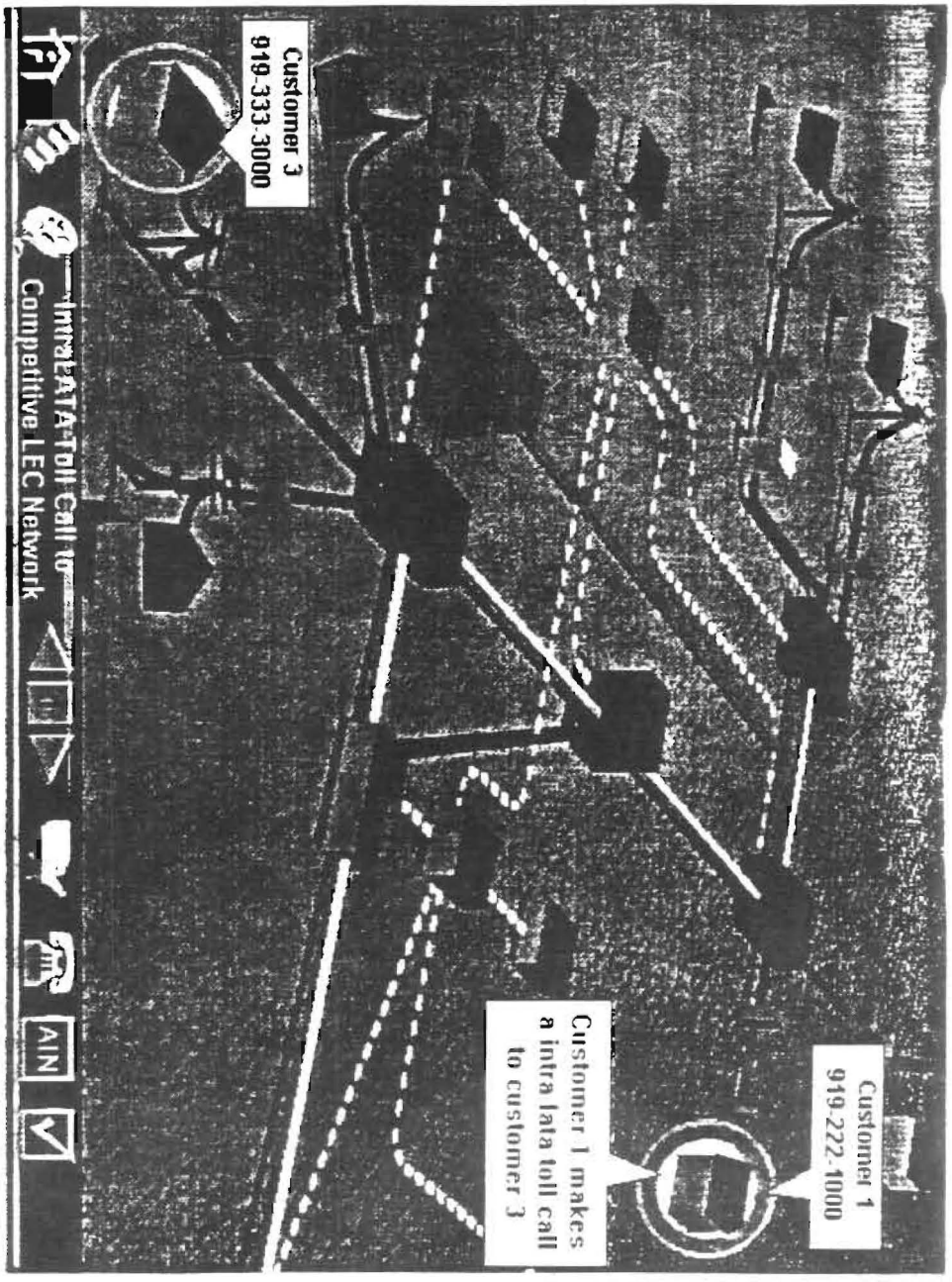



Customer 3
919-333-3000
Customer 1
919-222-1000
Long distance call using
common transport
IS
AIN


Customer 1
919-222-1000
Customer 1 makes
a intra lata toll call
to customer 3
Customer 3
919-333-3000
IntraLATA Toll Call to
Competitive LEC Network
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
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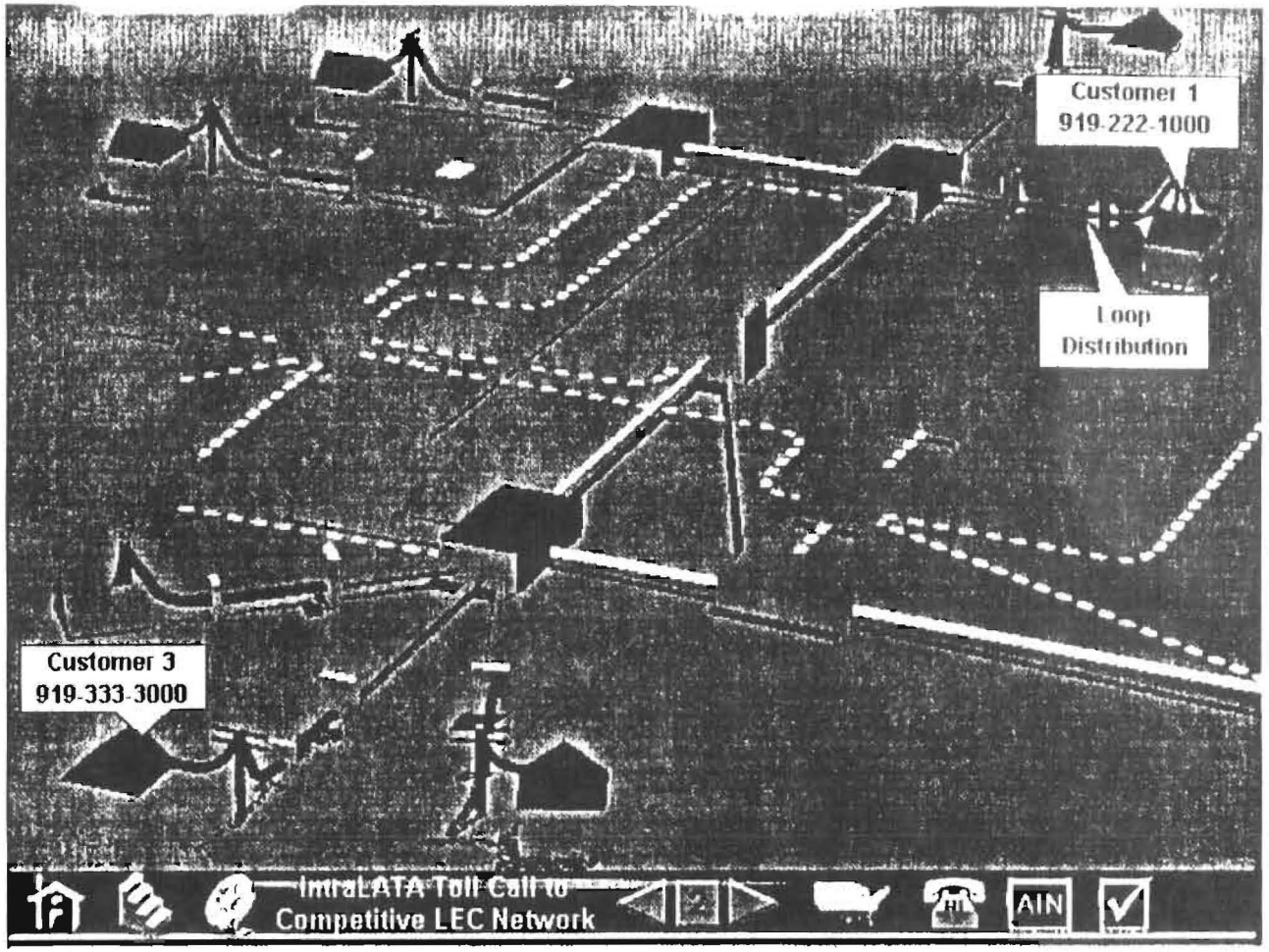

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
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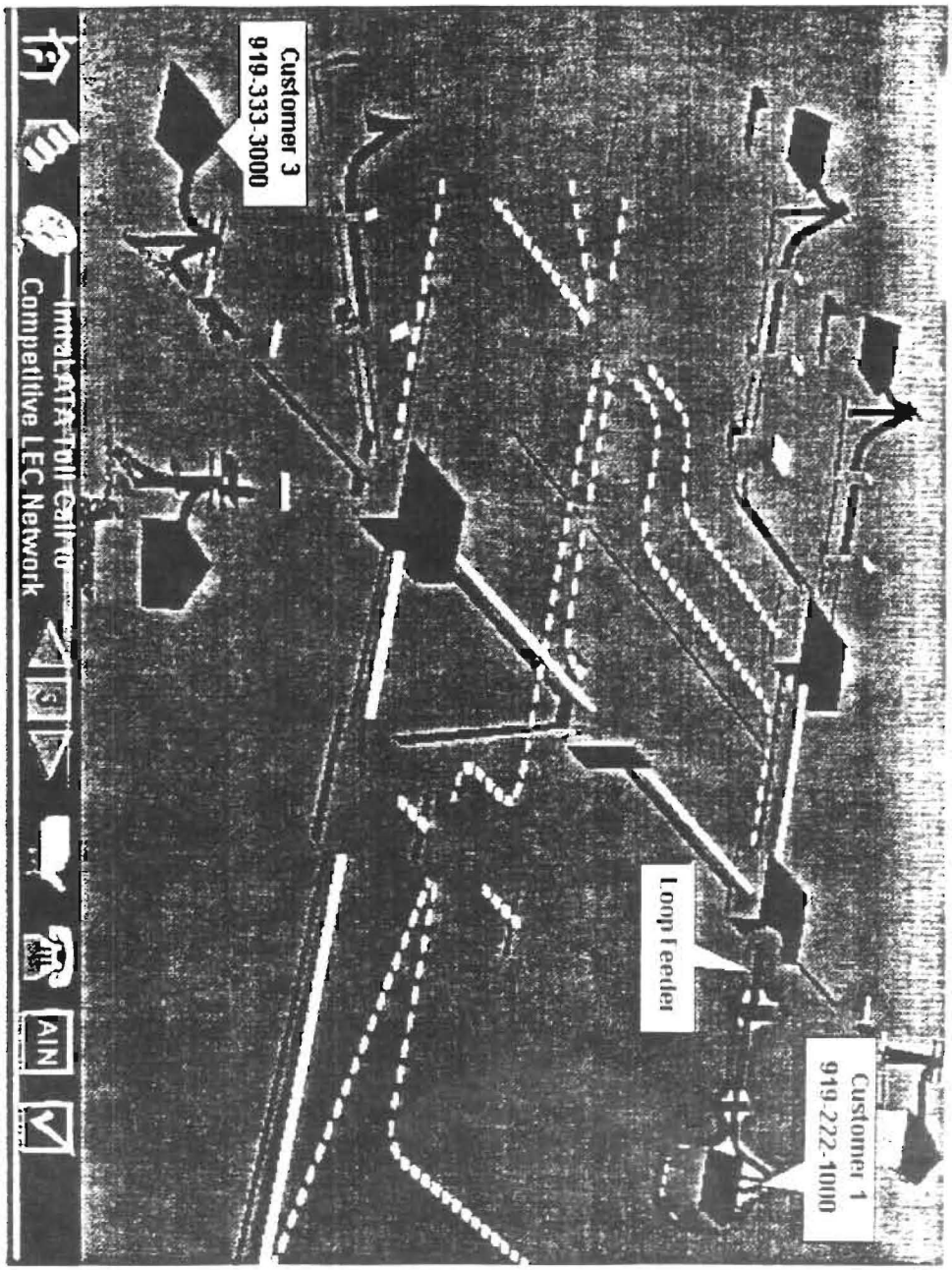

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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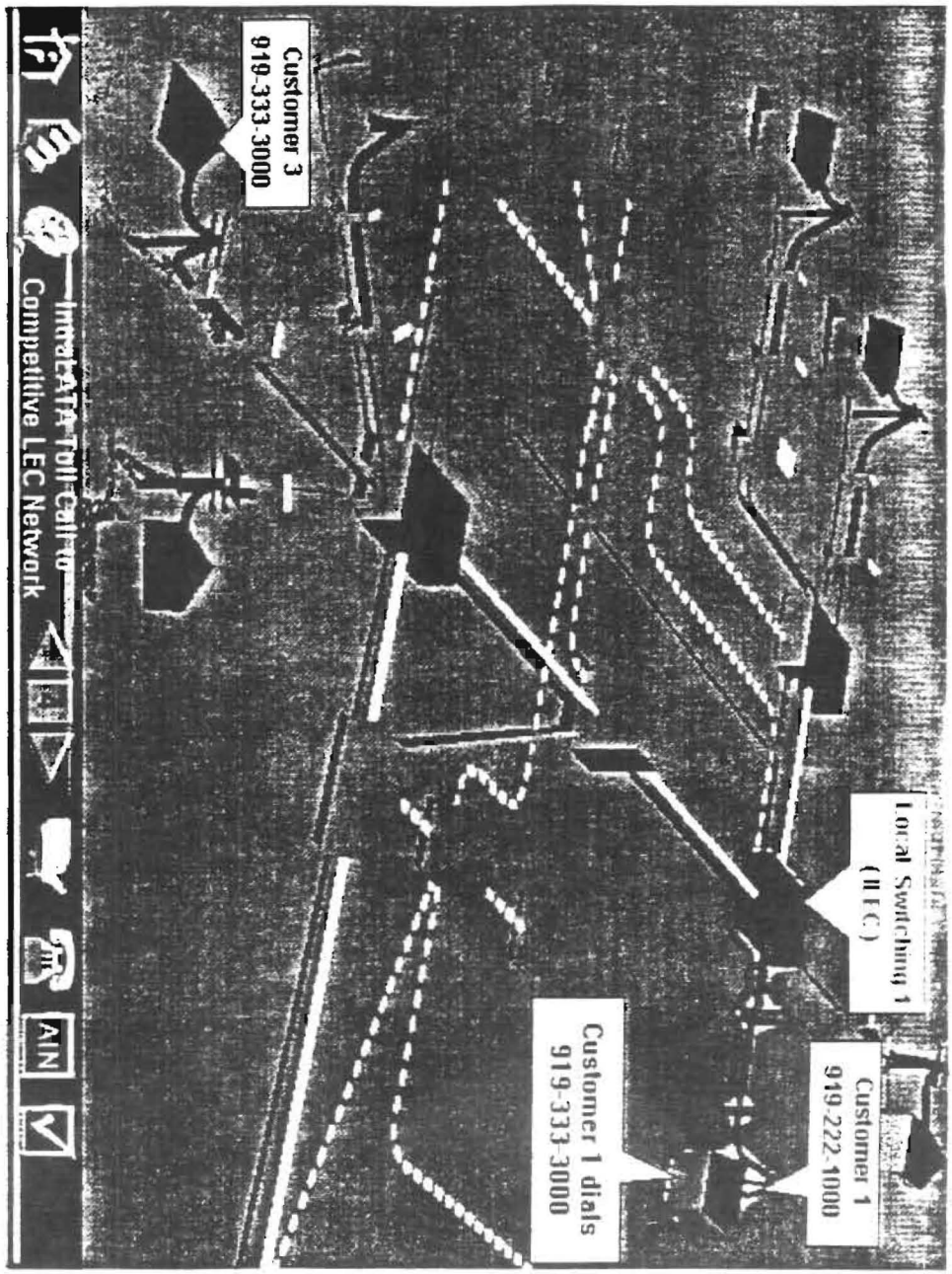

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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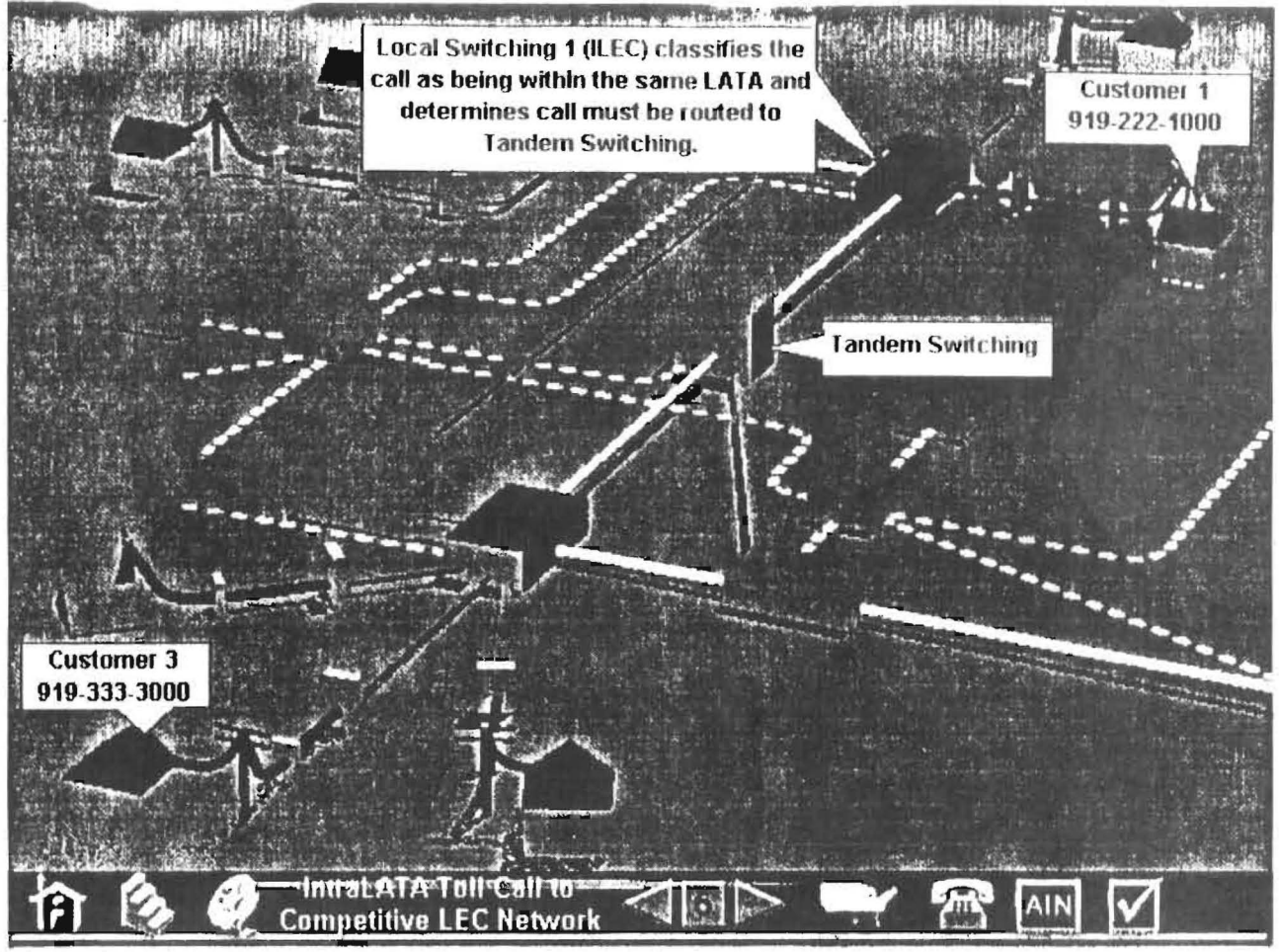

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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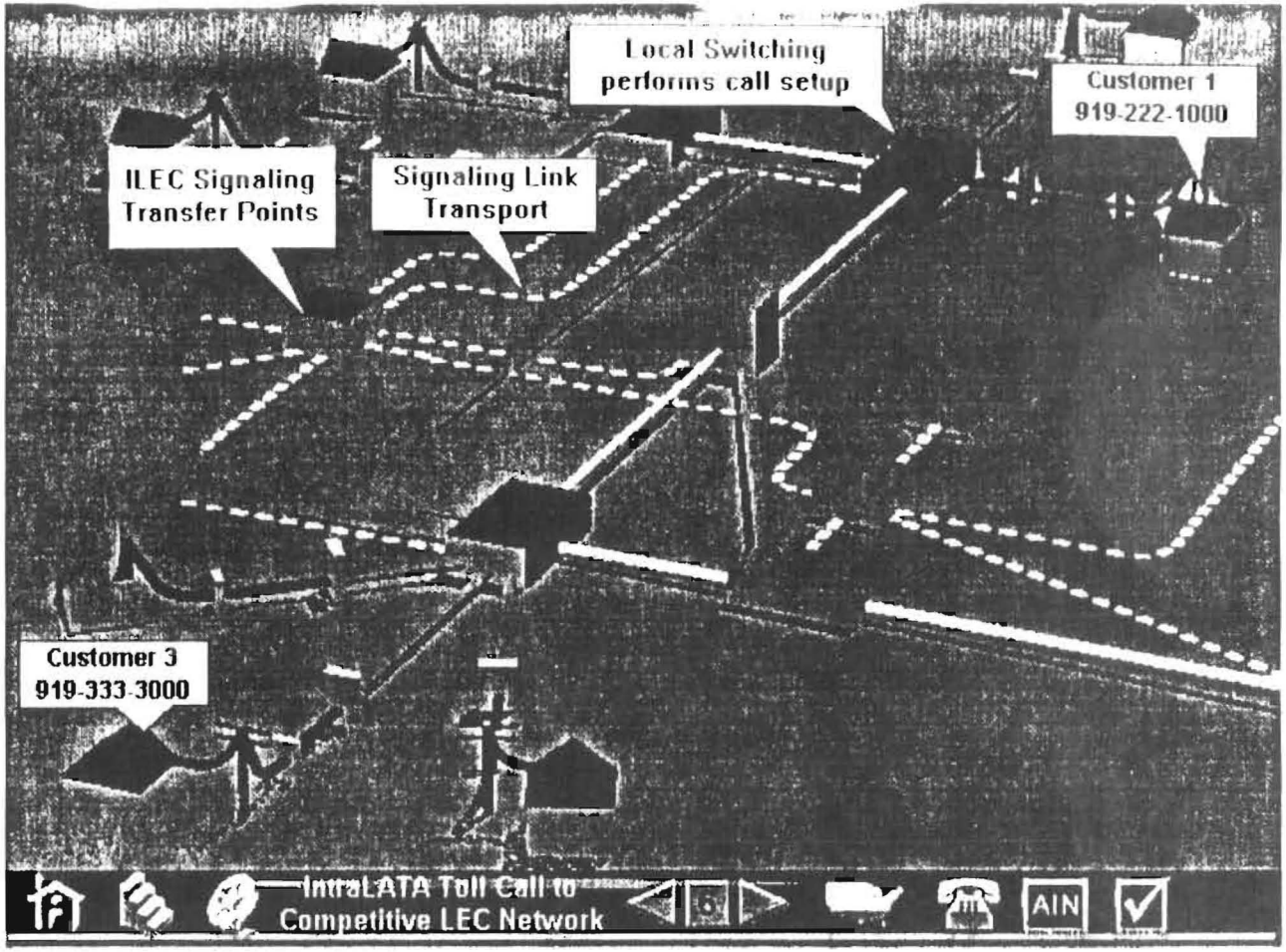

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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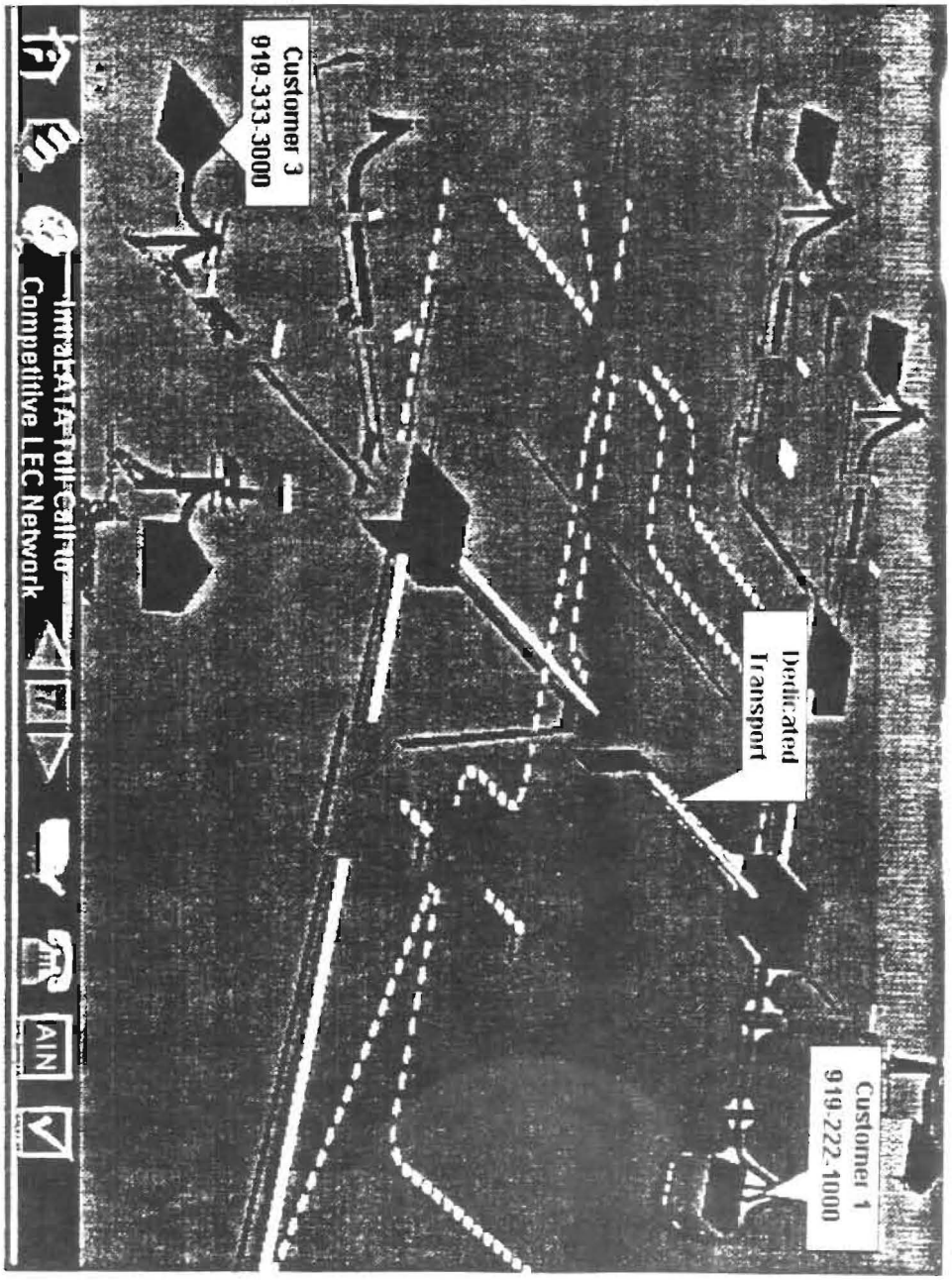

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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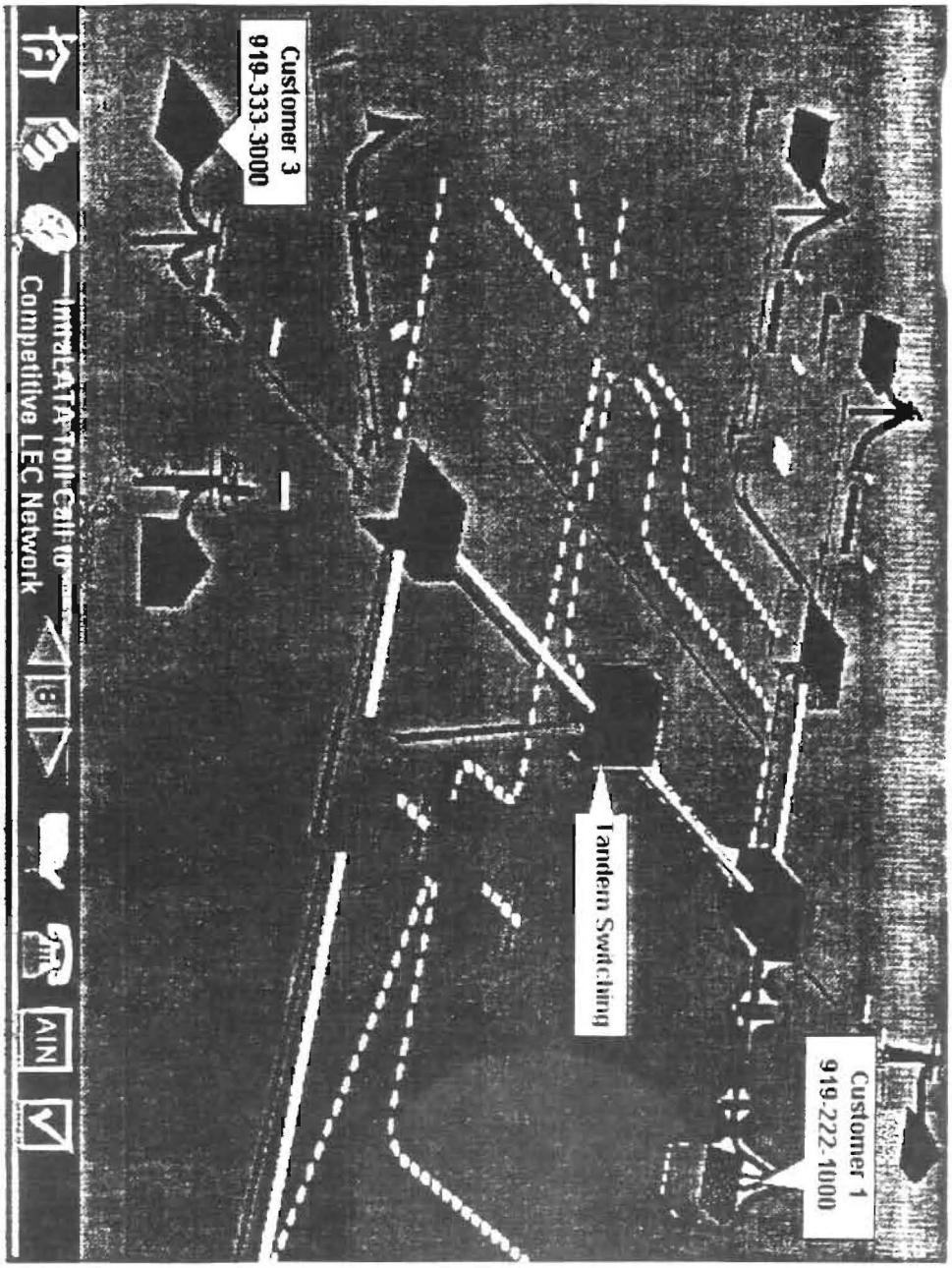

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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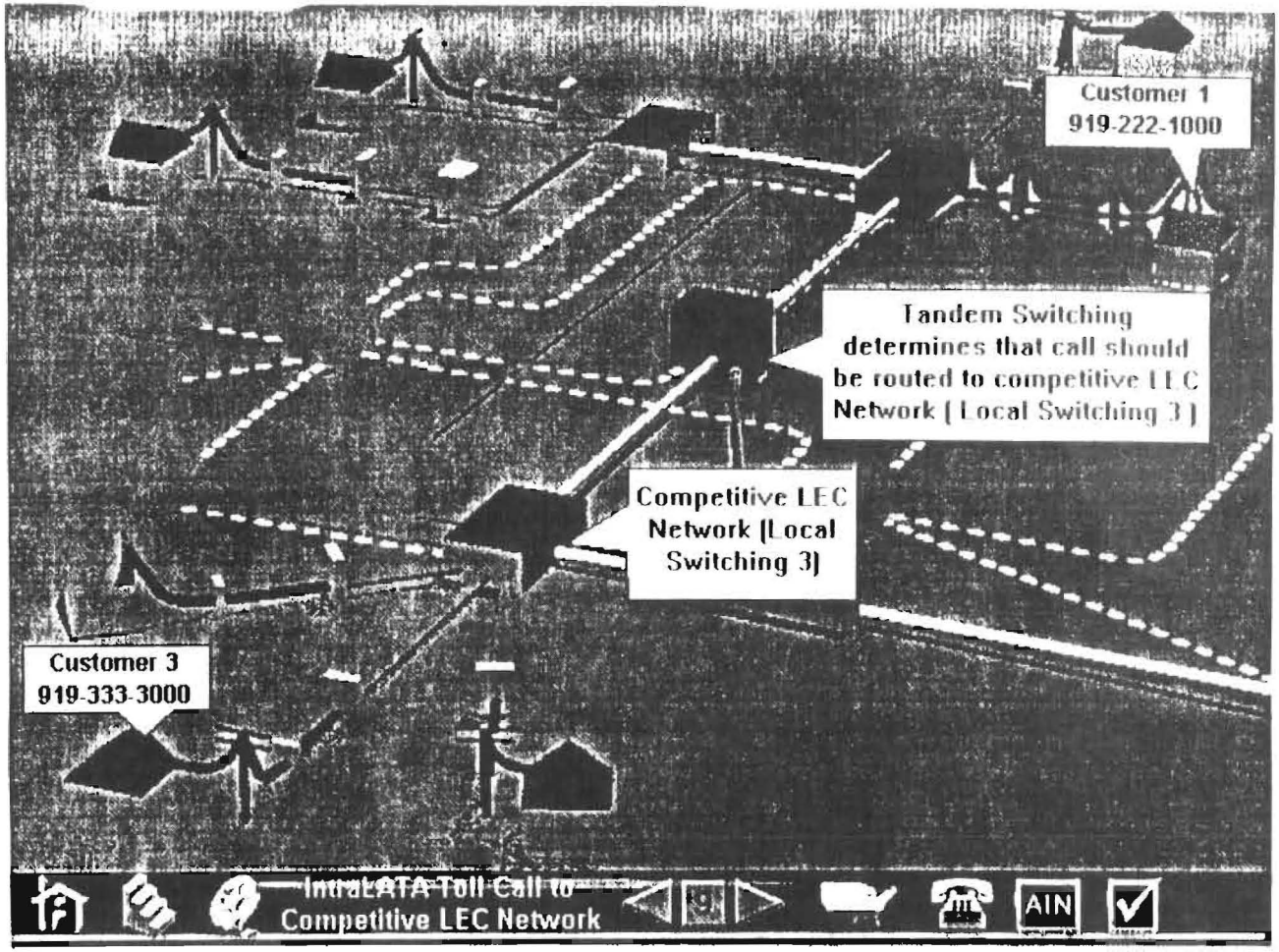

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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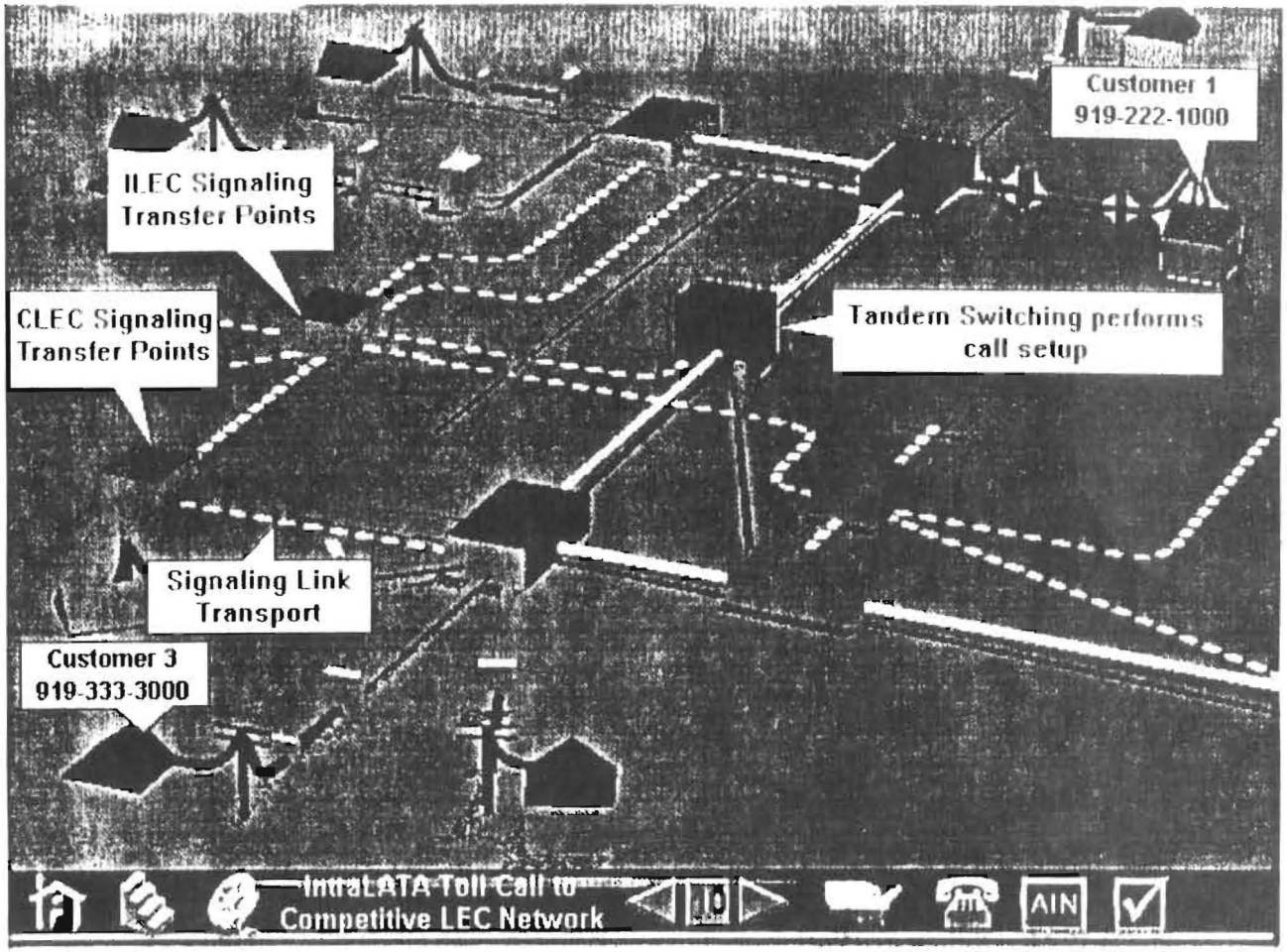

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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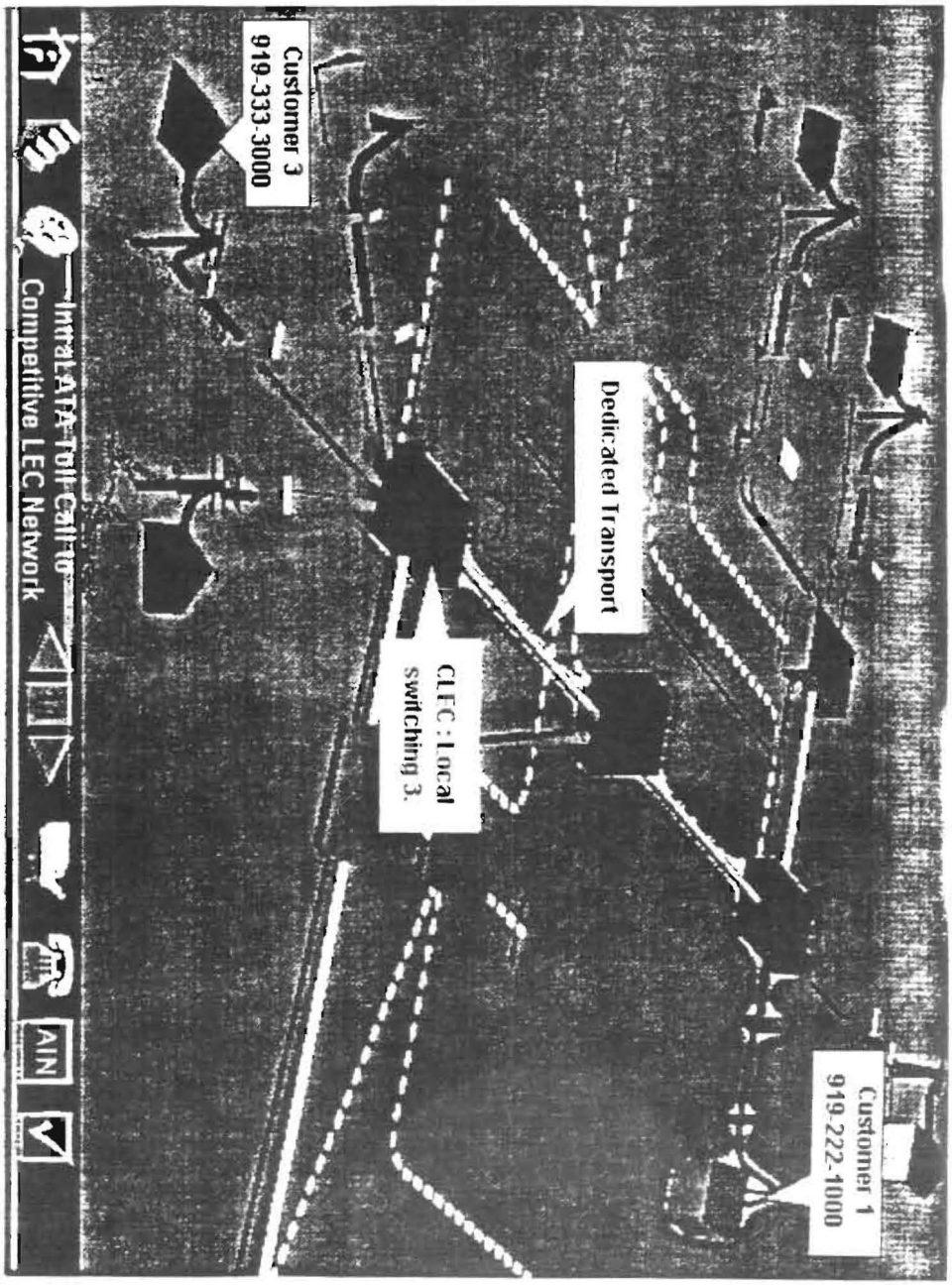

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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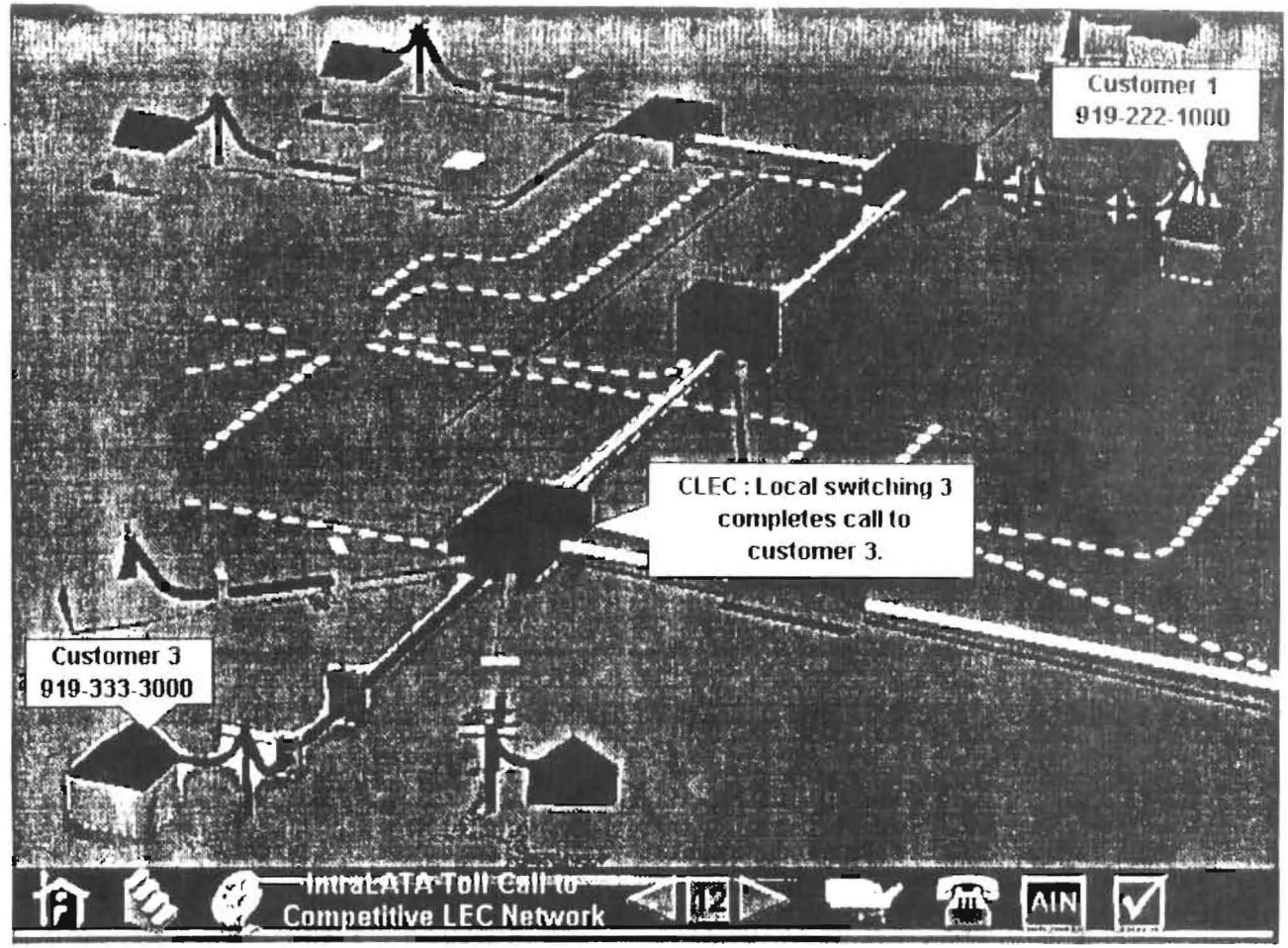

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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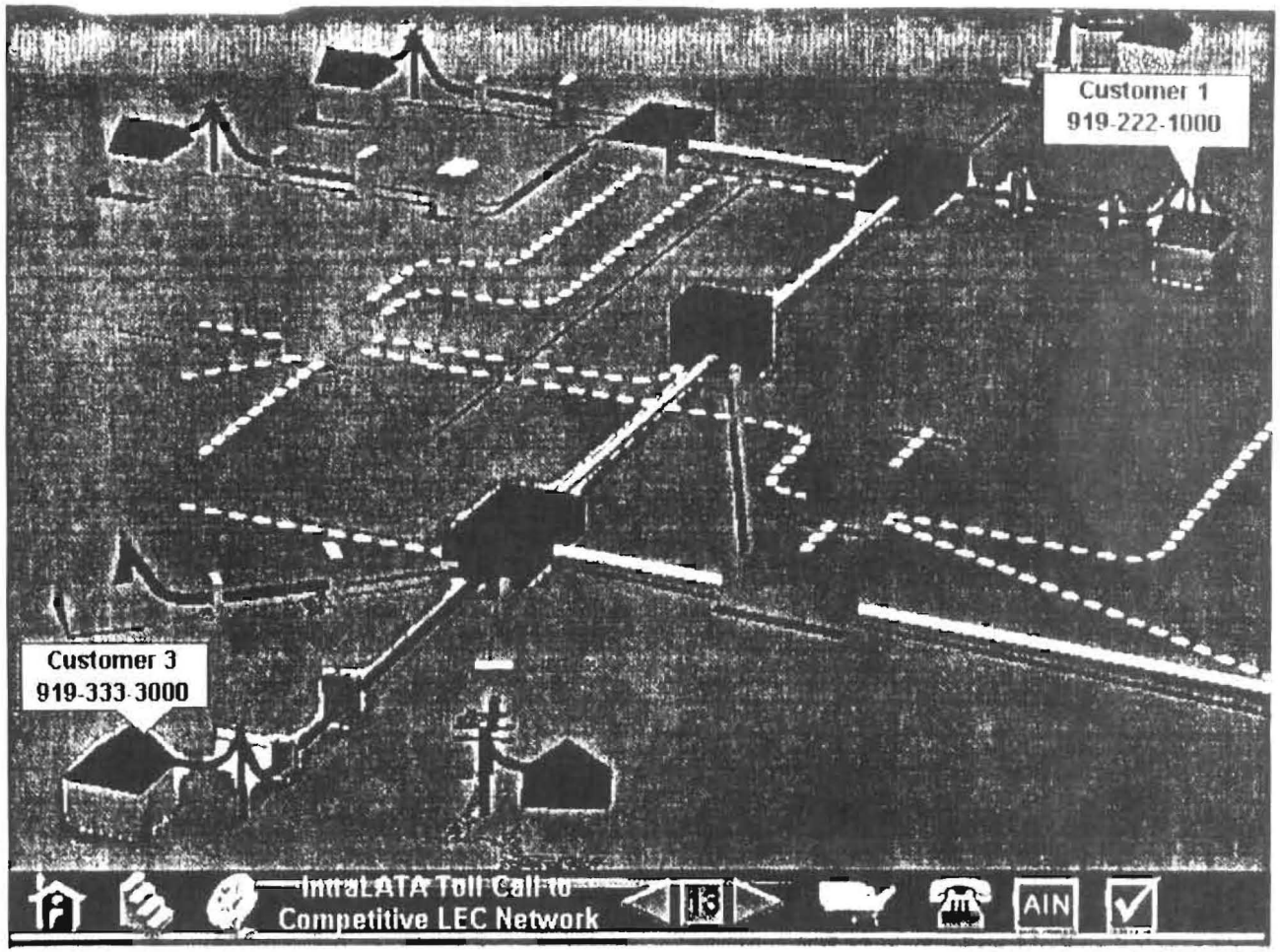

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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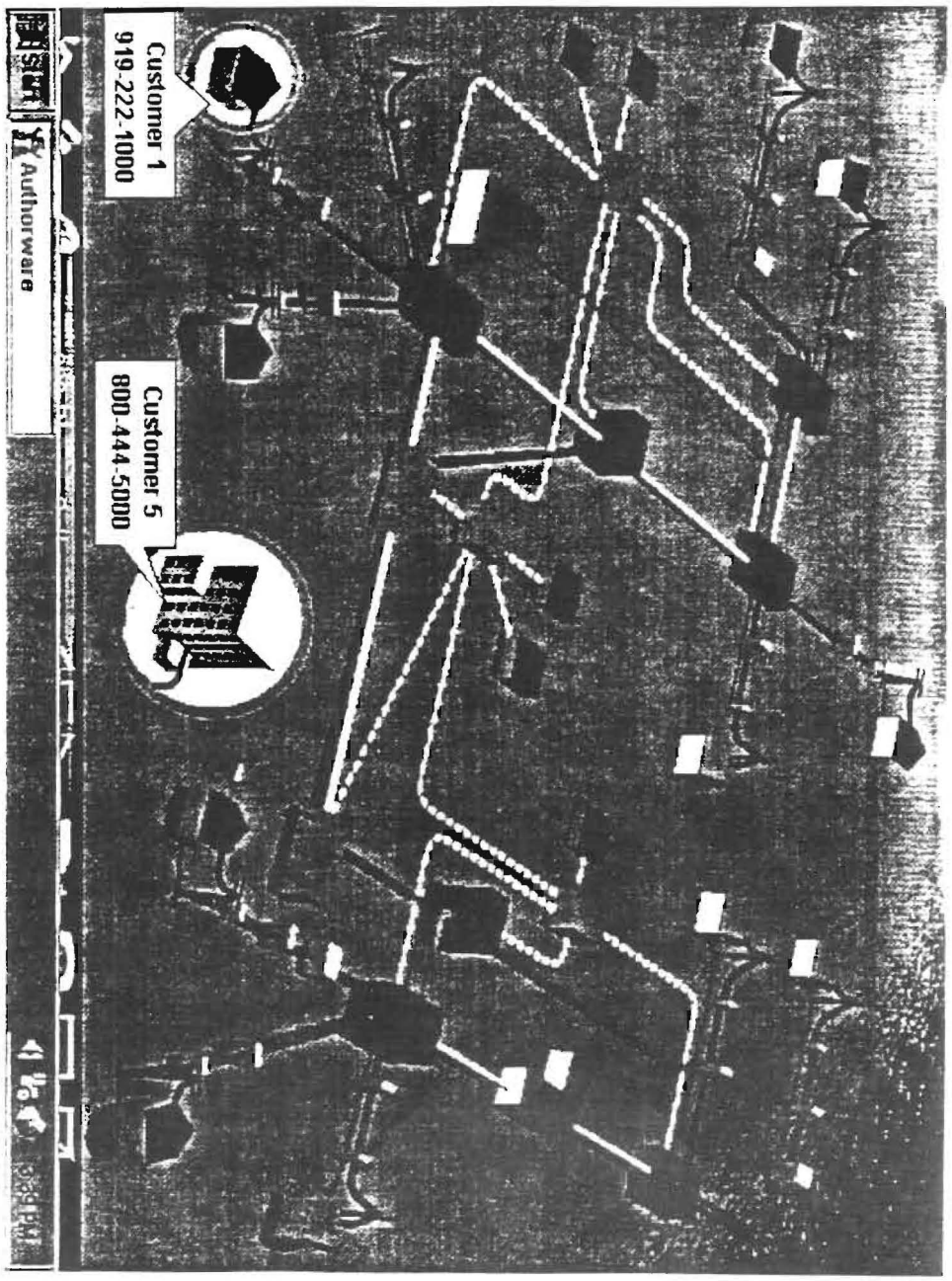
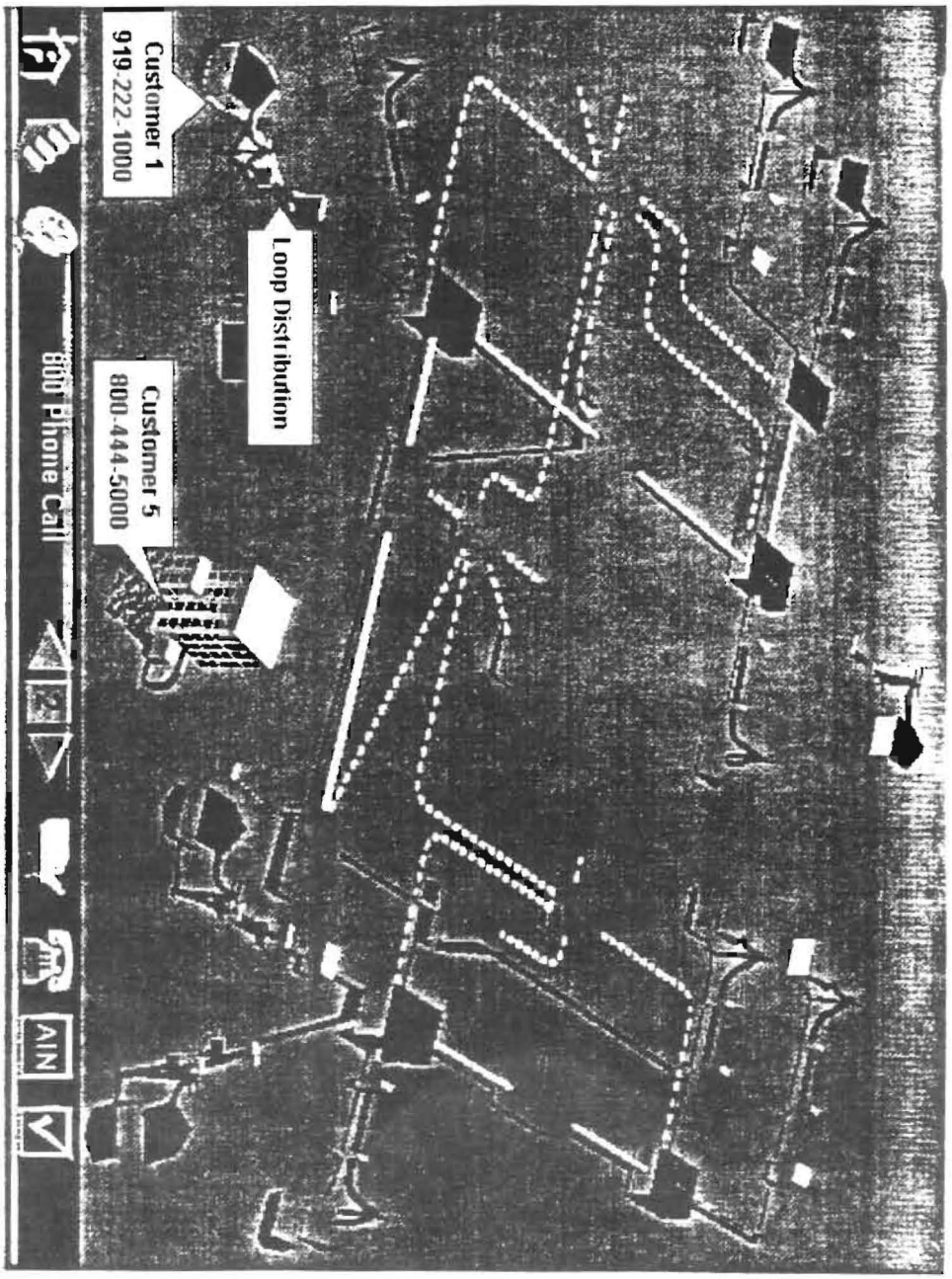
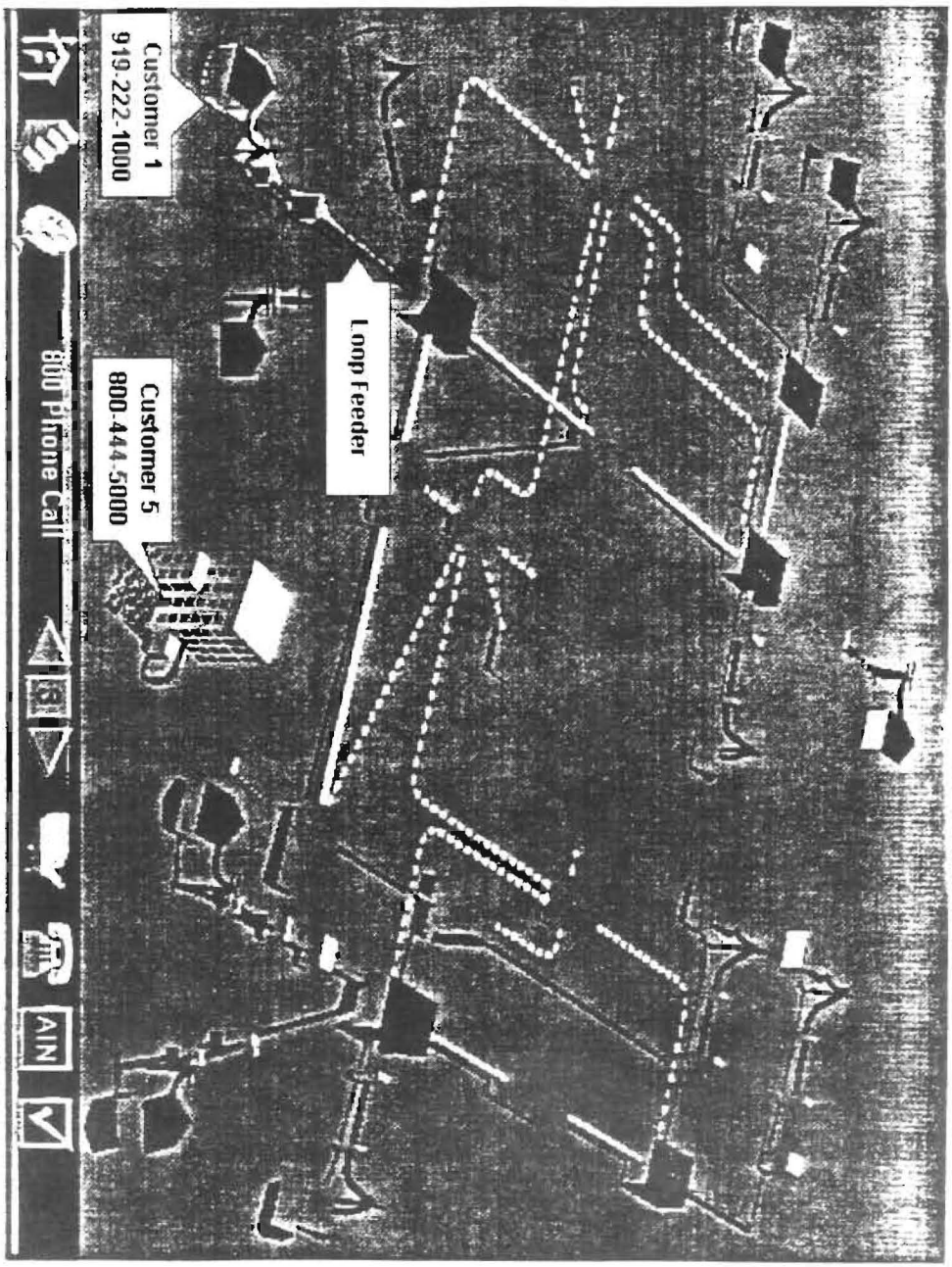
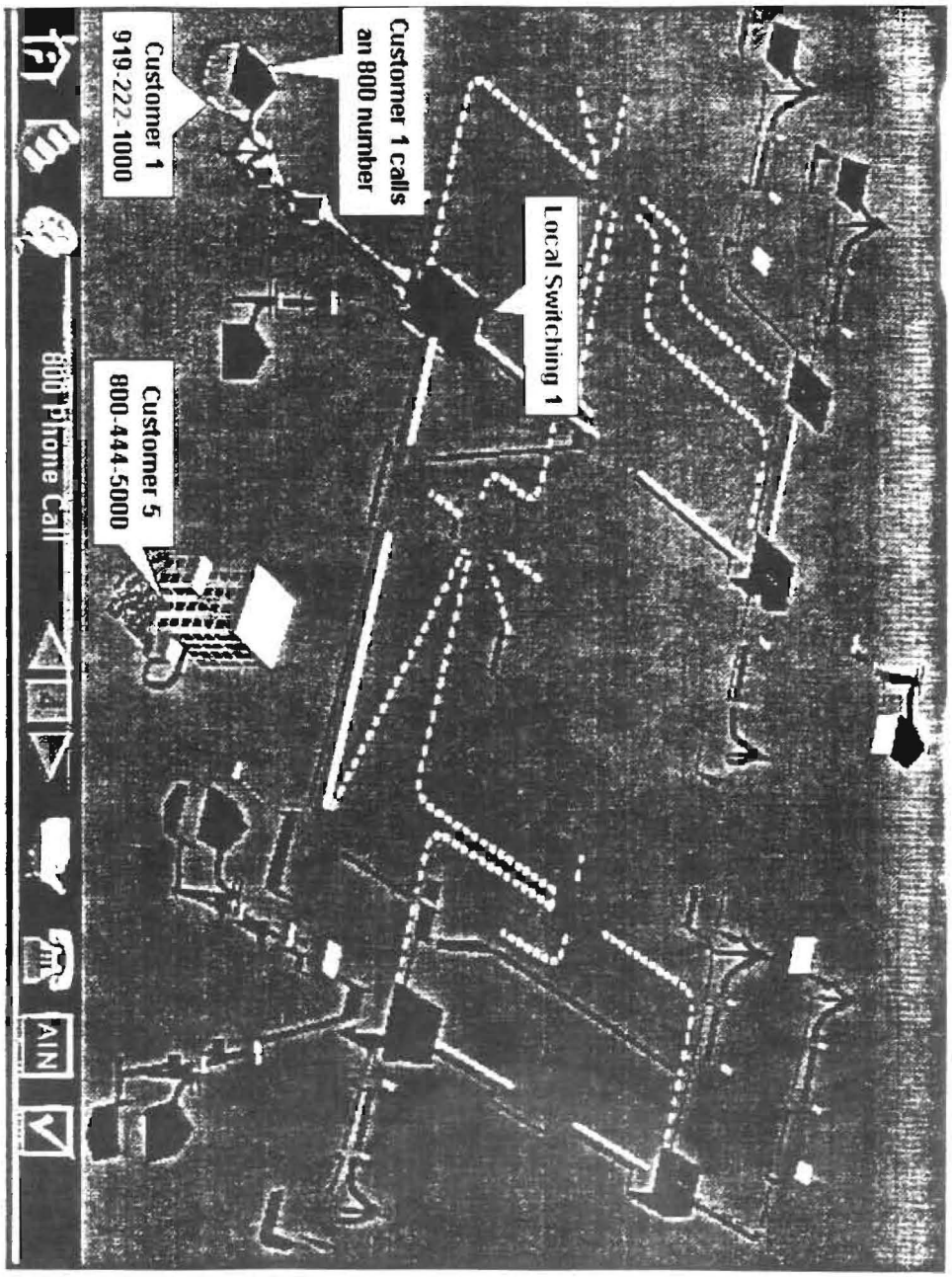



Customer 1
919-222-1000
Loop Distribution
Customer 5
800-444-5000
800 Phone Call
AIN


Customer 1
919-222-1000
Loop Feeder
Customer 5
800-444-5000
800 Phone Call
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 49 OF 238



FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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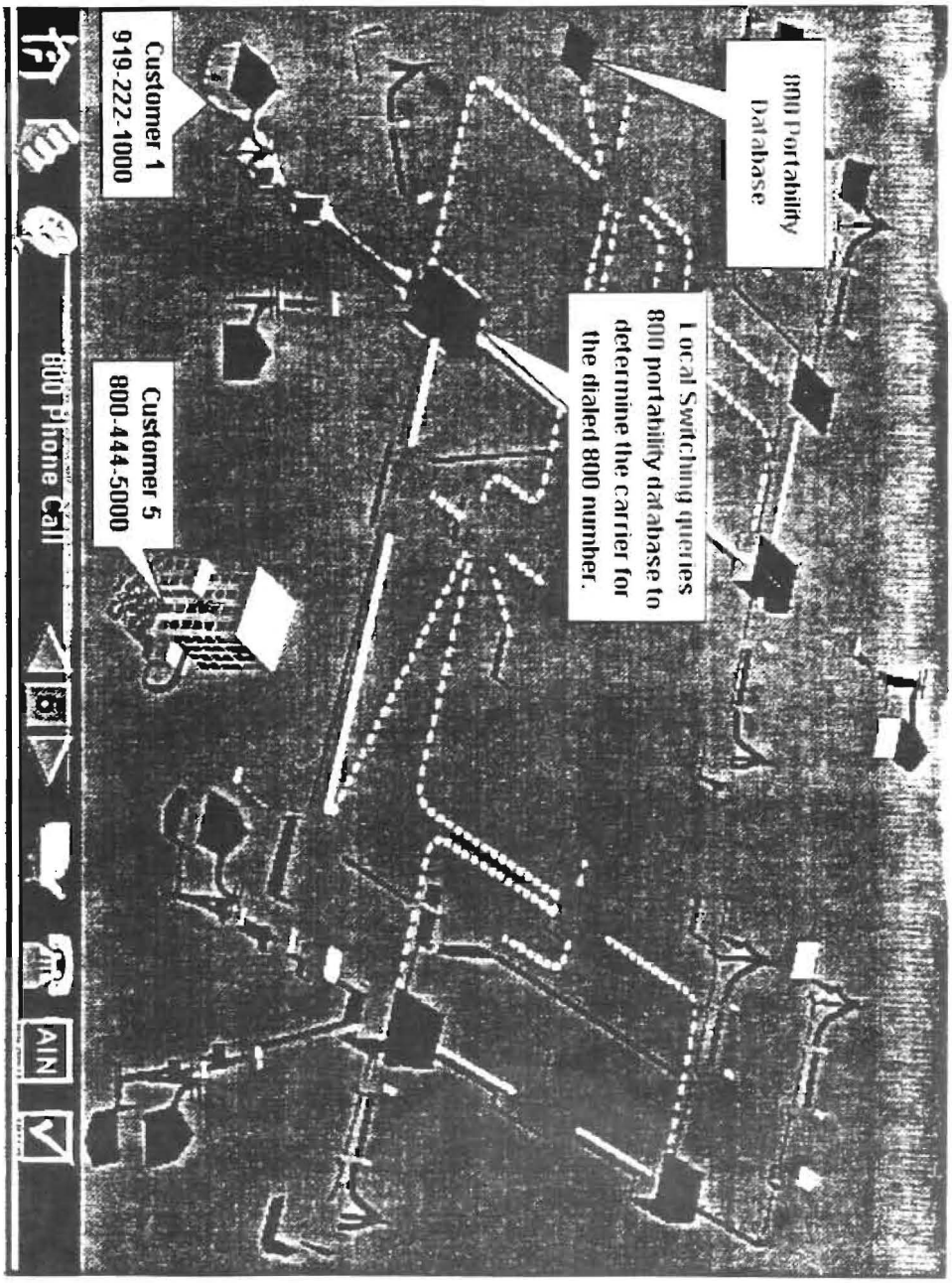

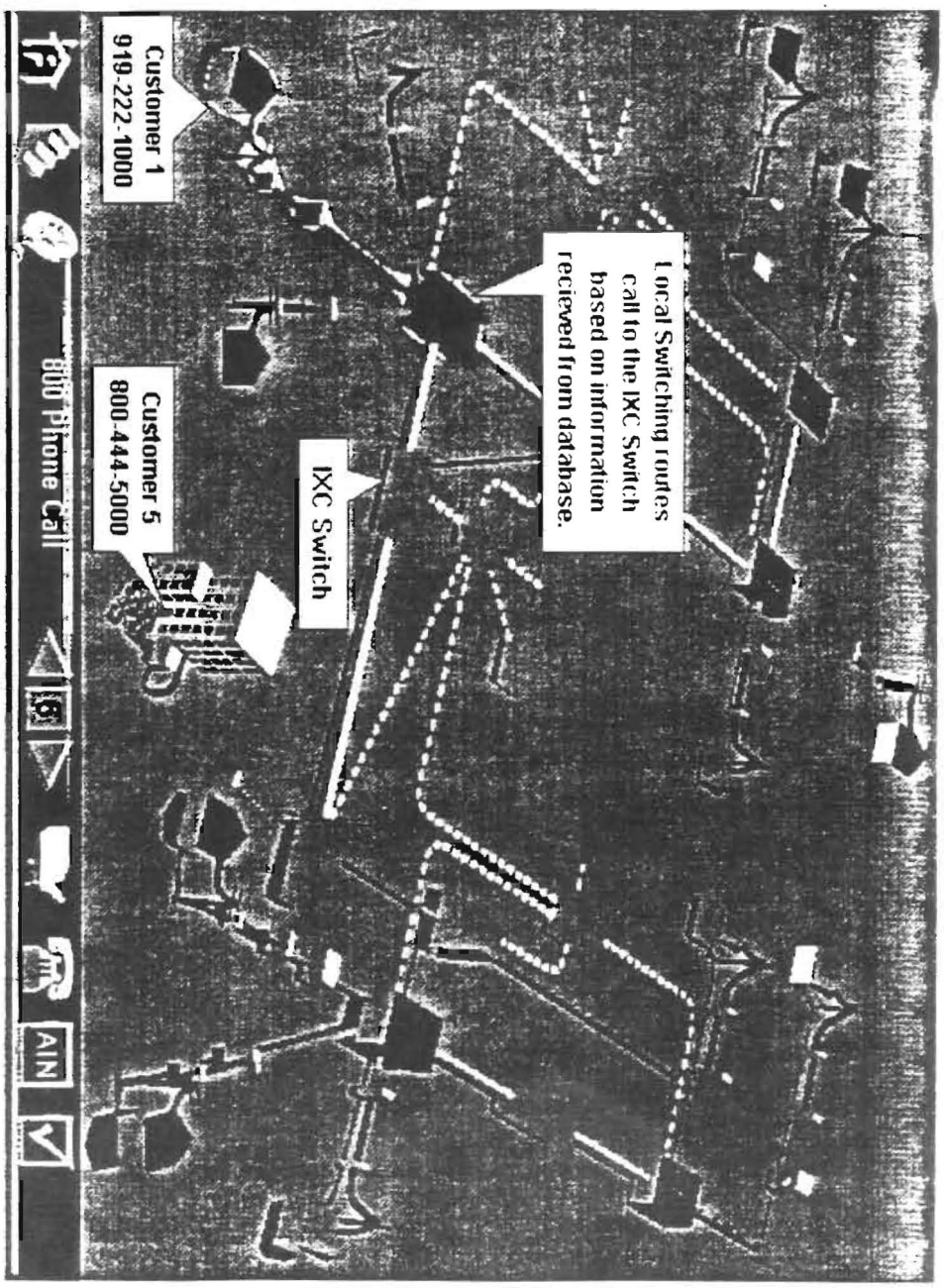
Local Switching routes call to the IXC Switch based on information recieved from database.
IXC Switch
Customer 1
919-222-1000
Customer 5
800-444-5000
800 Phone Call
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
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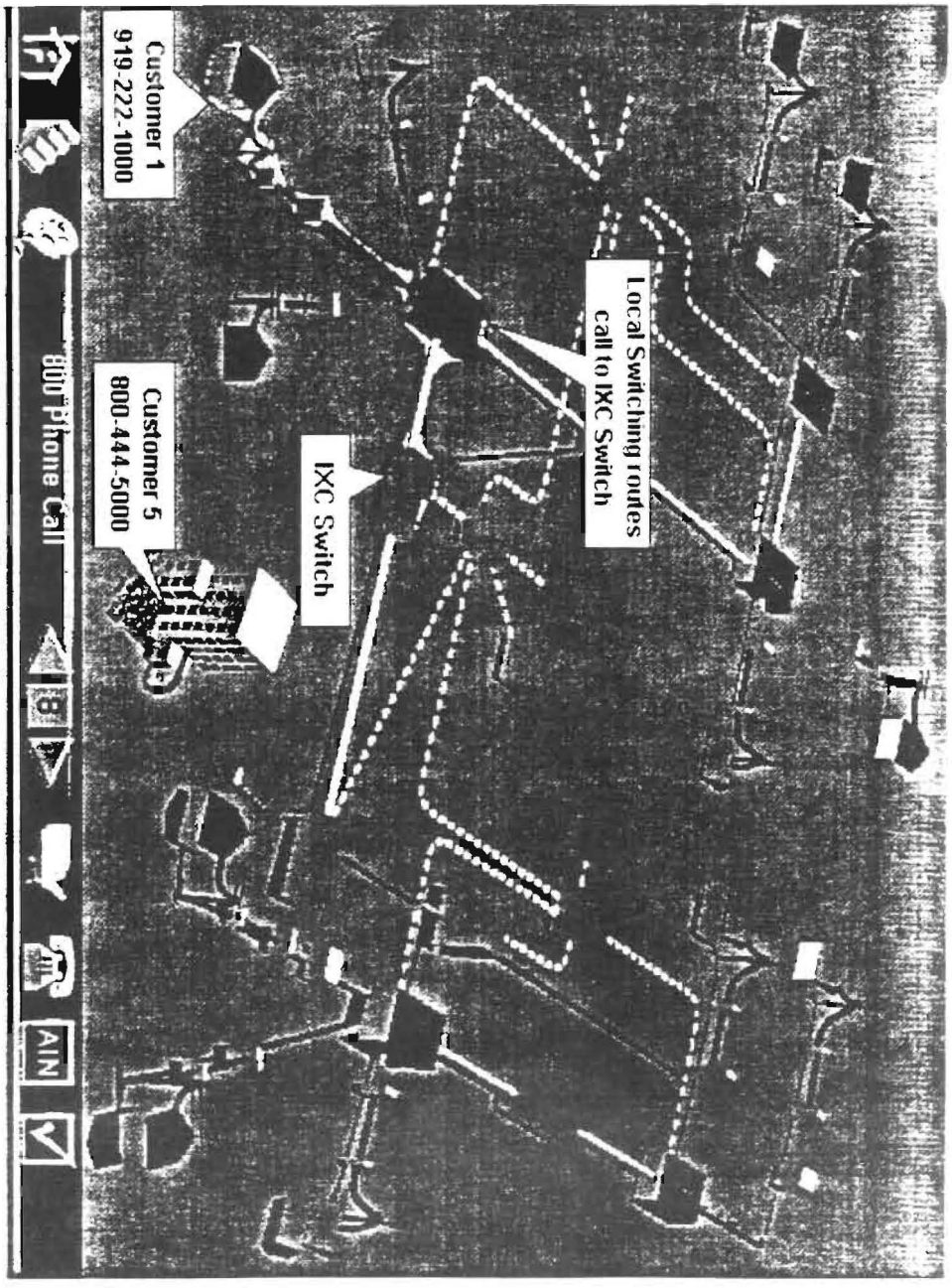

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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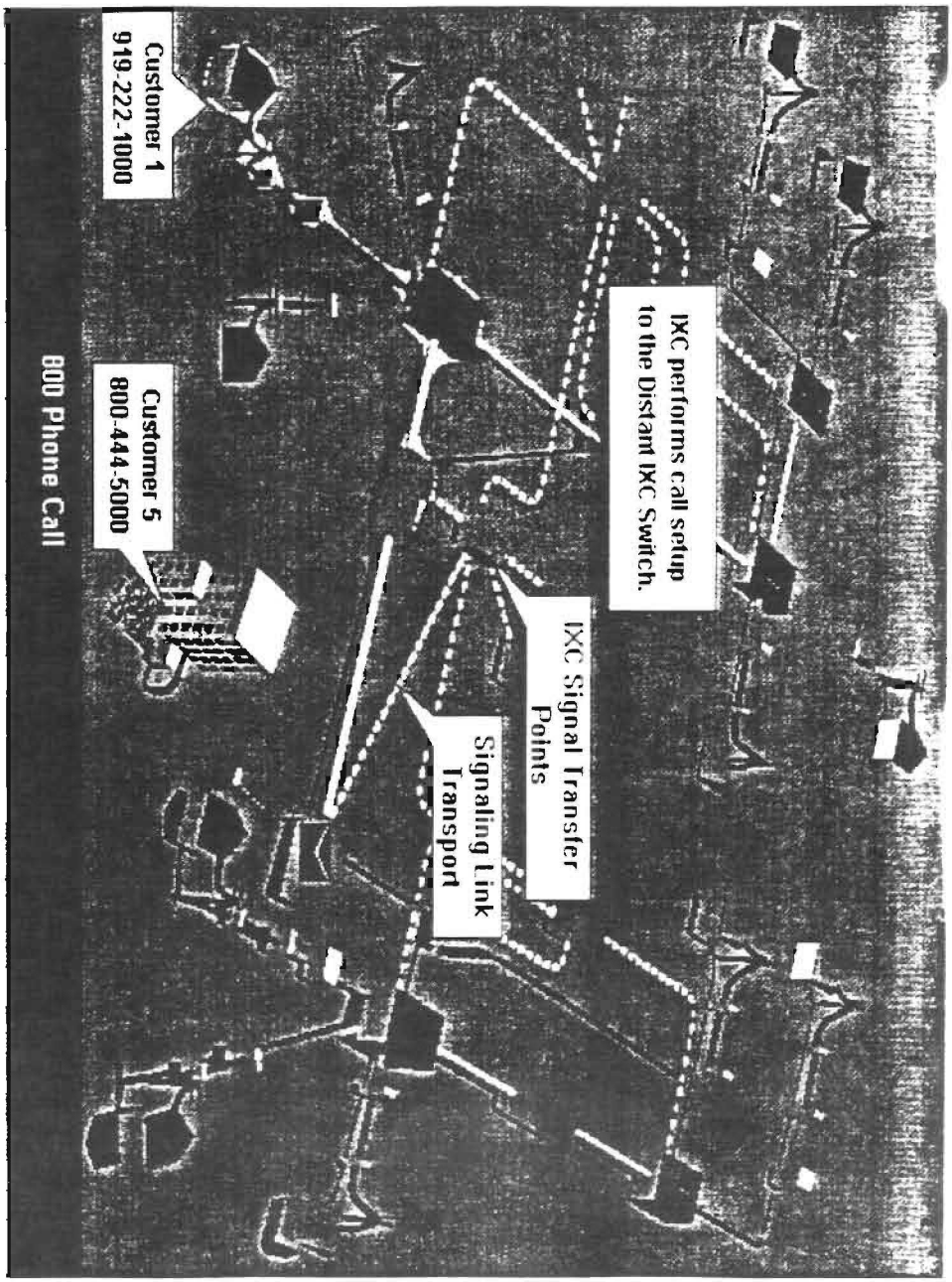
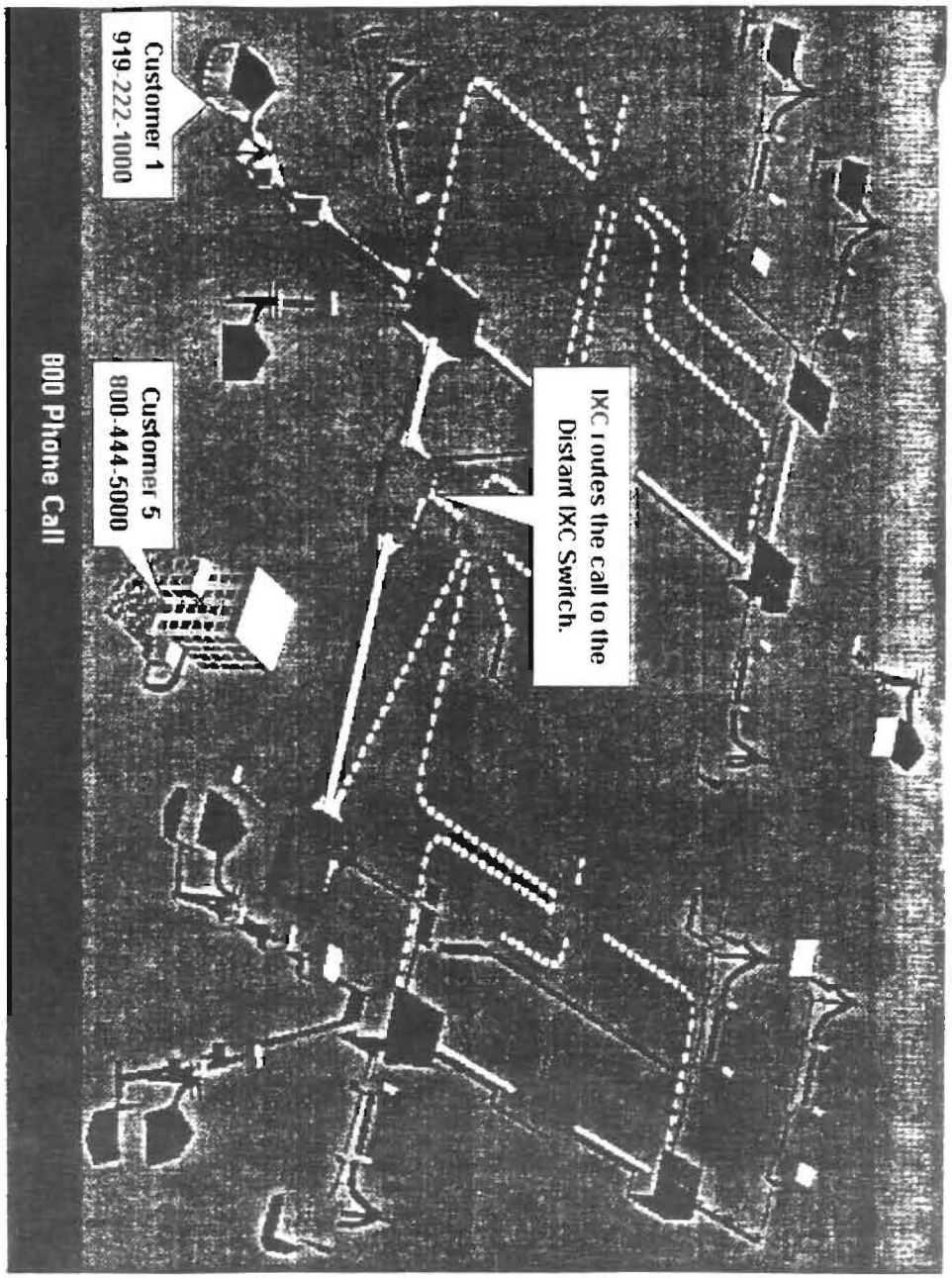
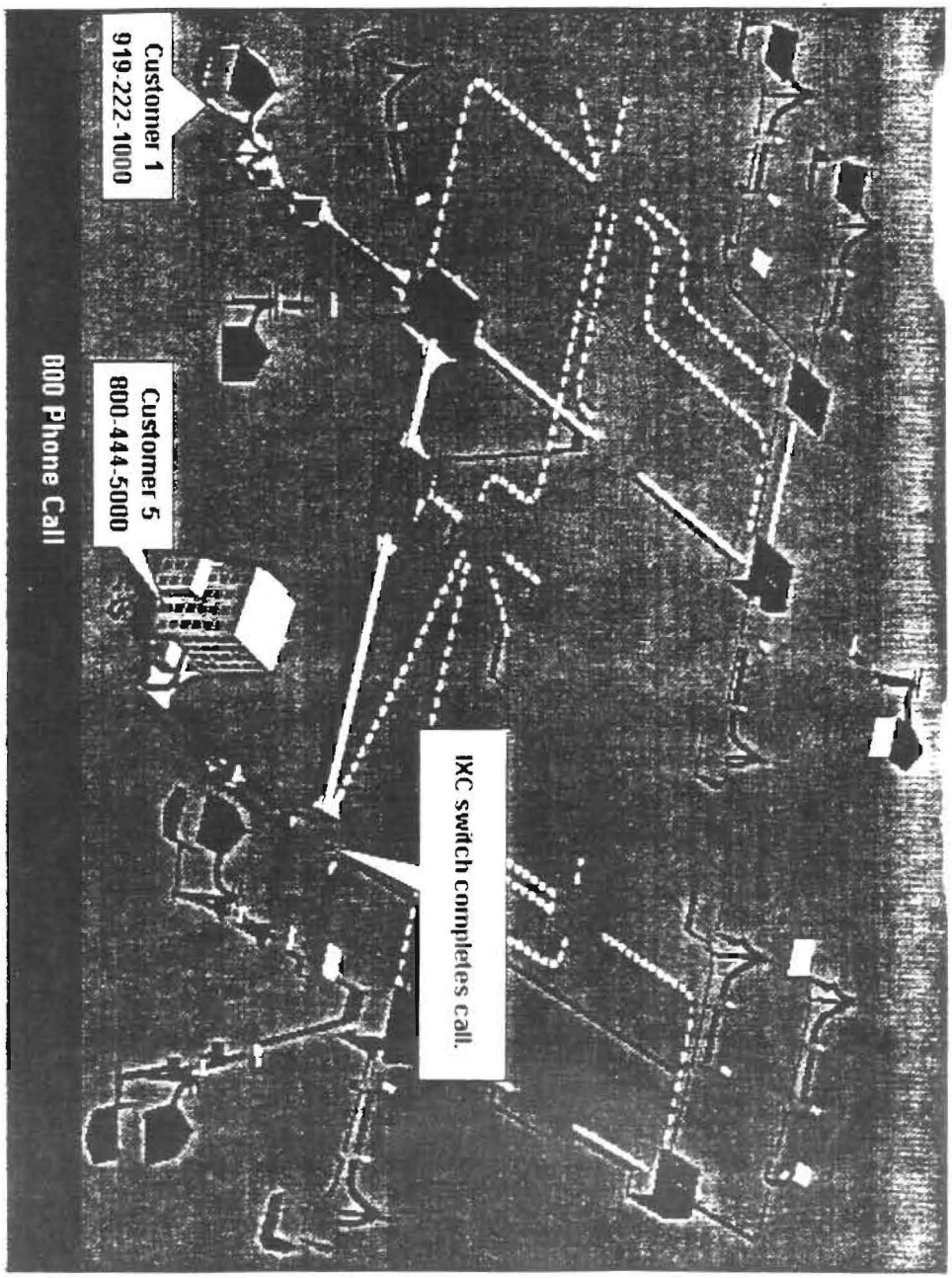
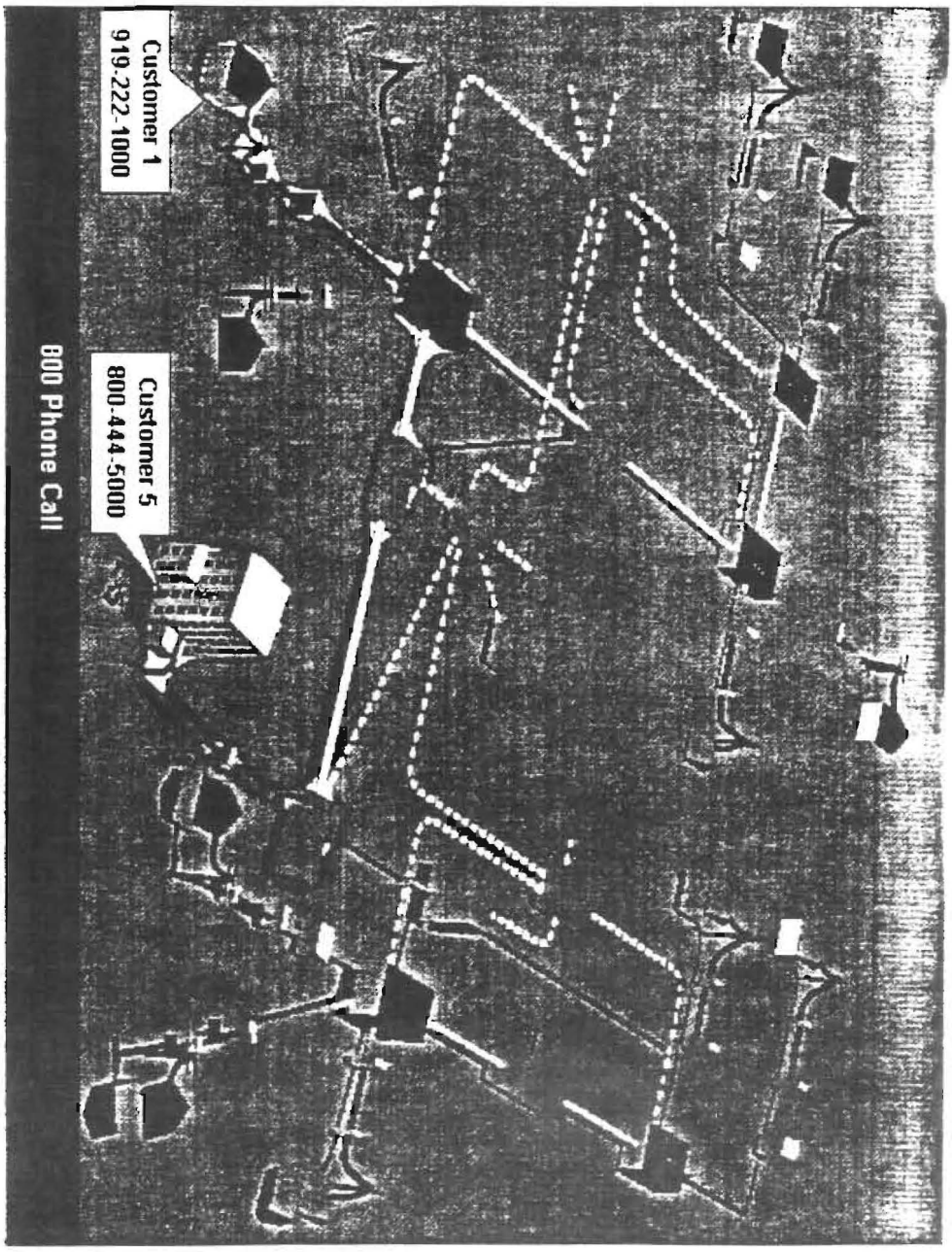

800 Phone Call
Customer 1
919-222-1000
Customer 5
800-444-5000
IXC performs call setup to the Distant IXC Switch.
IXC Signal Transfer Points
Signaling Link Transport


800 Phone Call
Customer 1
919-222-1000
Customer 5
800-444-5000
IXC routes the call to the
Distant IXC Switch.


Customer 1
919-222-1000
Customer 5
800-444-5000
800 Phone Call
IXC switch completes call.


Customer 1
919-222-1000
Customer 5
800-444-5000
800 Phone Call

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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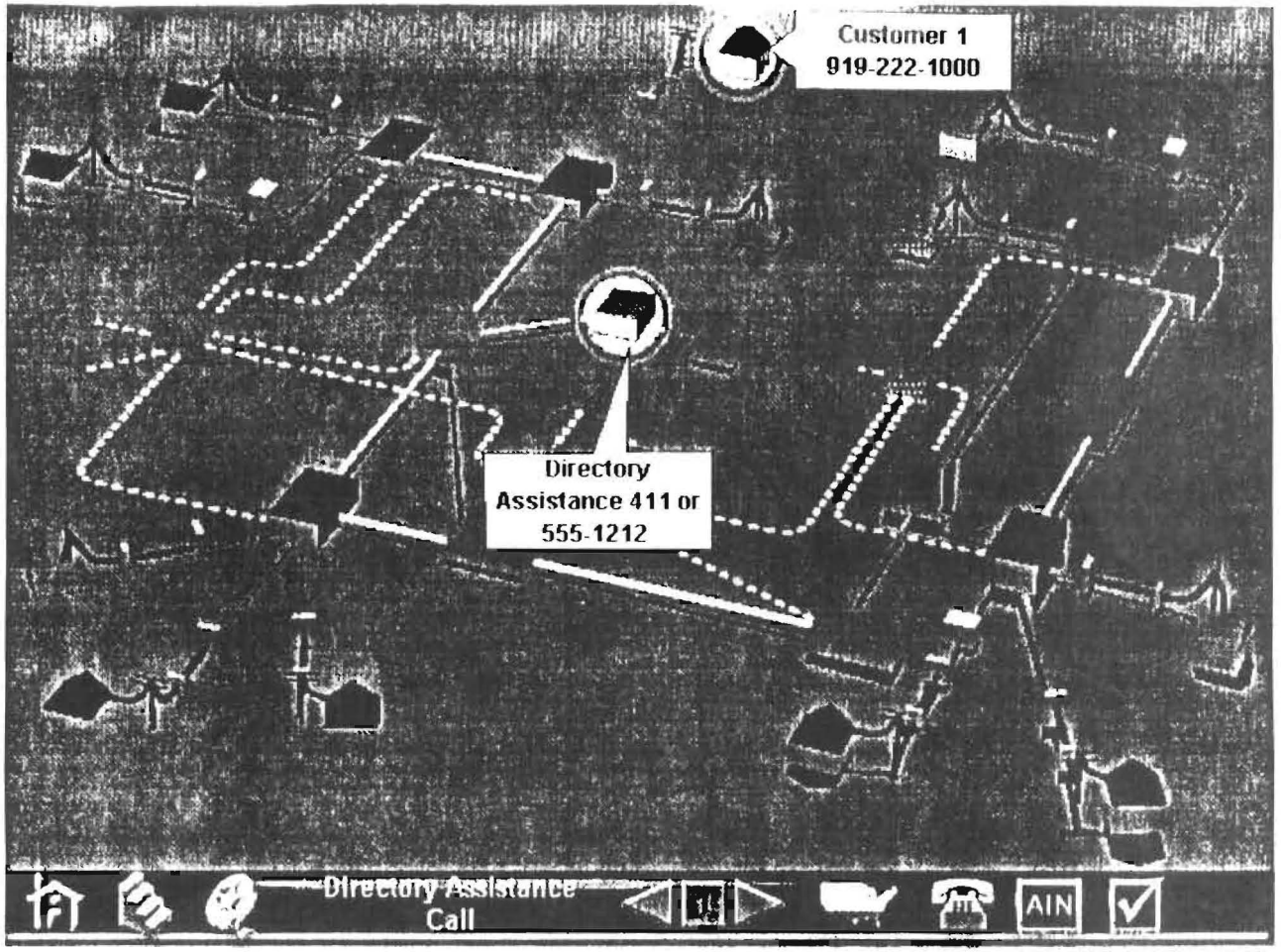
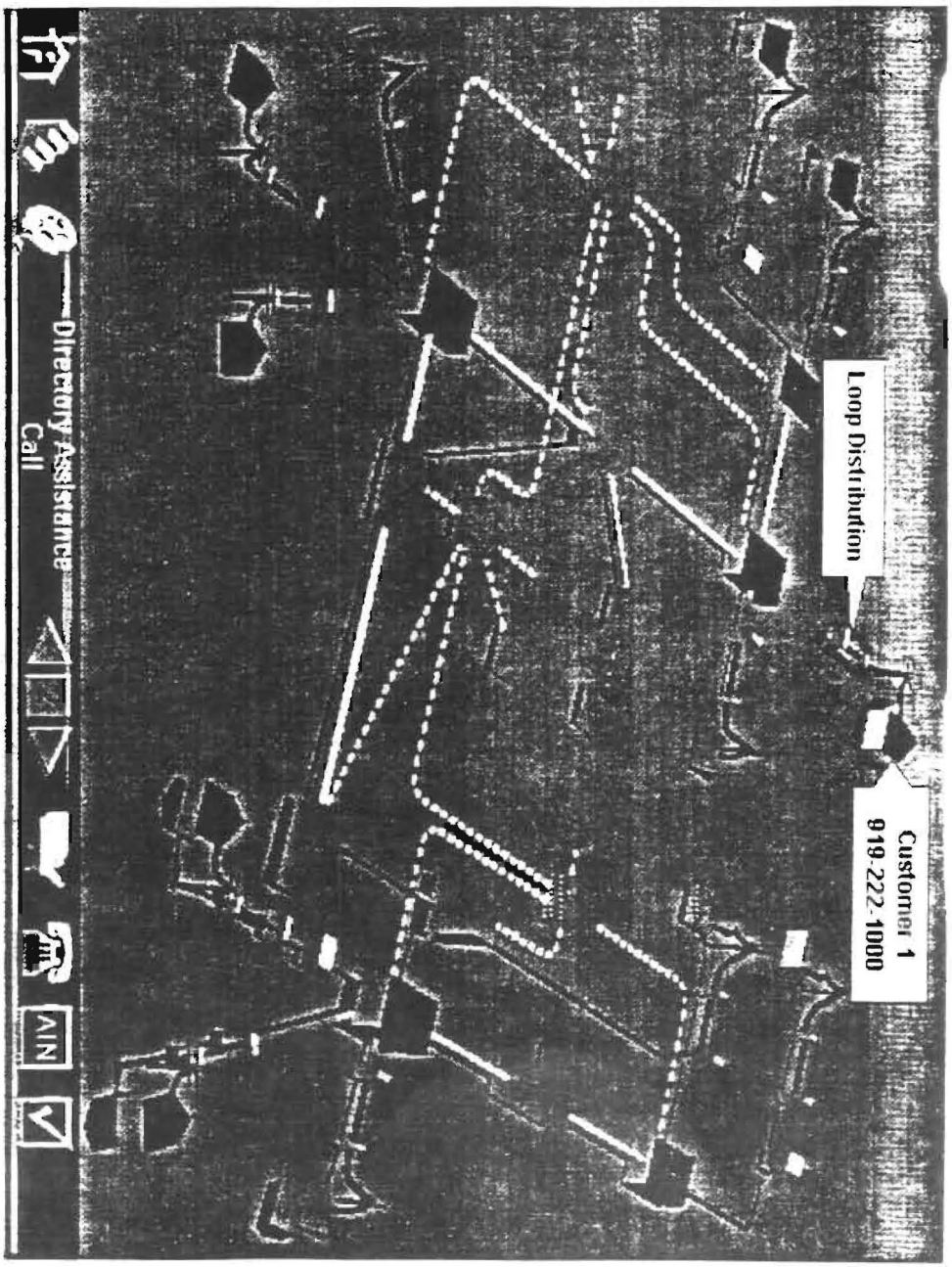
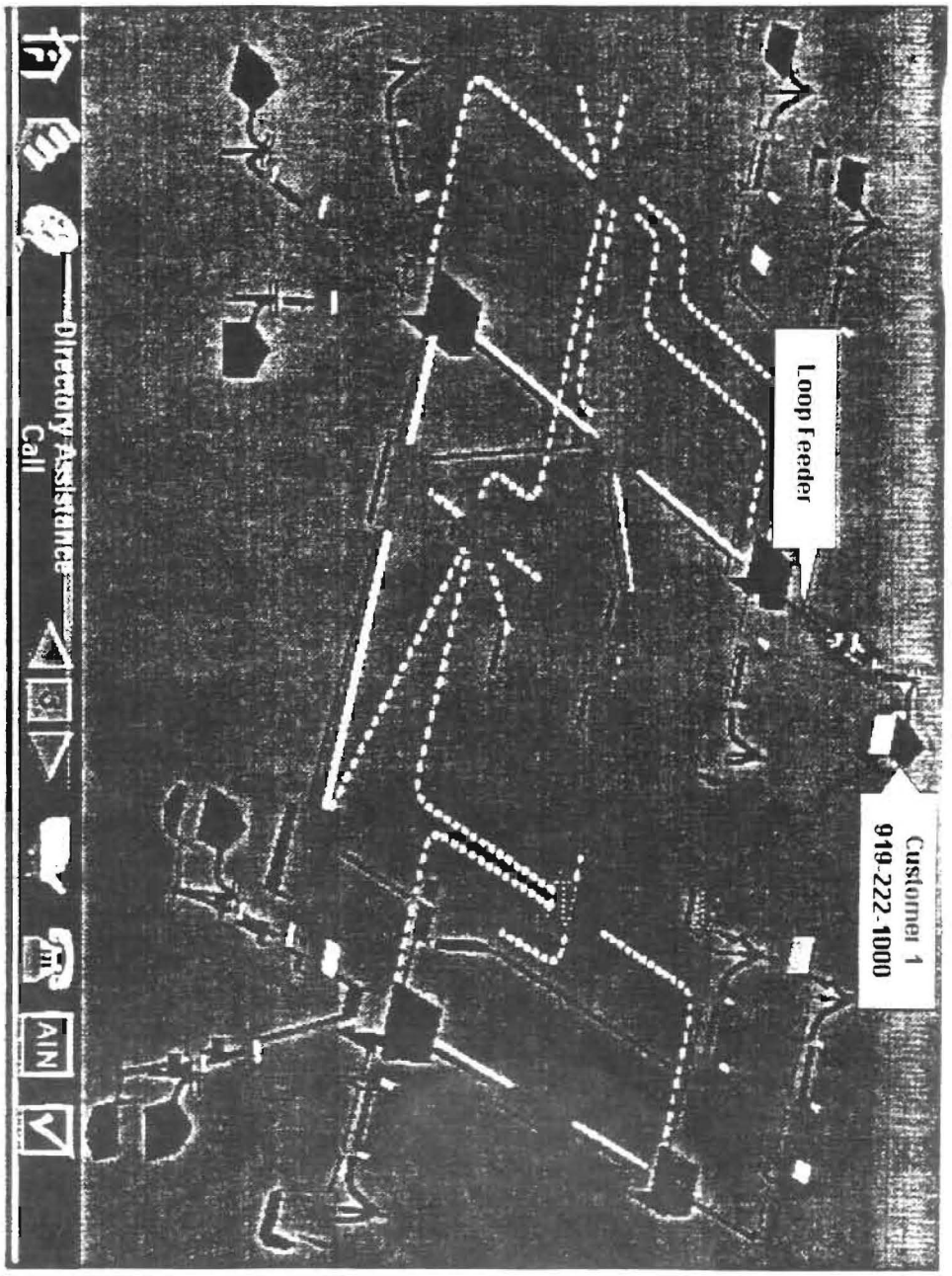



Loop Distribution
Customer 1
919-222-1000
Directory Assistance
Call
AIN


Loop Feeder
Customer 1
919-222-1000
Directory Assistance
Call
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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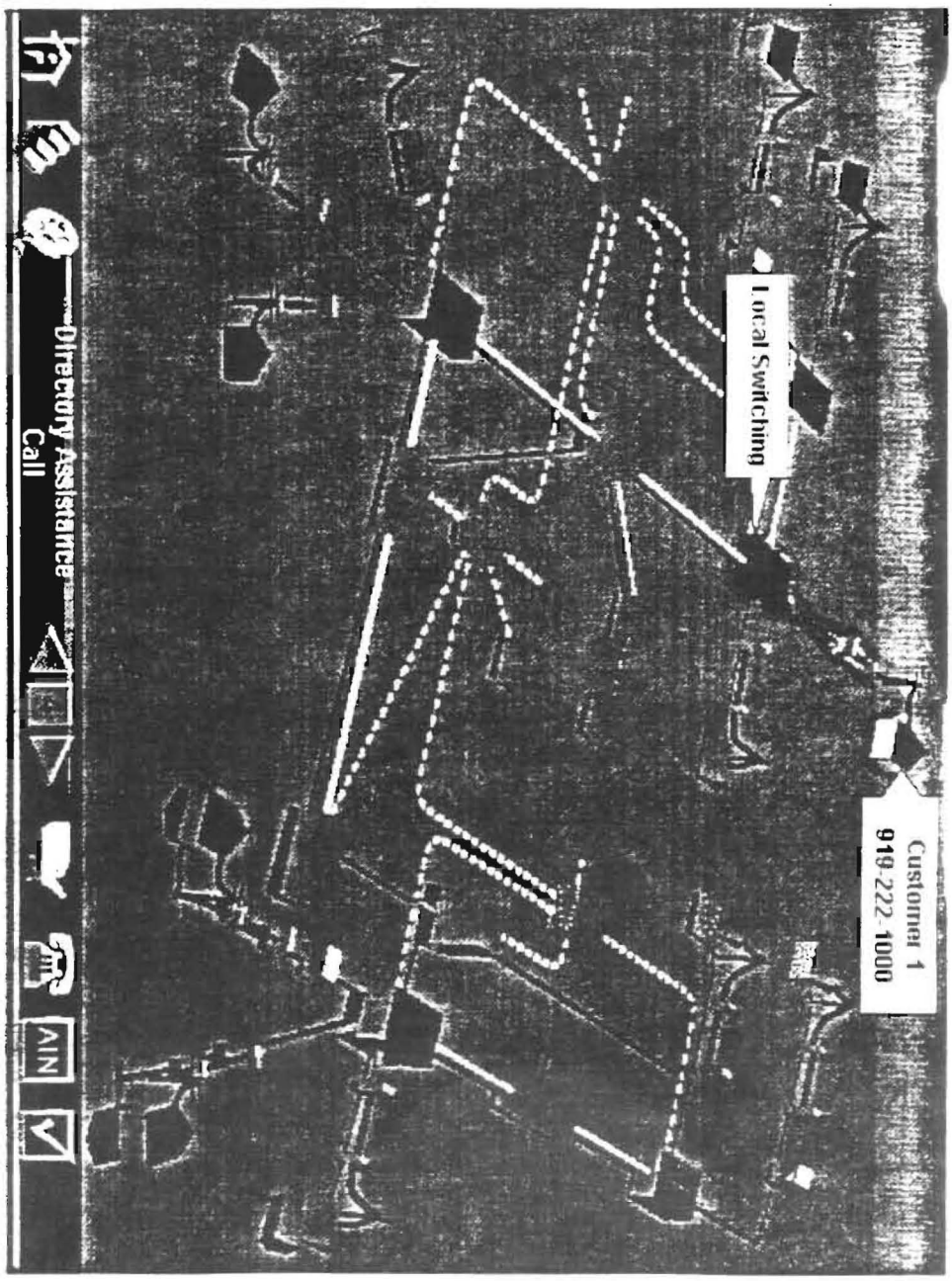

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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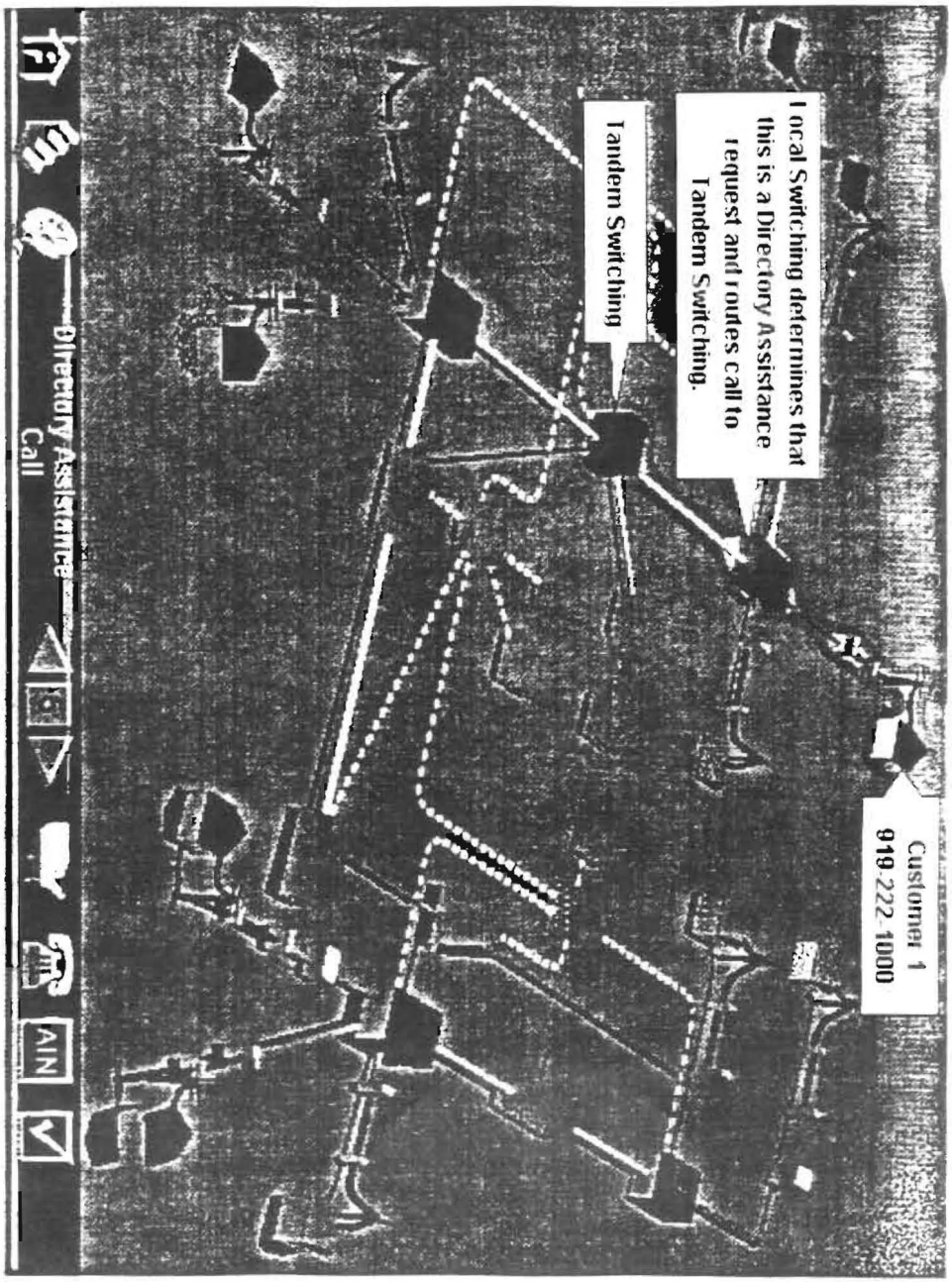

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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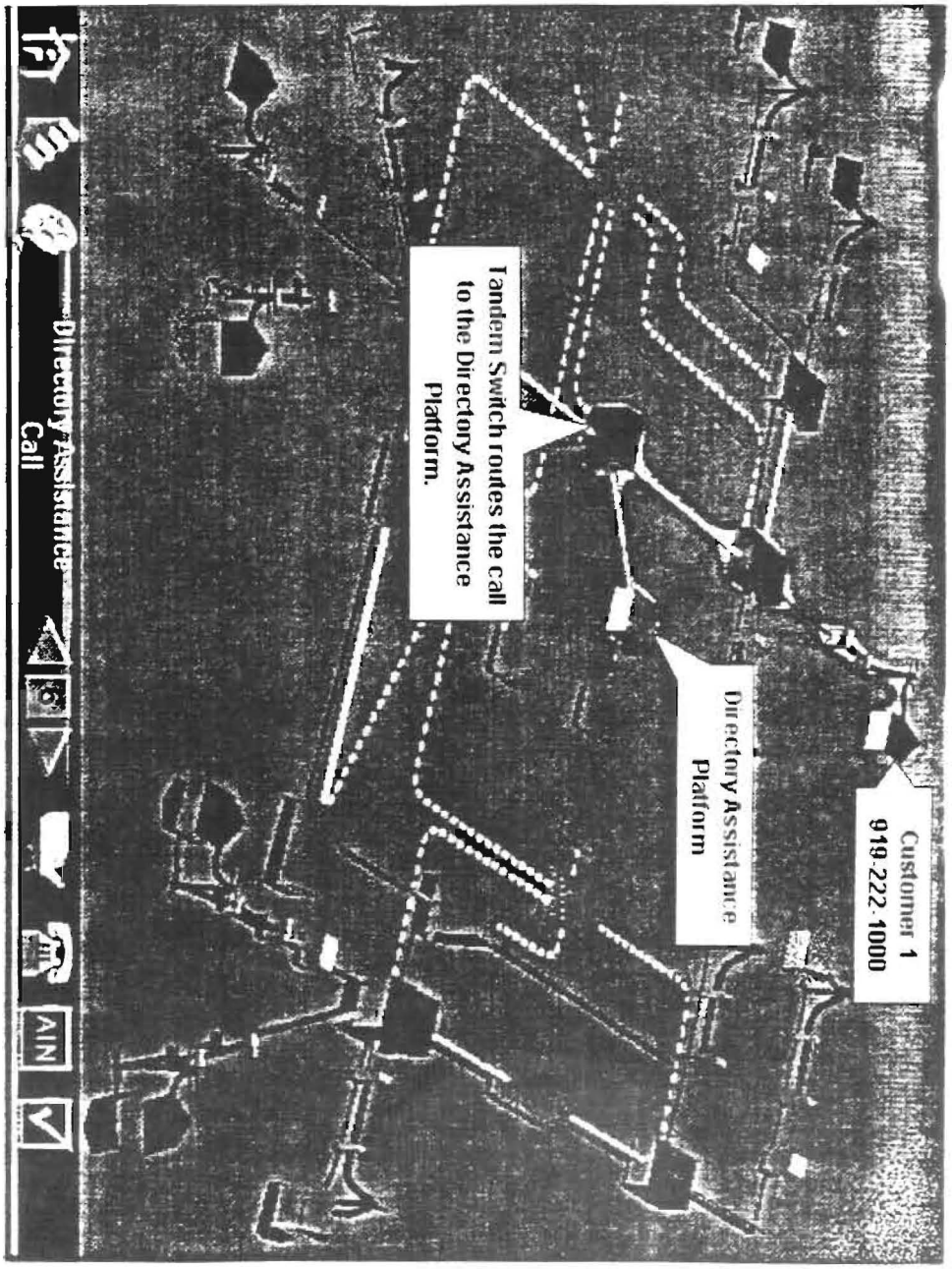

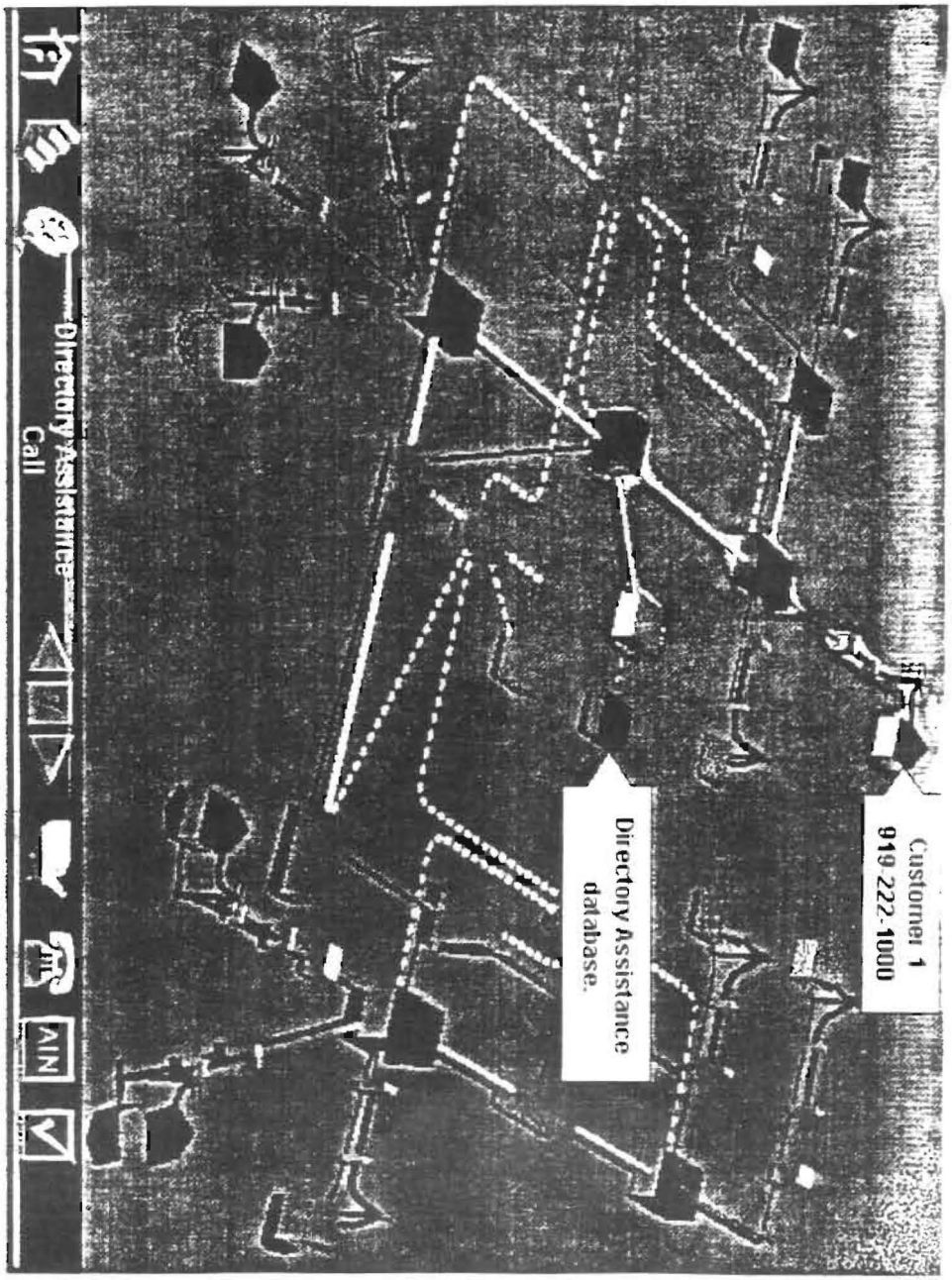
Customer 1
919 222-1000
Directory Assistance database.
Directory Assistance Call
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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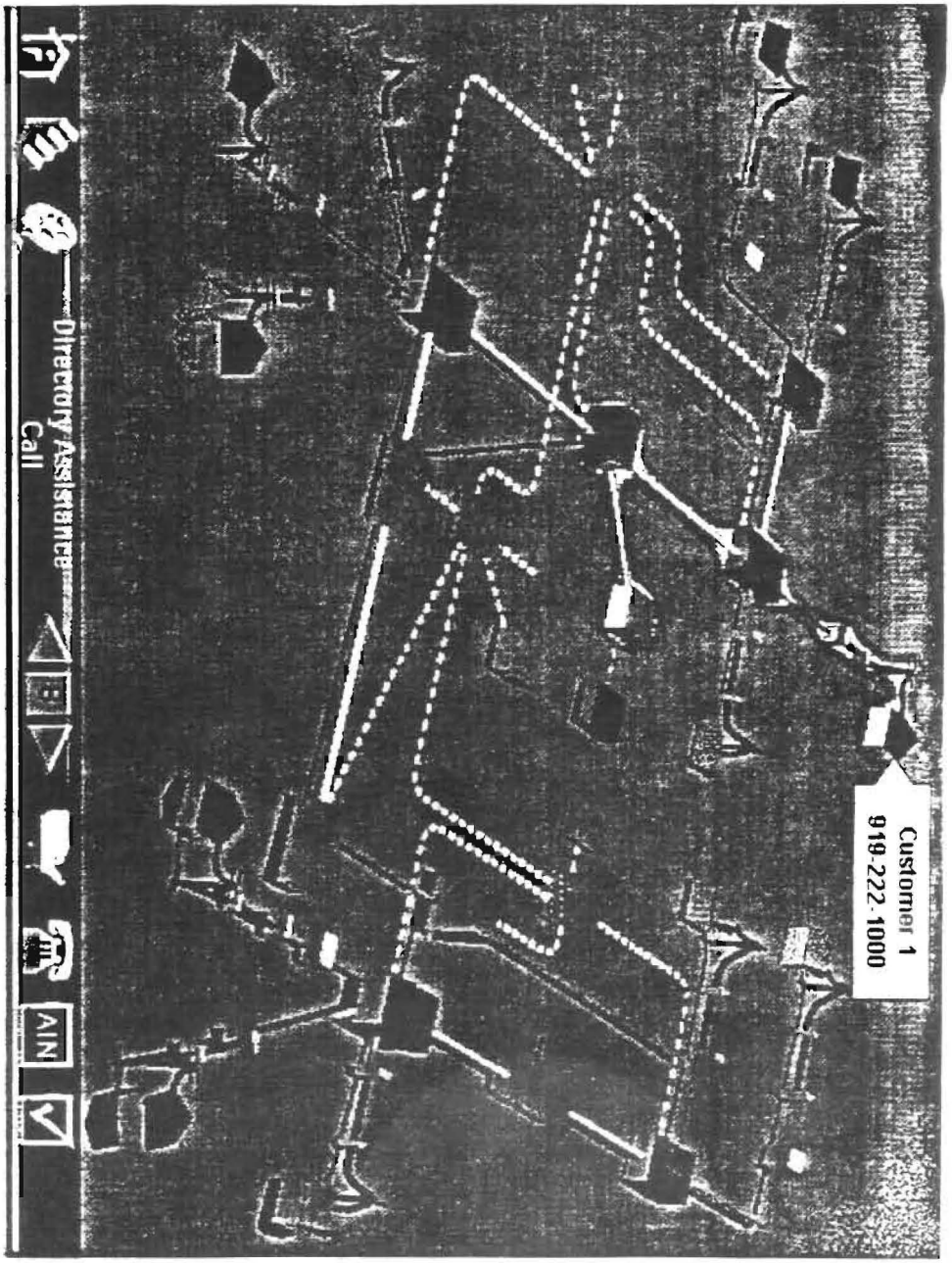

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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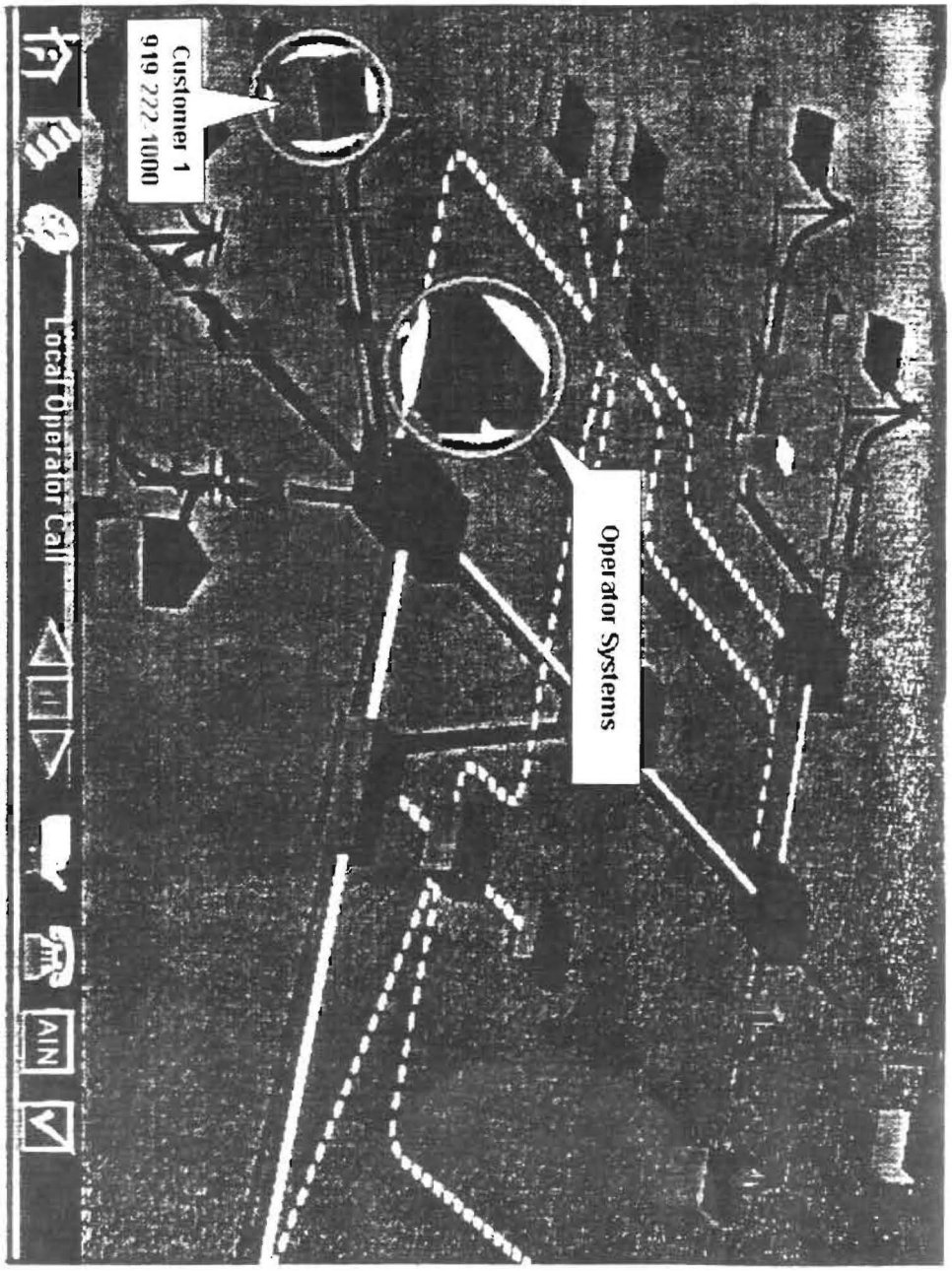

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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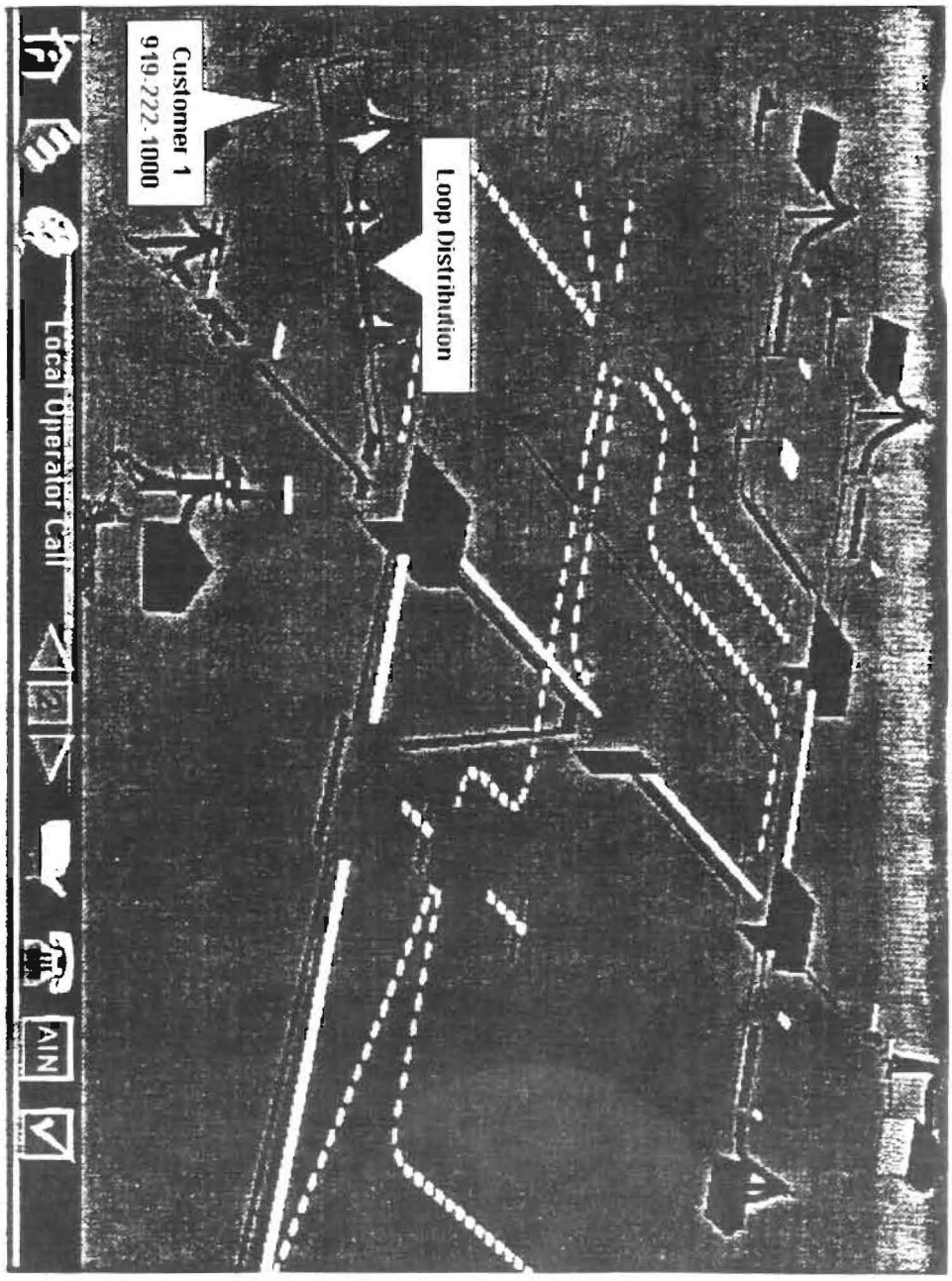

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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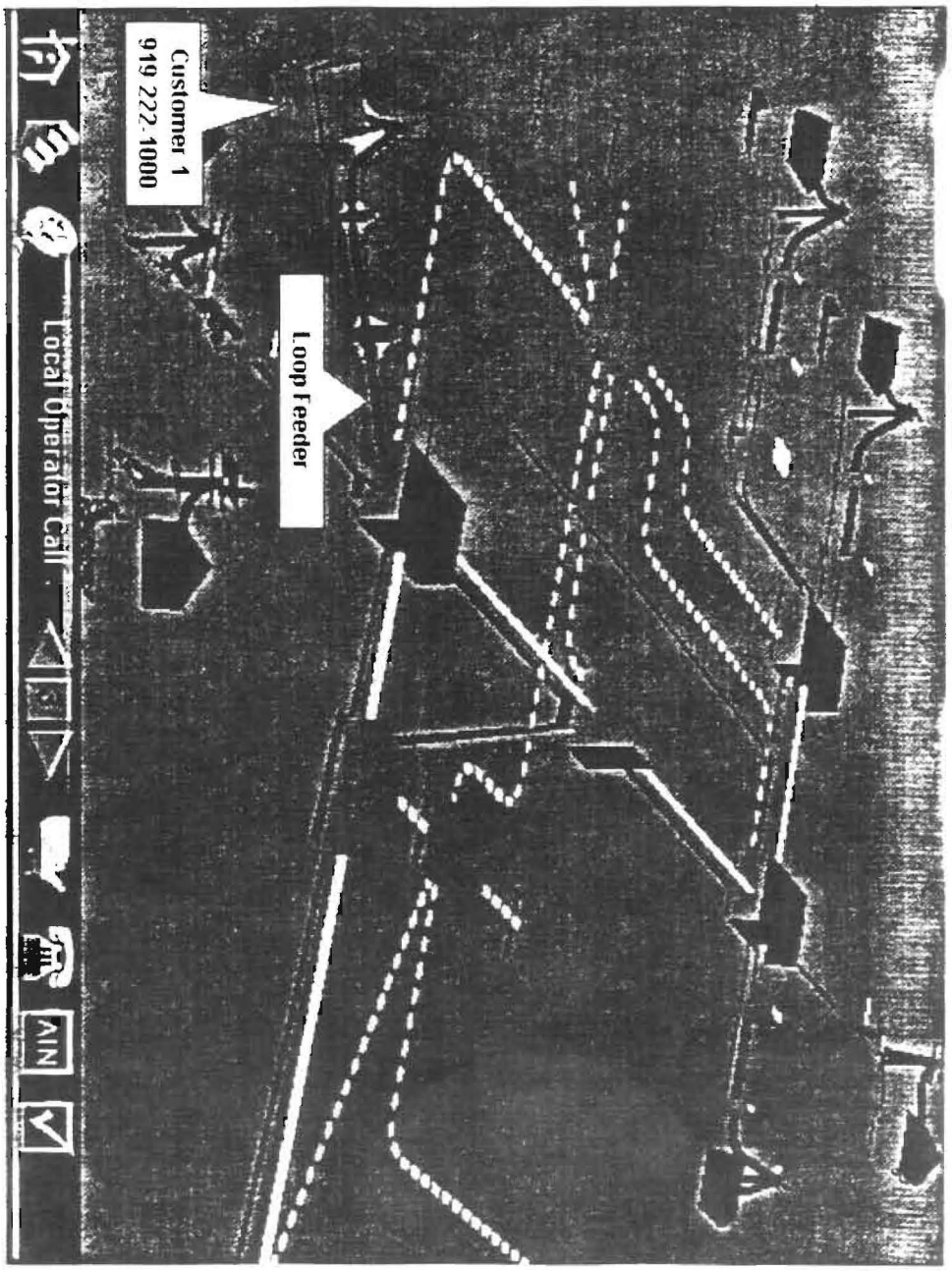

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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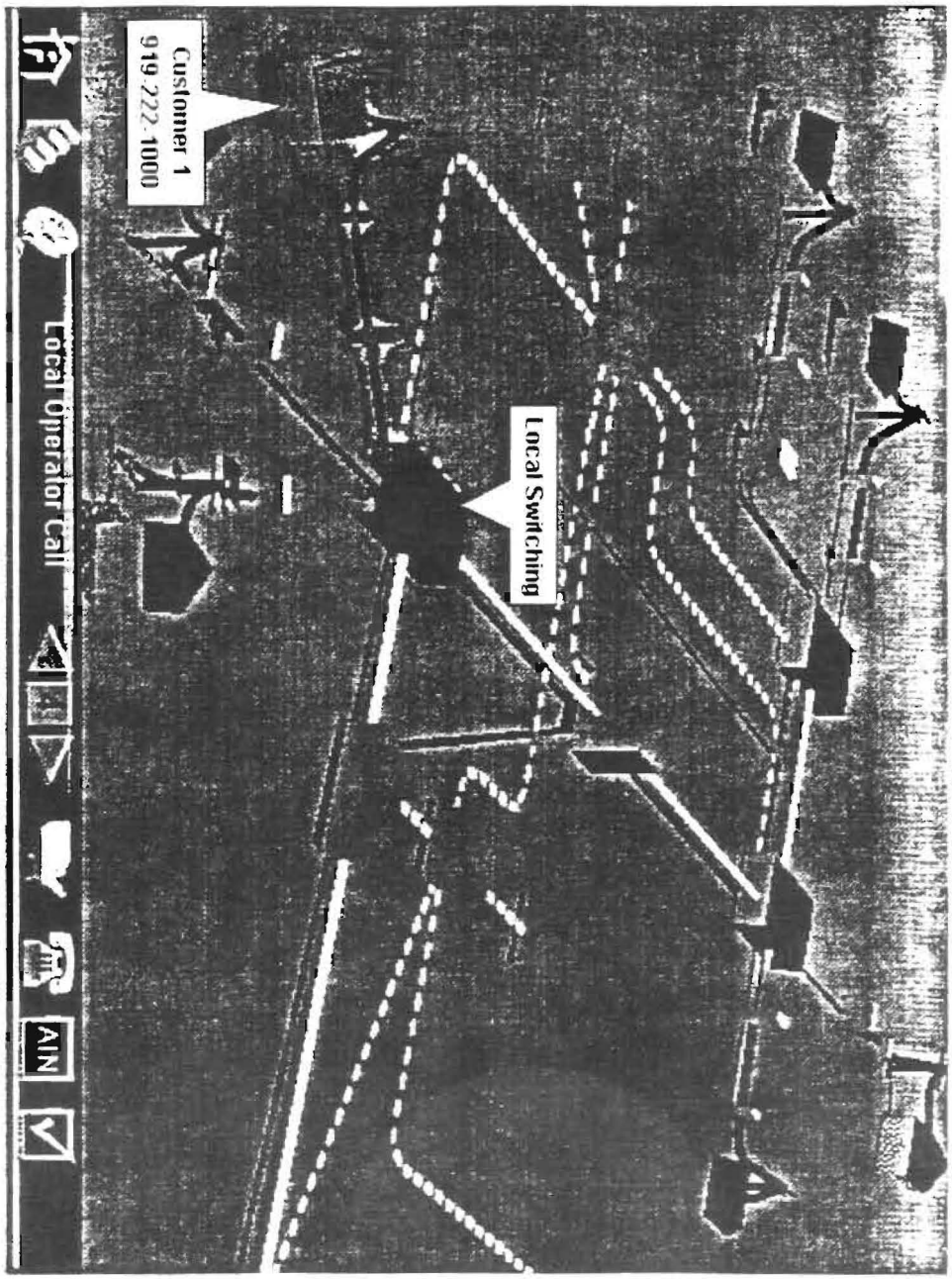
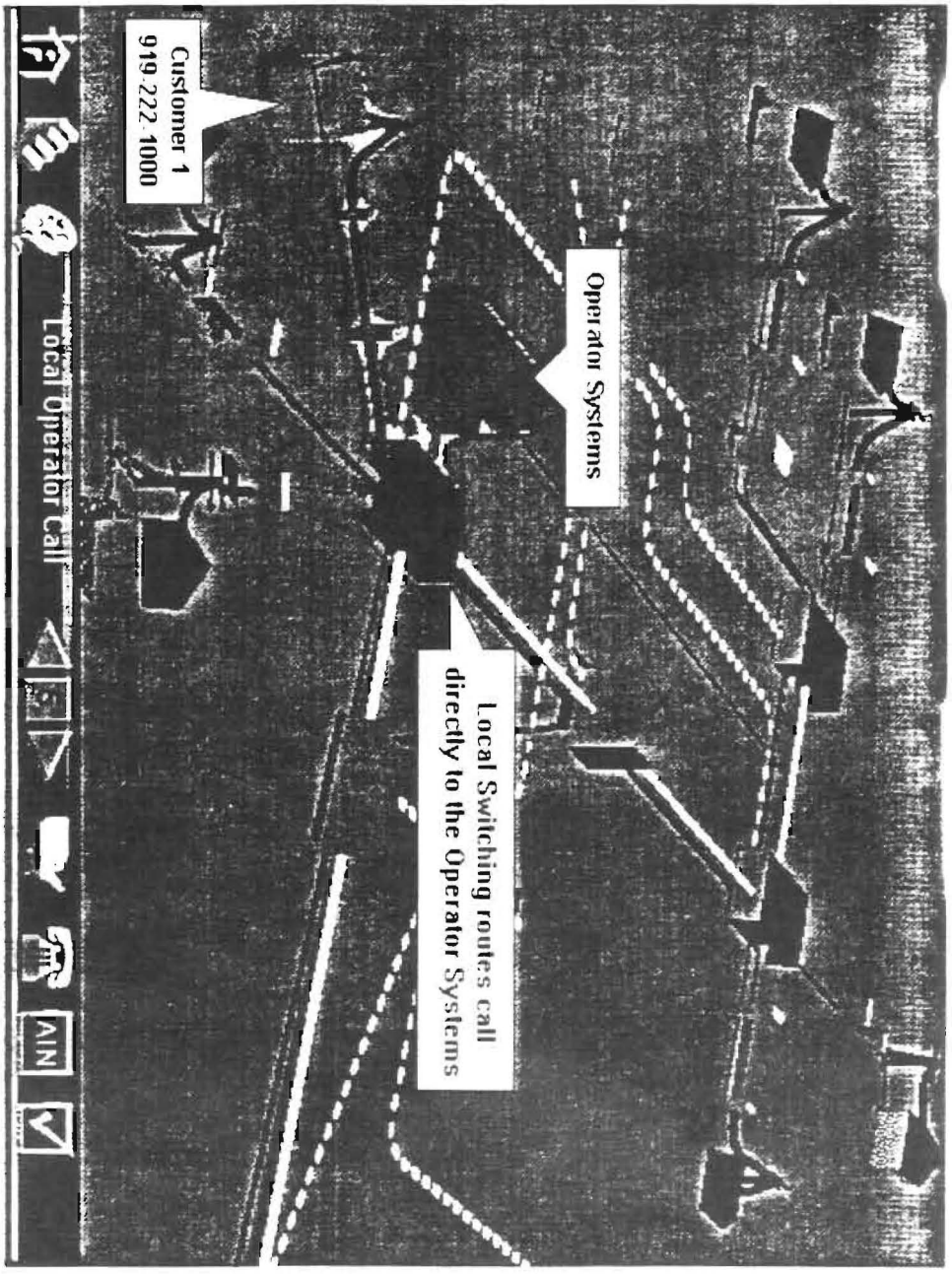
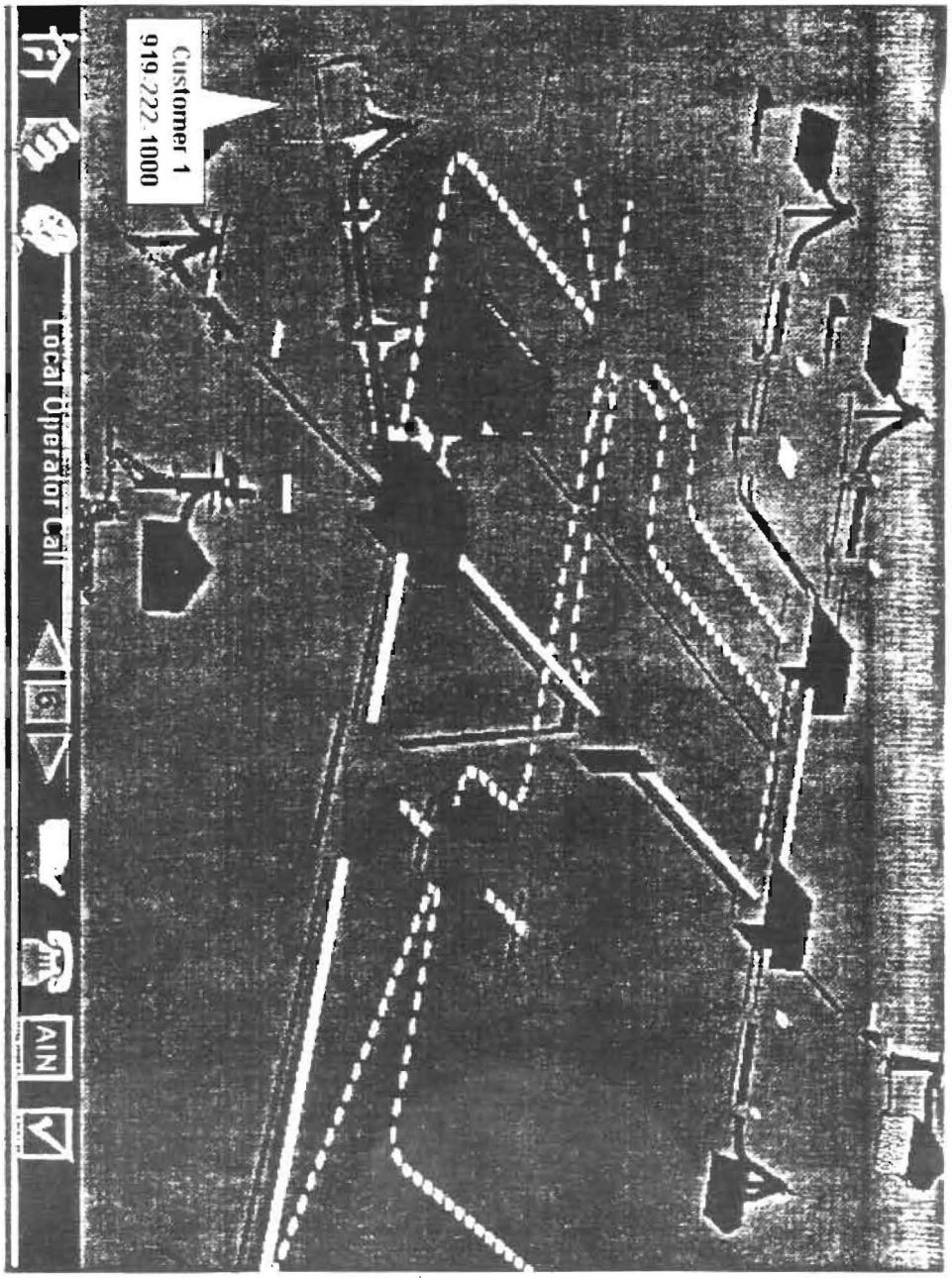



Operator Systems
Local Switching routes call directly to the Operator Systems
Customer 1
919-222-1000
Local Operator Call
AIN


Customer 1
919 222 1000
Local Operator Call
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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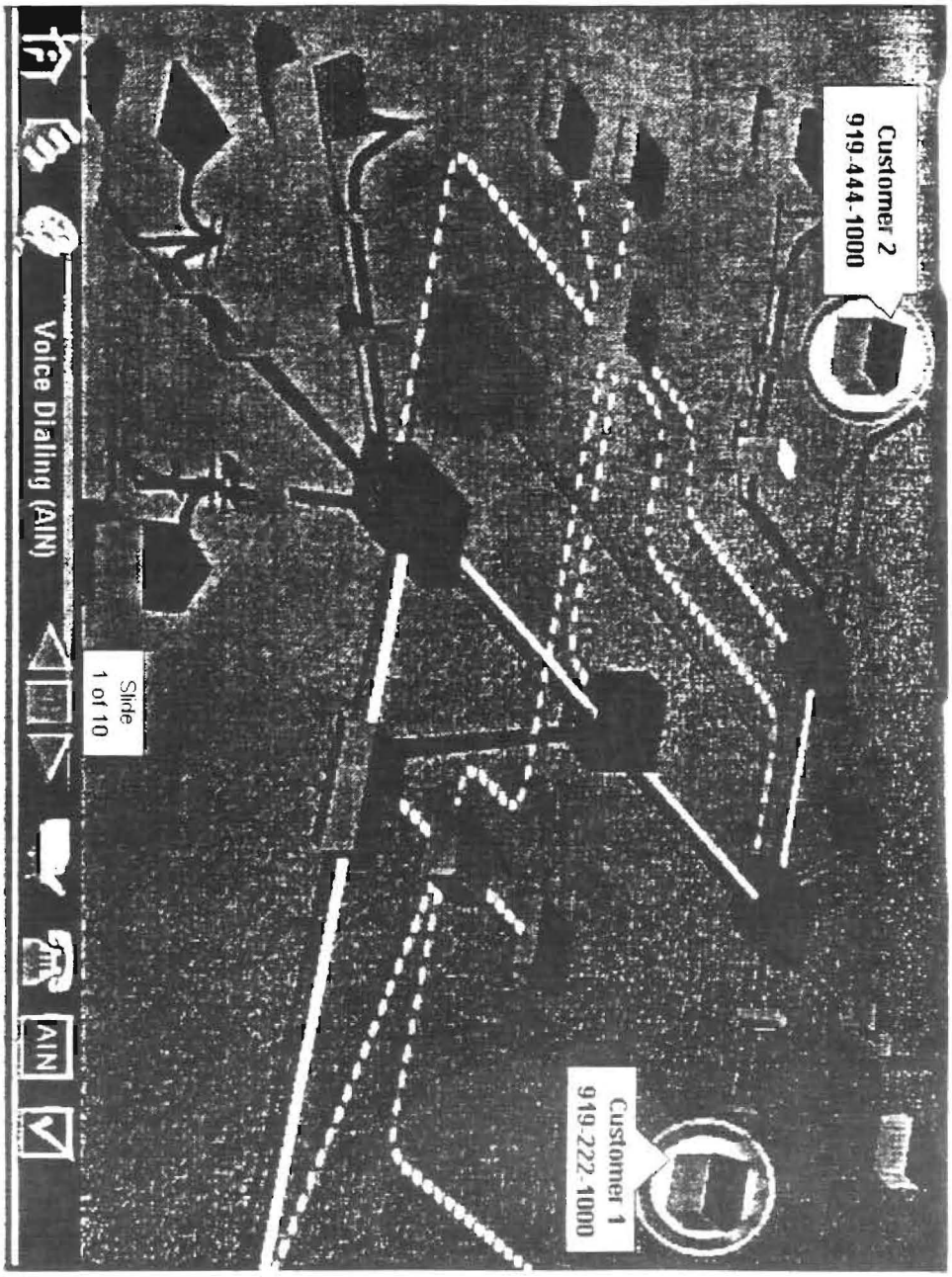

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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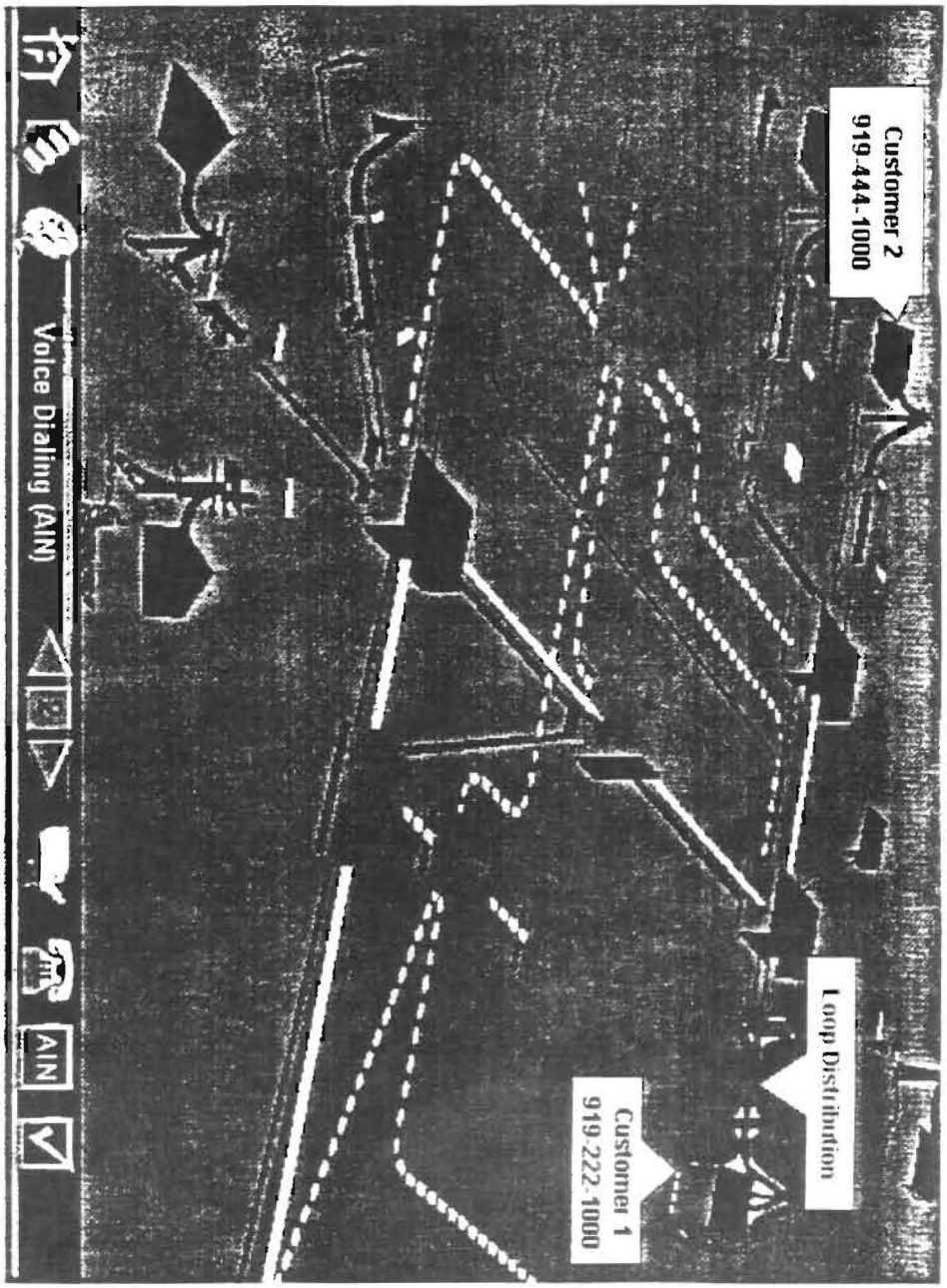

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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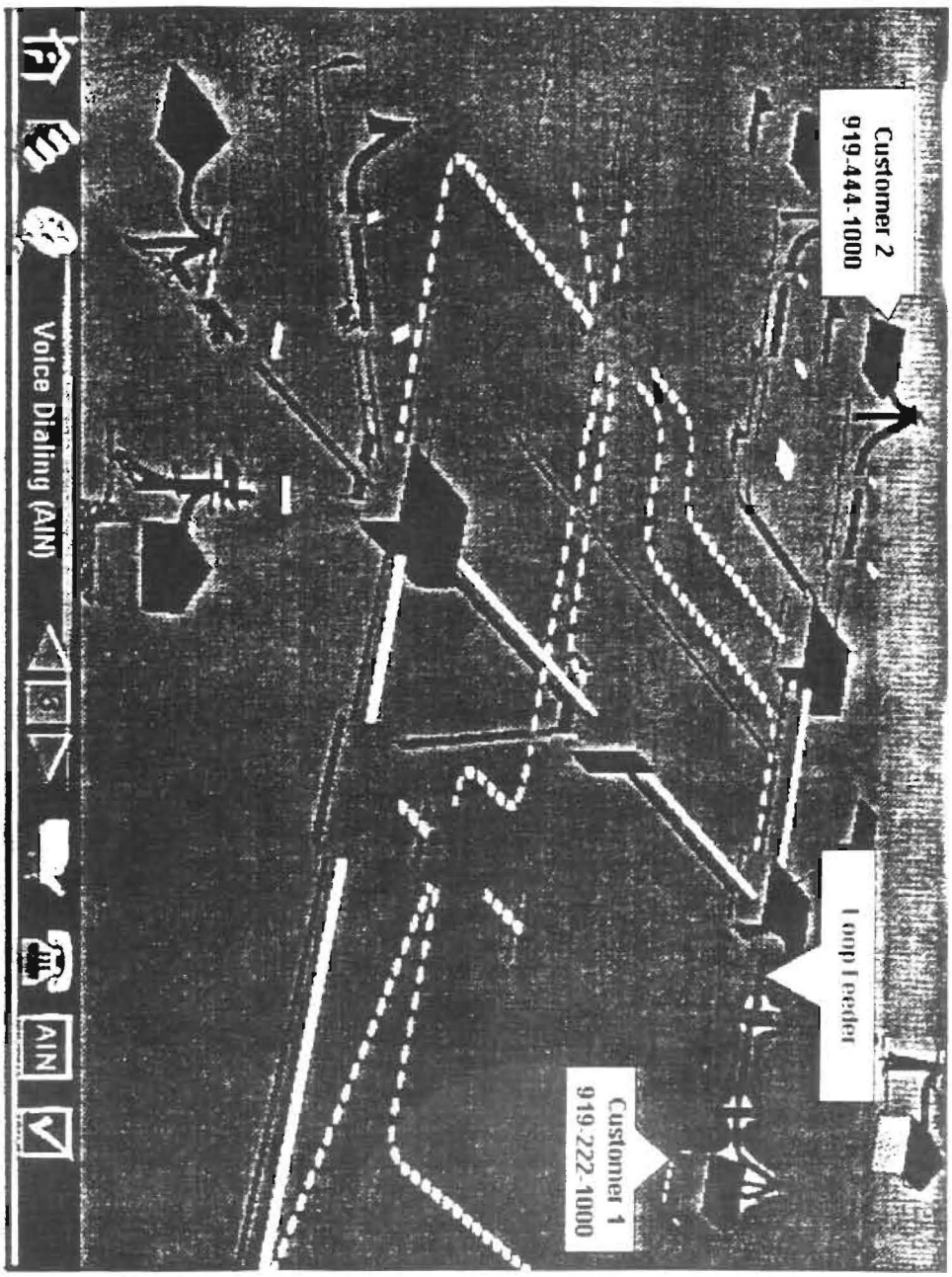
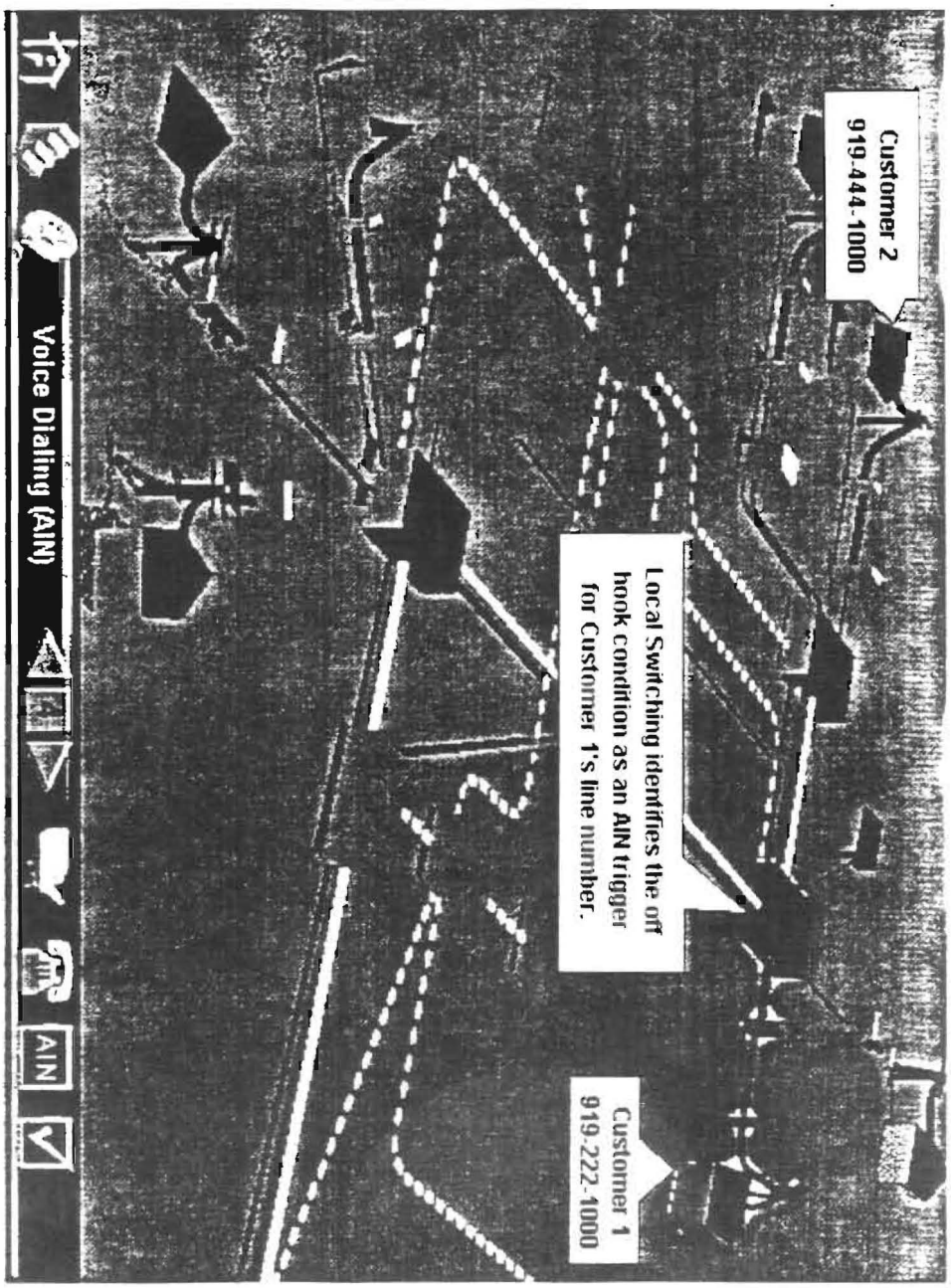
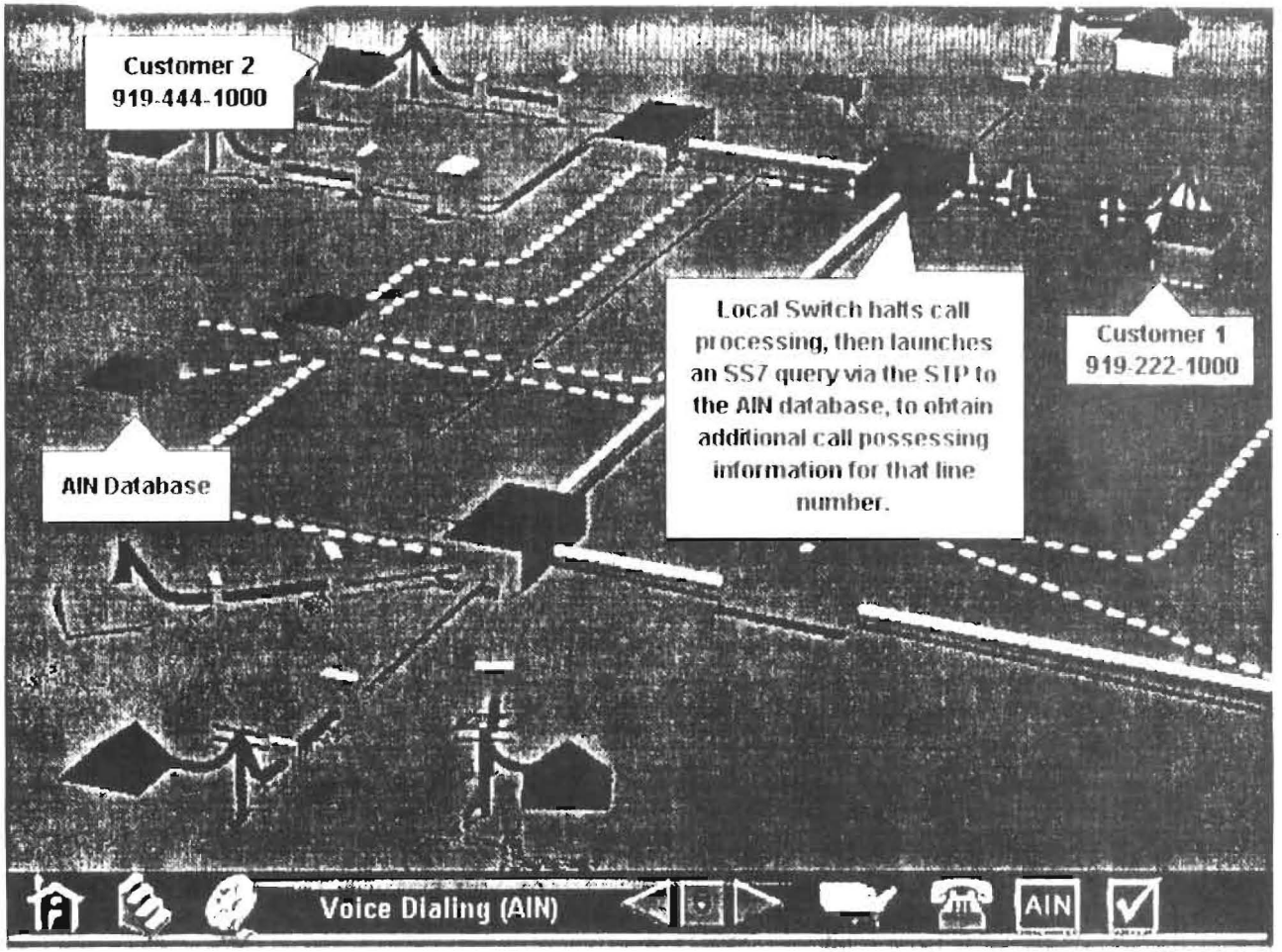
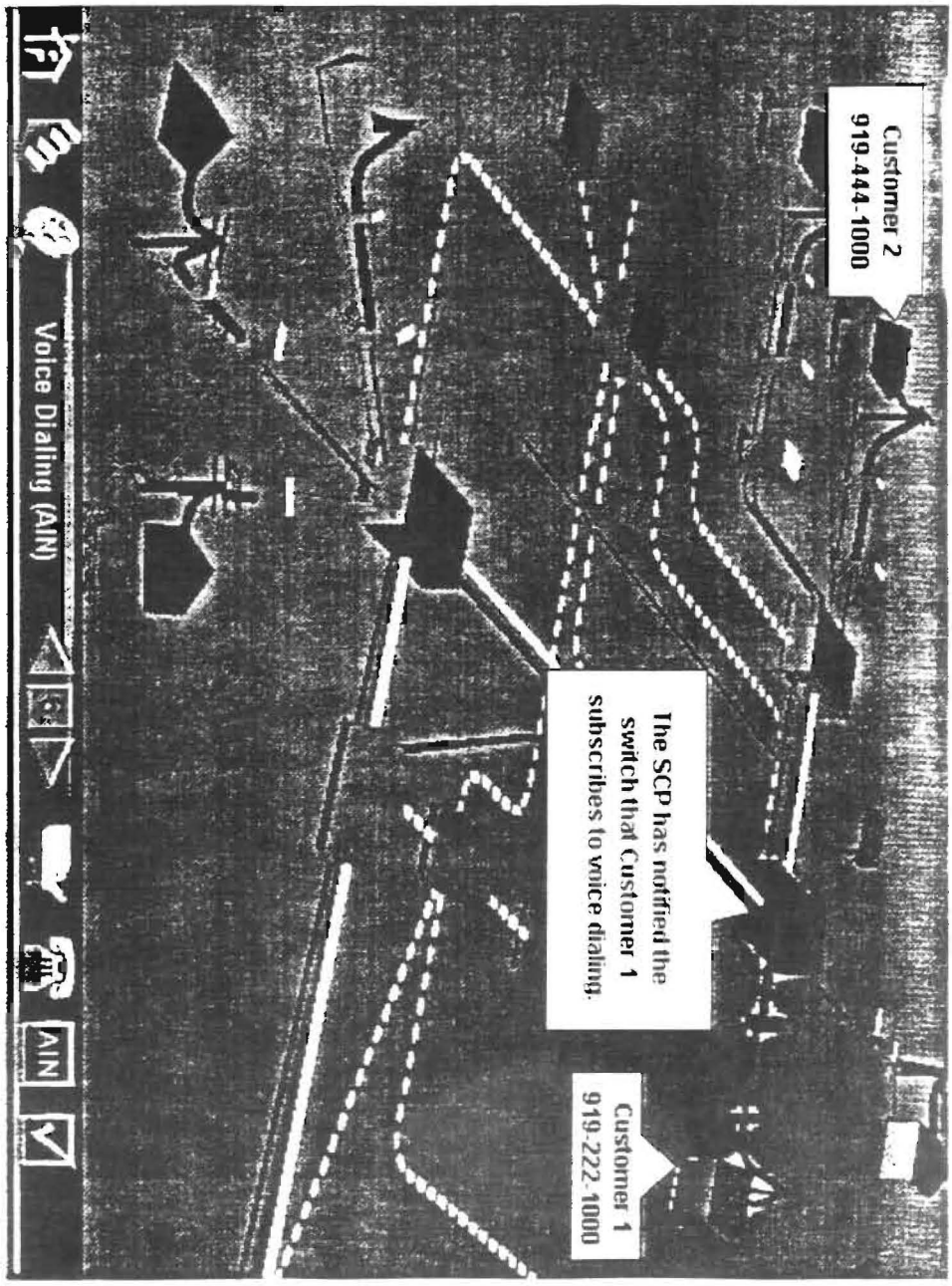



Customer 2
919-444-1000
Local Switching identifies the off hook condition as an AIN trigger for Customer 1's line number.
Customer 1
919-222-1000
Voice Dialing (AIN)
AIN


Customer 2
919-444-1000
Local Switch halts call processing, then launches an SS7 query via the STP to the AIN database, to obtain additional call possessing information for that line number.
Customer 1
919-222-1000
AIN Database
Voice Dialing (AIN)
AIN


Customer 2
919-444-1000
The SCP has notified the switch that Customer 1 subscribes to voice dialing.
Customer 1
919-222-1000
Voice Dialing (AIN)
AIN

FPSC EXHIBIT NUMBER _____
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CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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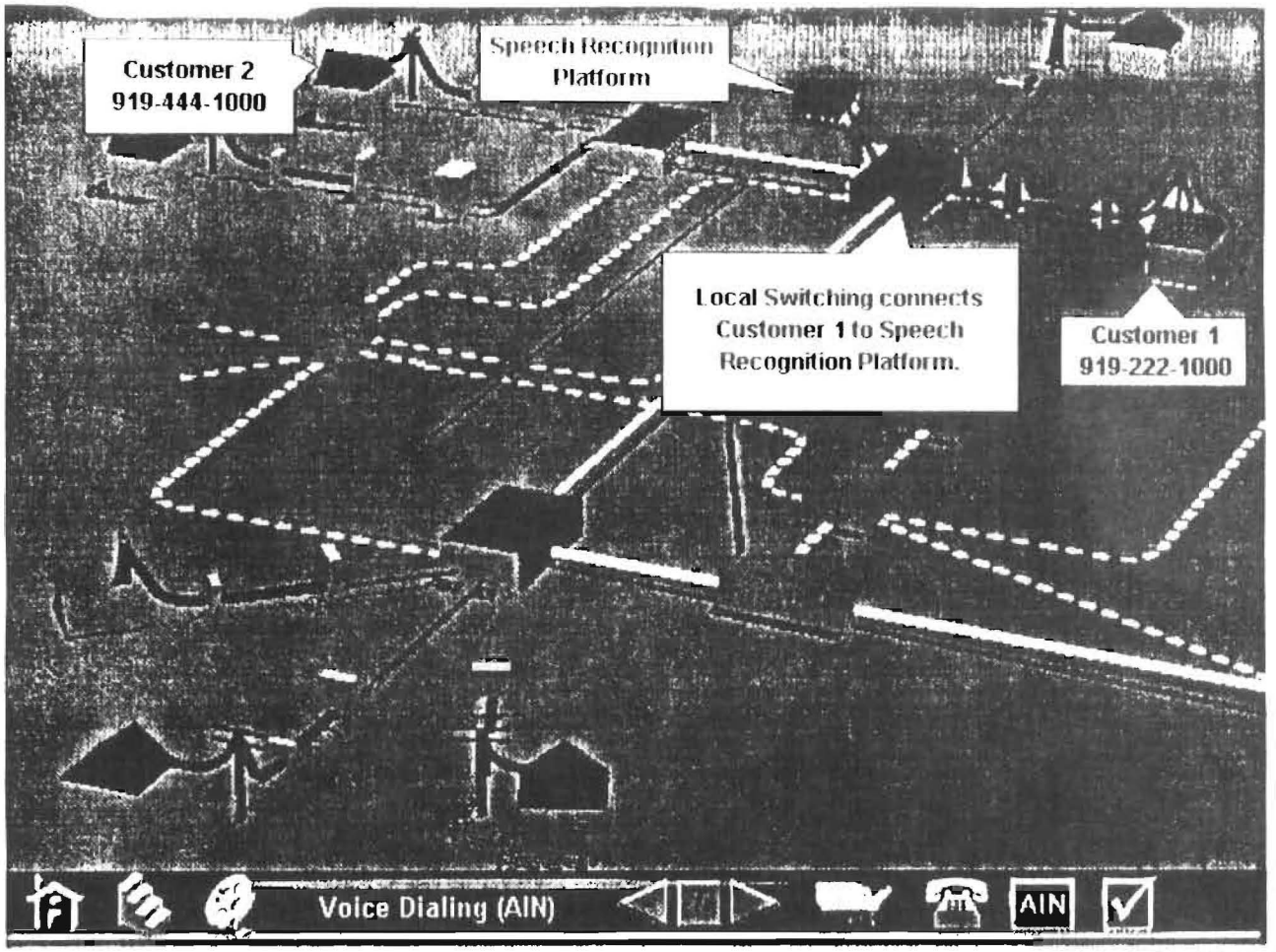

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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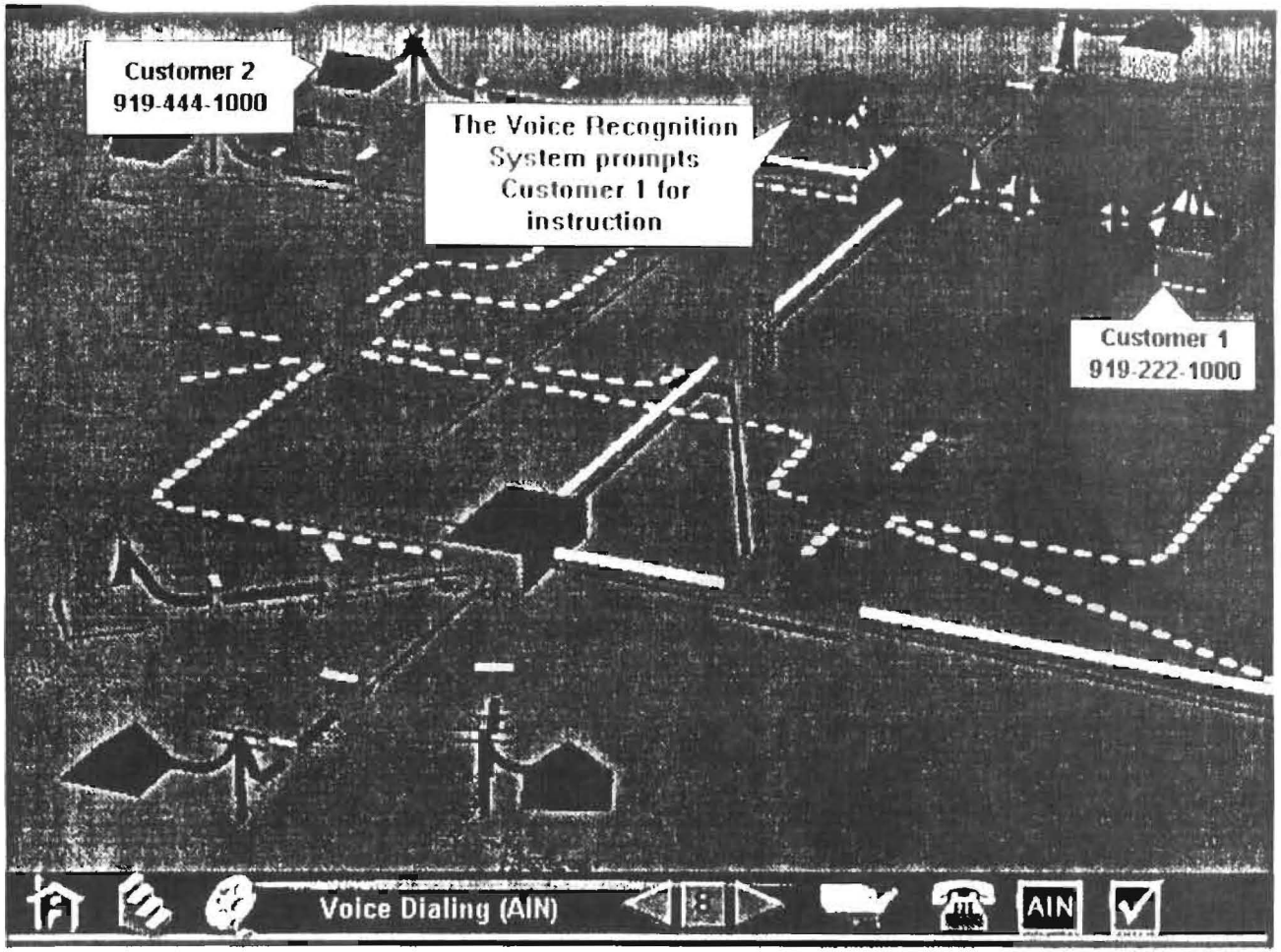

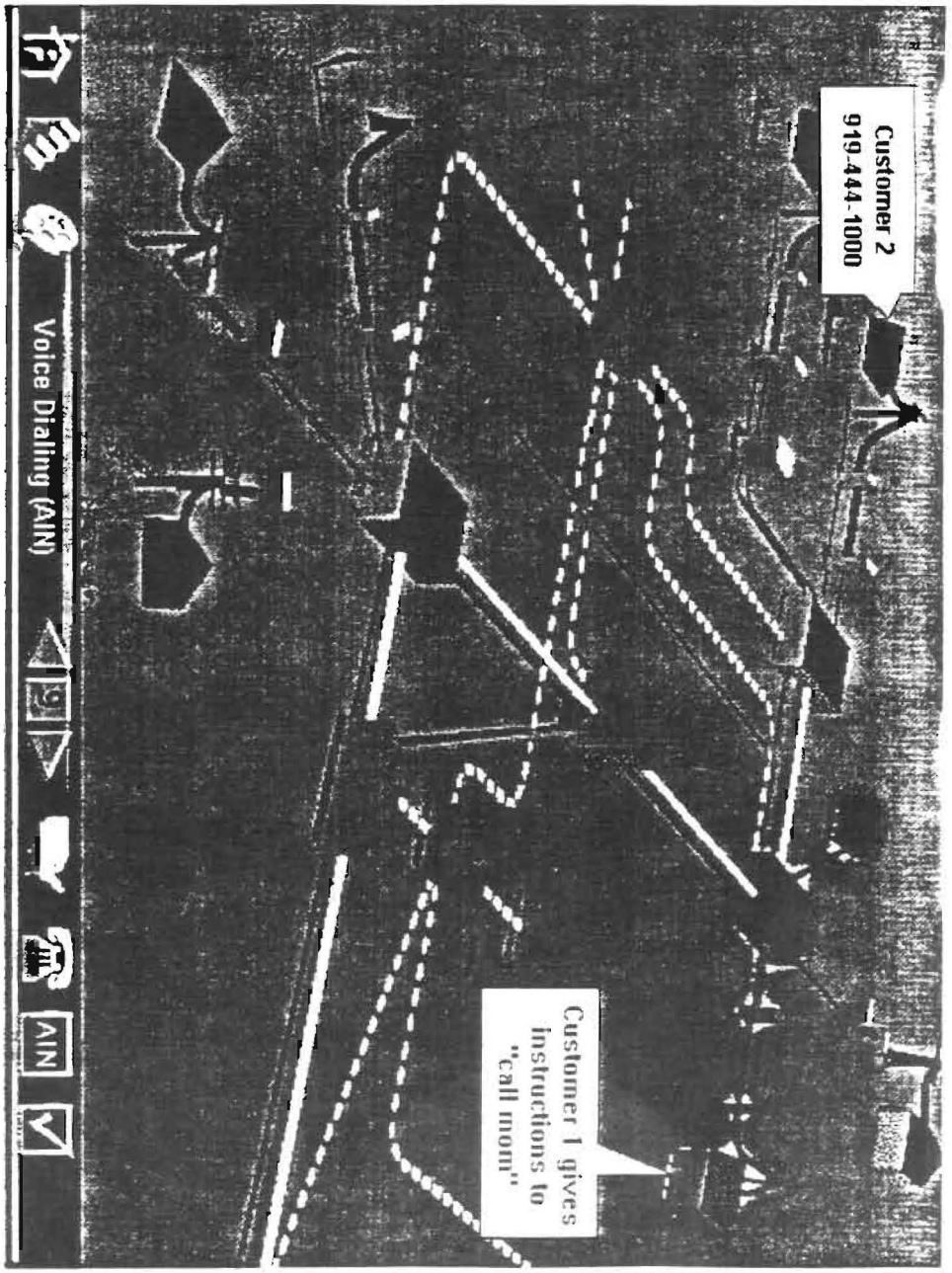
Customer 2
919-444-1000
Customer 1 gives instructions to "call mom"
Voice Dialing (AIN)
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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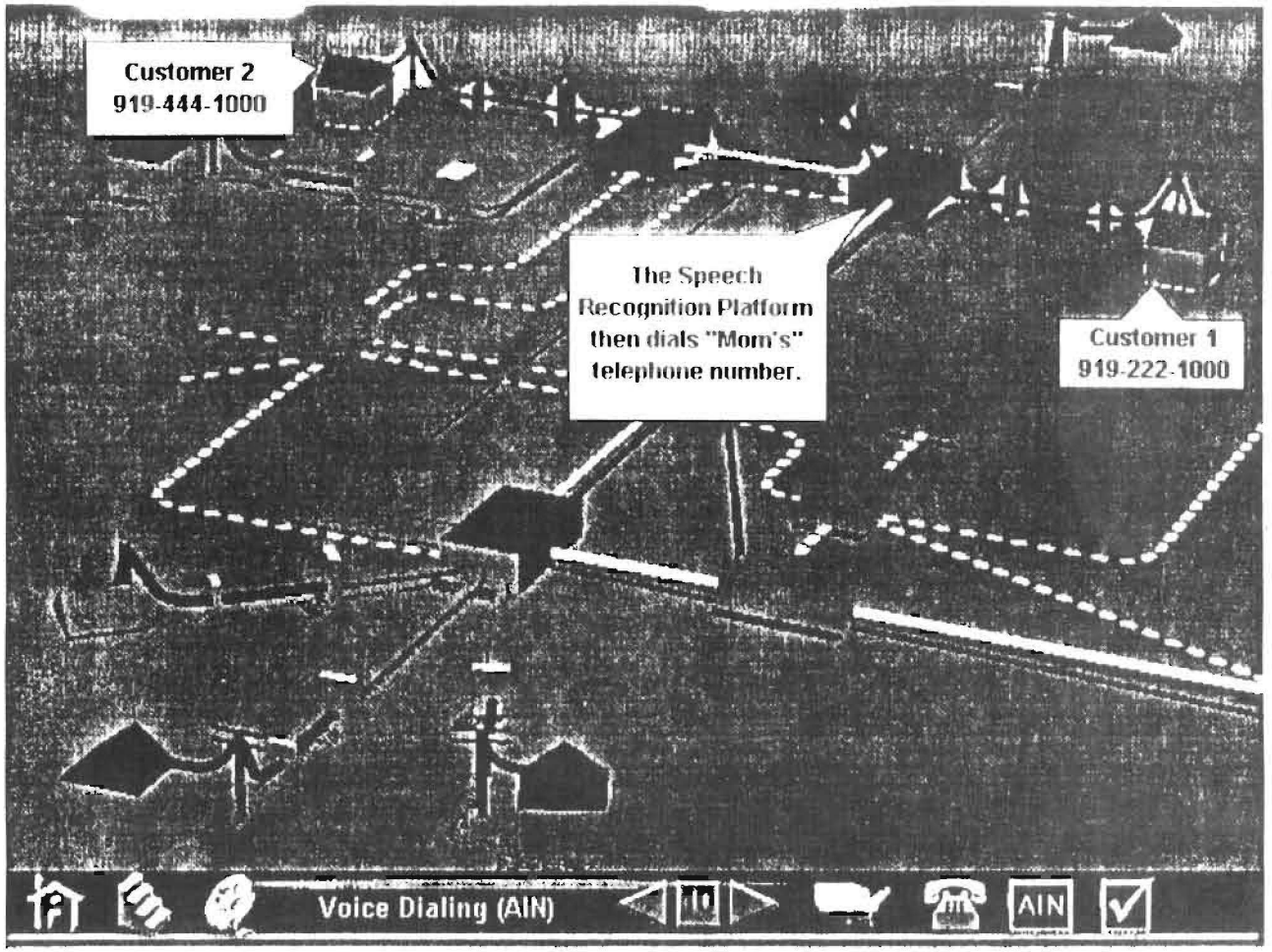

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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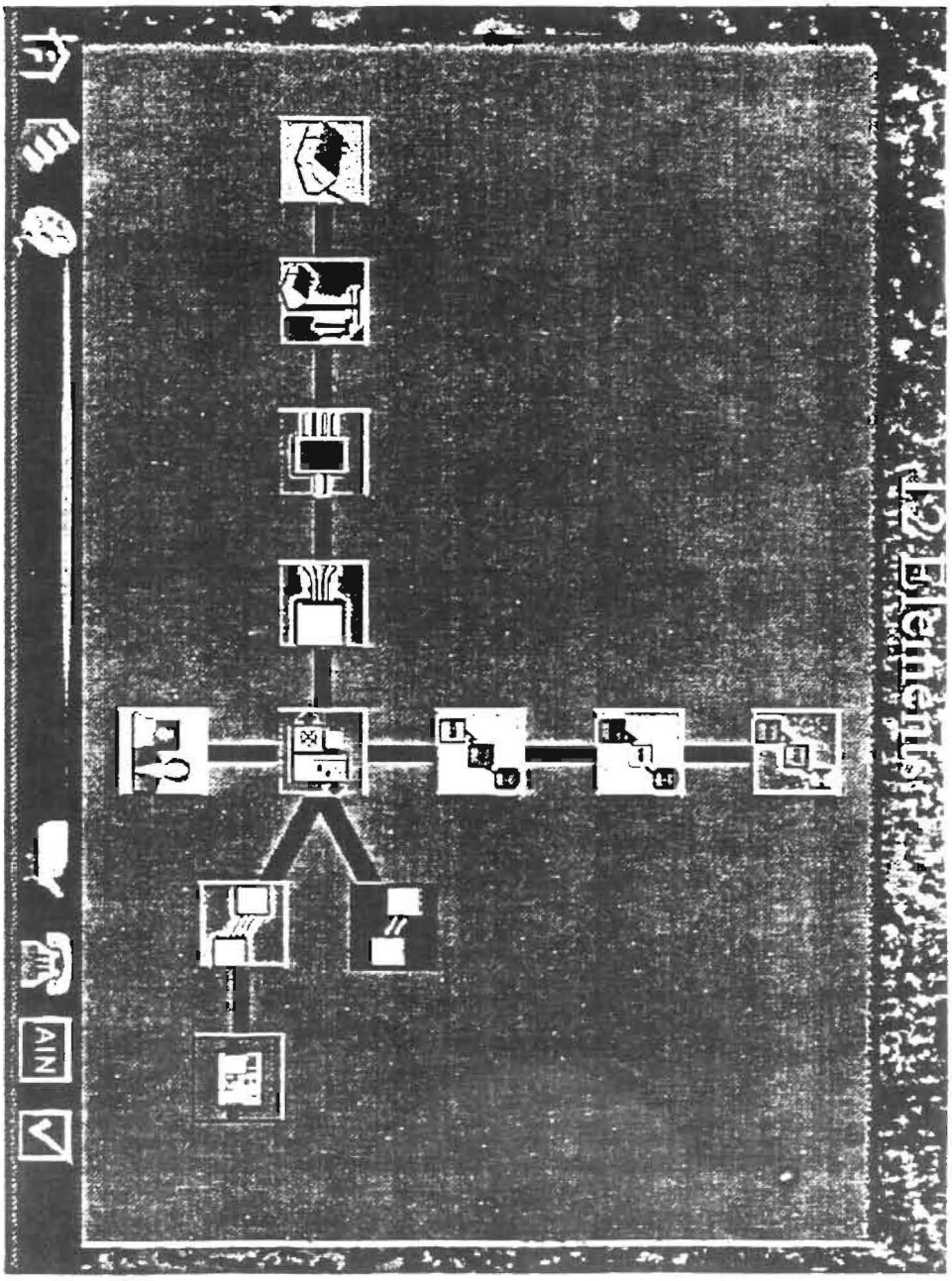
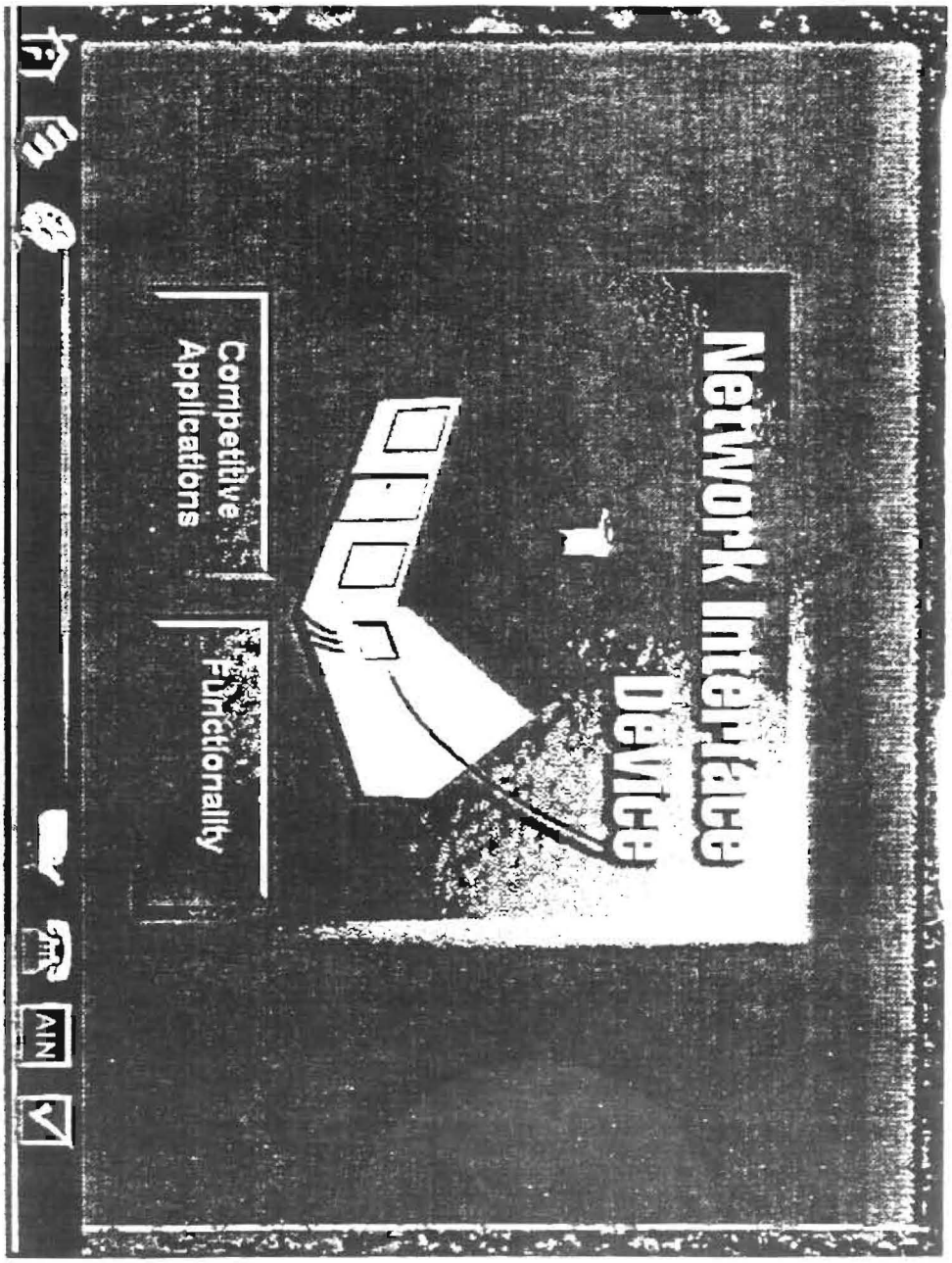
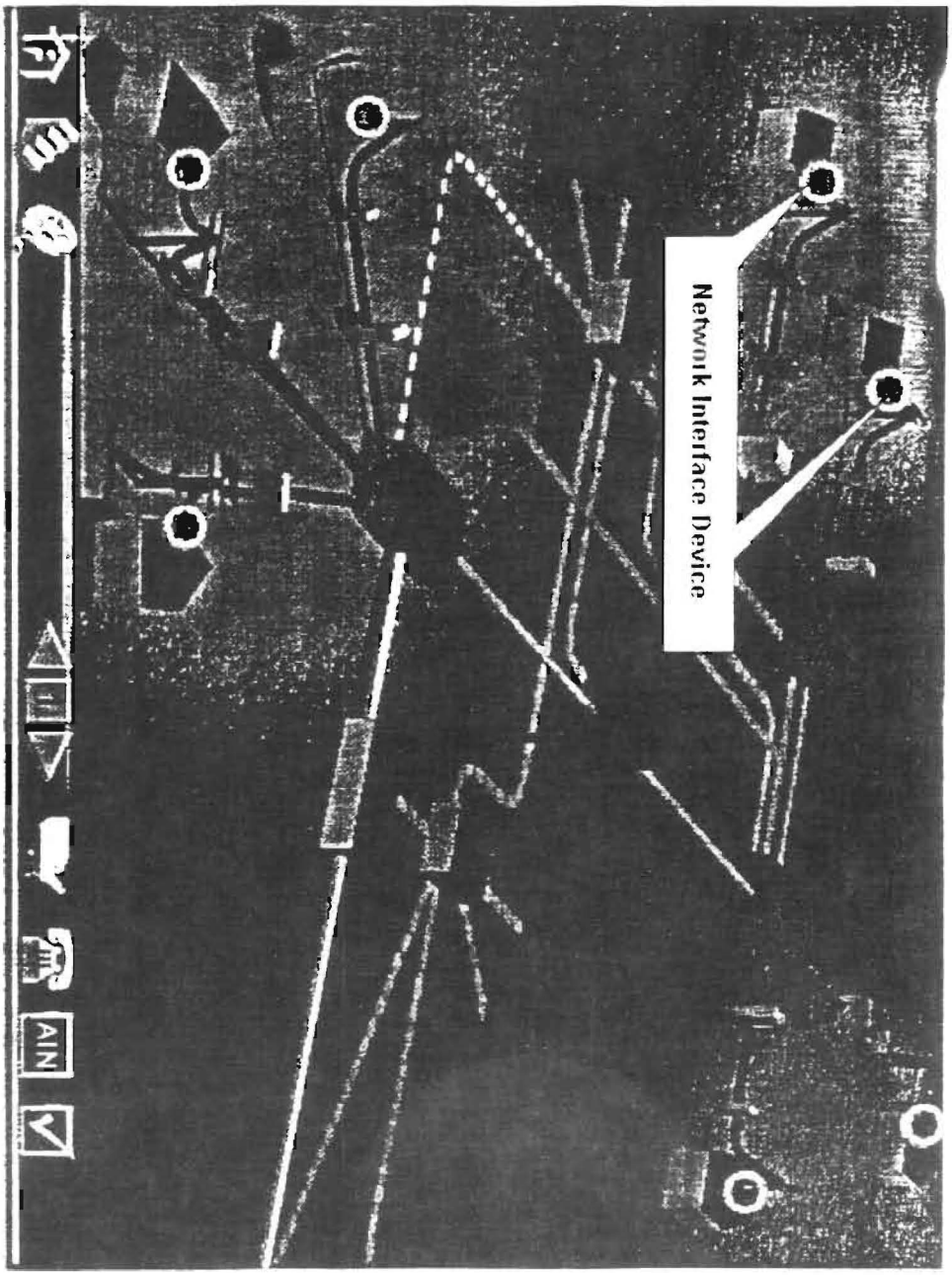
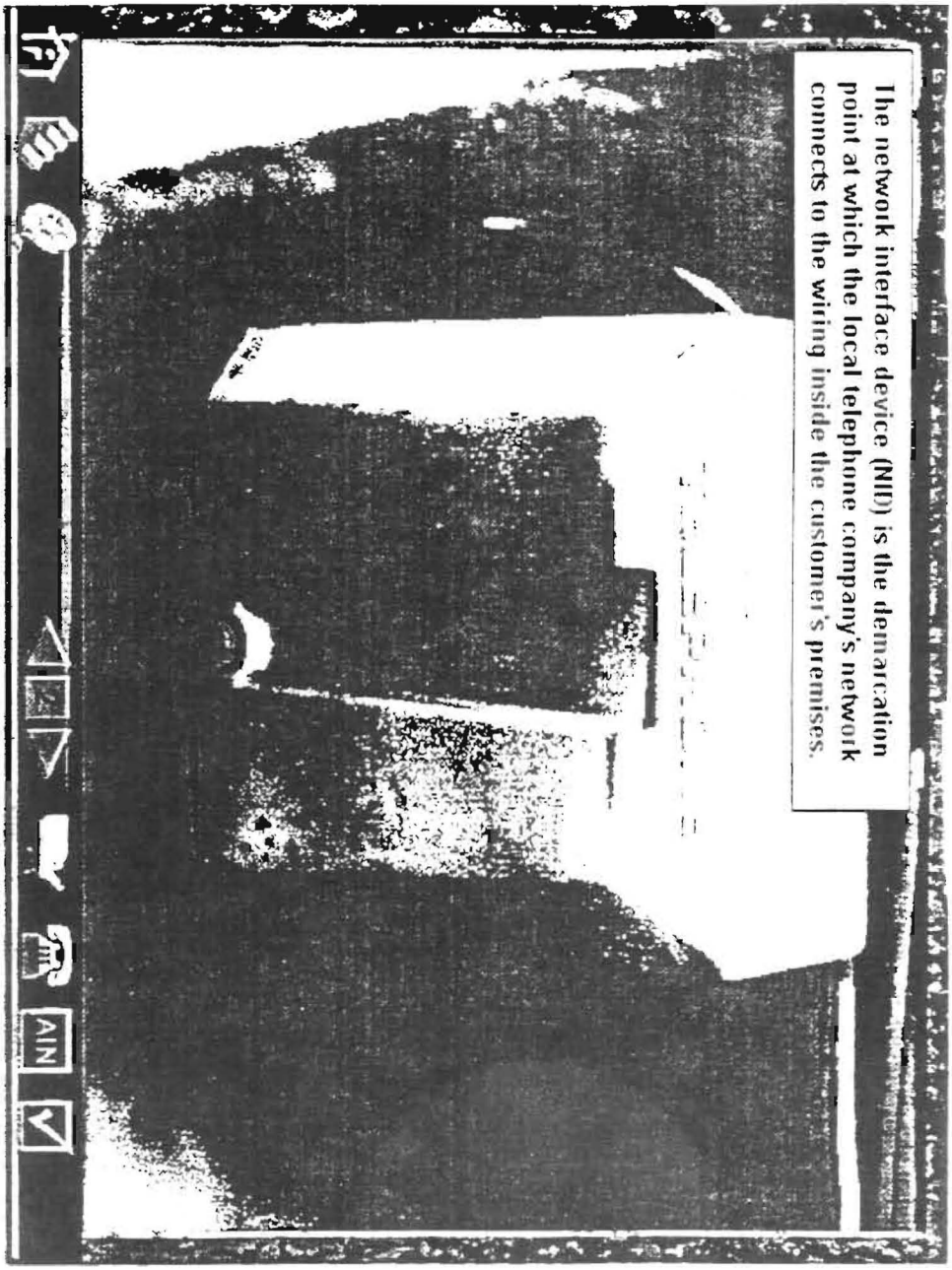
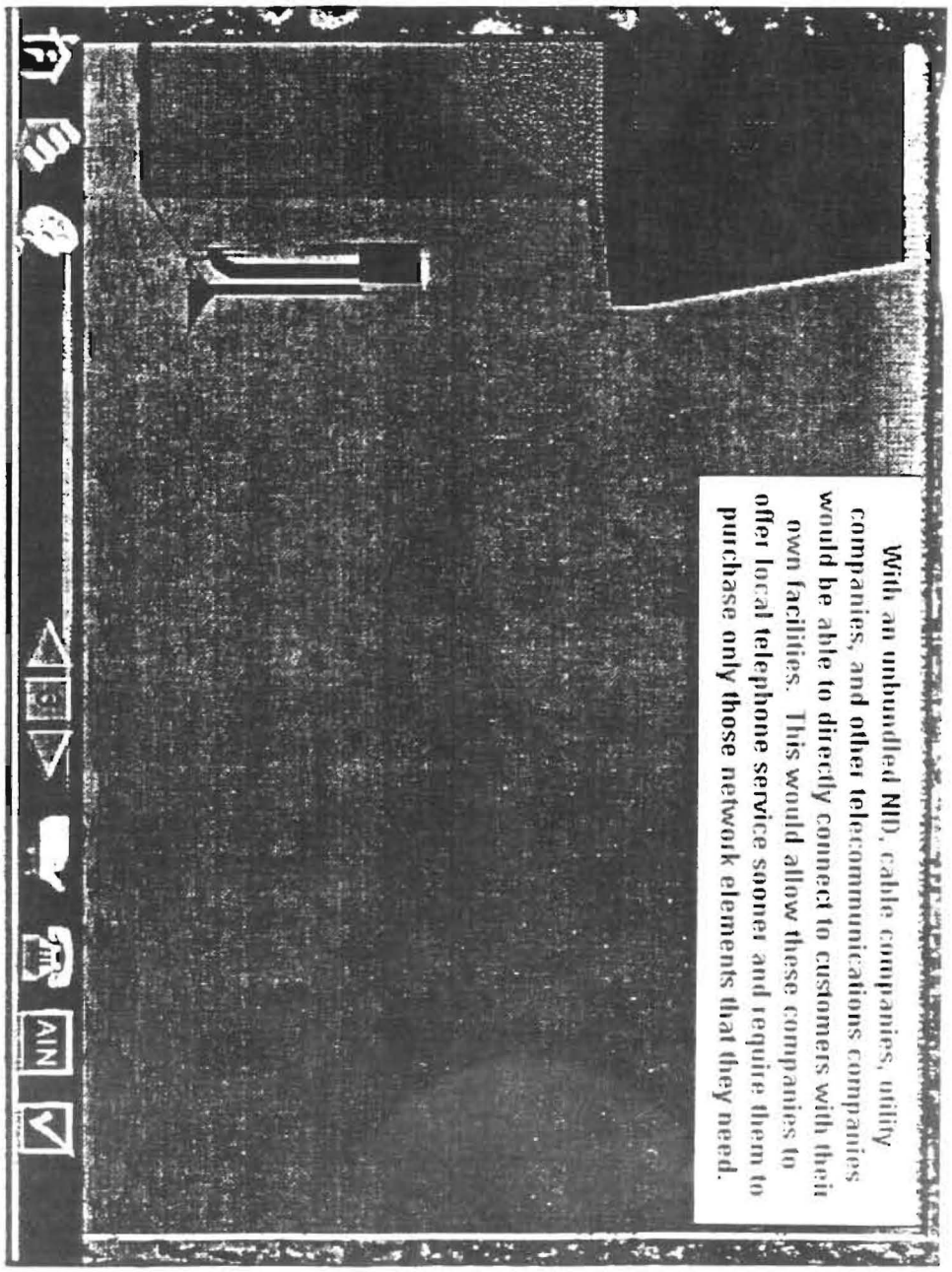



Network Interface Device
Competitive Applications
Functionality
AIN


Network Interface Device
AIN


The network interface device (NID) is the demarcation point at which the local telephone company's network connects to the wiring inside the customer's premises.
AIN


With an unbundled NID, cable companies, utility companies, and other telecommunications companies would be able to directly connect to customers with their own facilities. This would allow these companies to offer local telephone service sooner and require them to purchase only those network elements that they need.
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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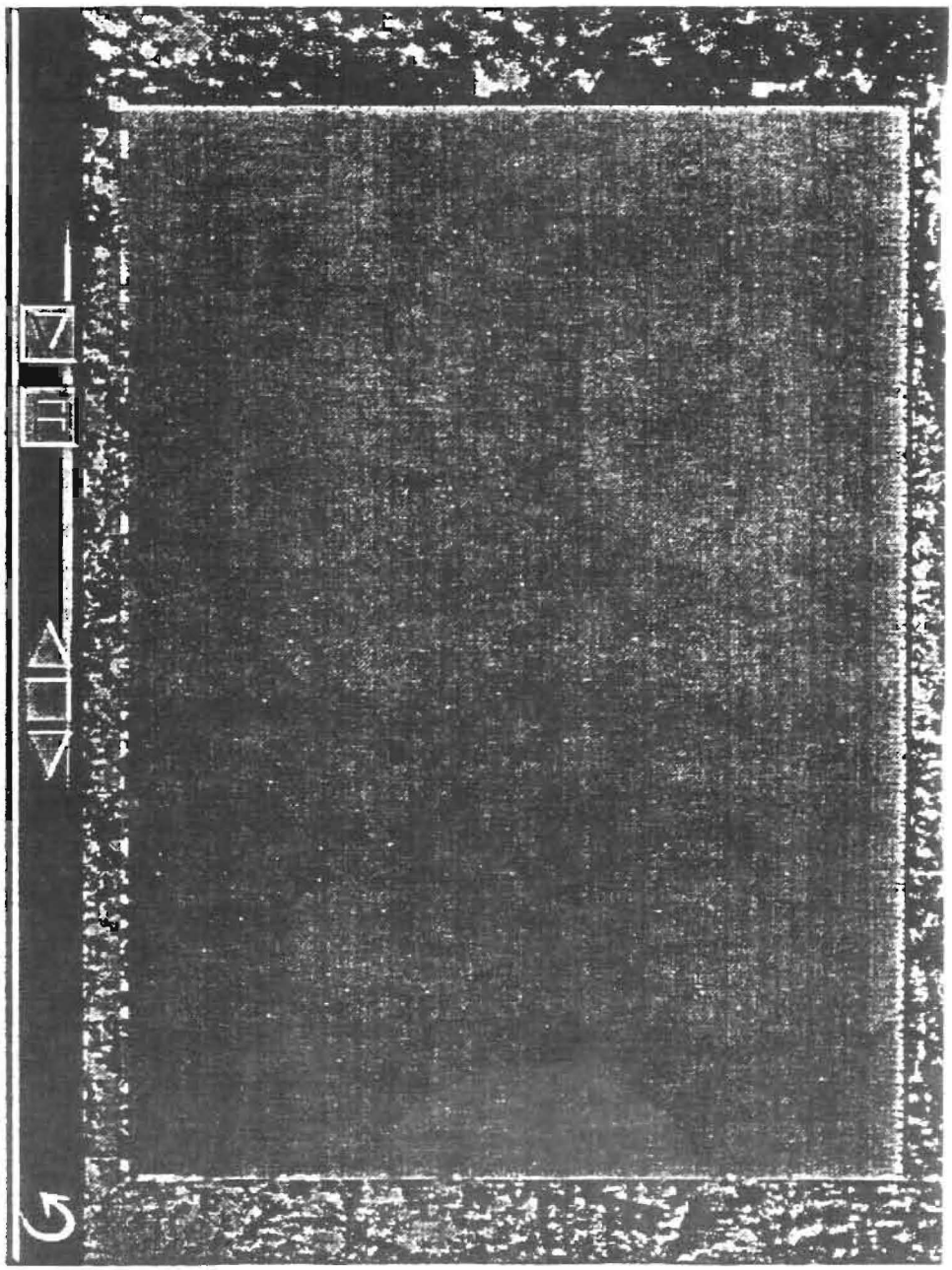

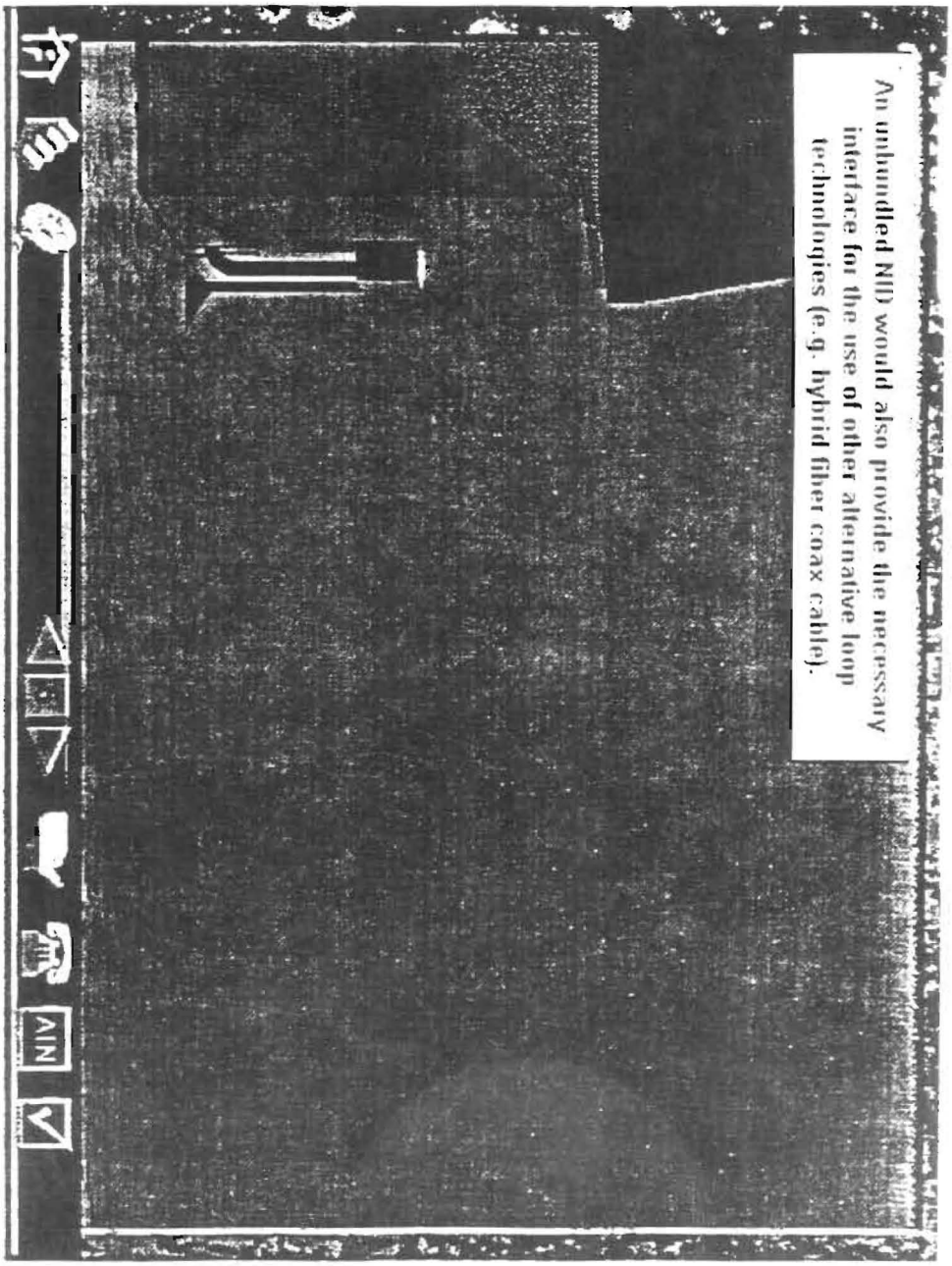
An unbundled NID would also provide the necessary interface for the use of other alternative loop technologies (e.g. hybrid fiber coax cable).
AIN

FPSC EXHIBIT NUMBER _____
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UNBUNDLED NETWORK ELEMENTS
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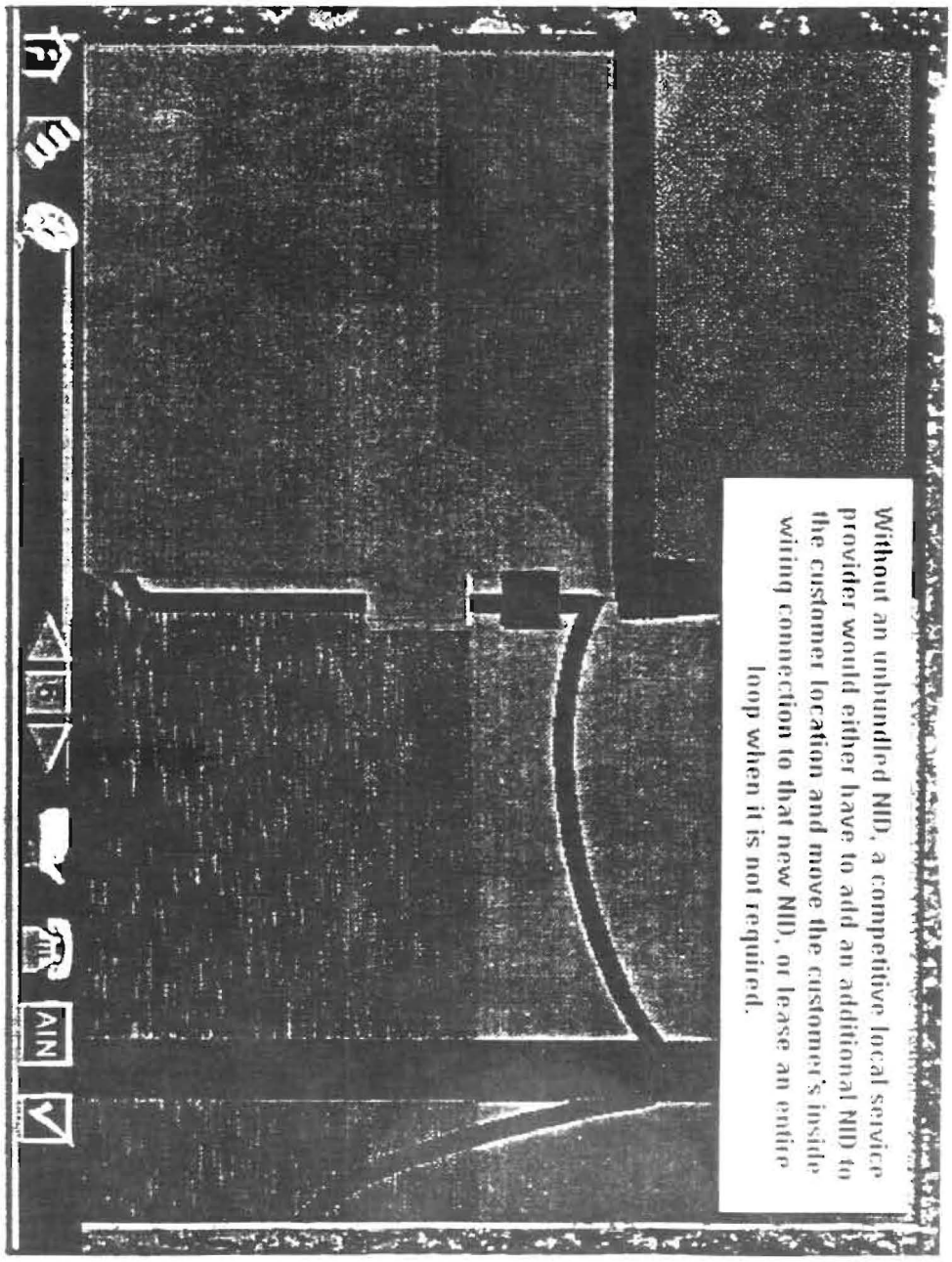
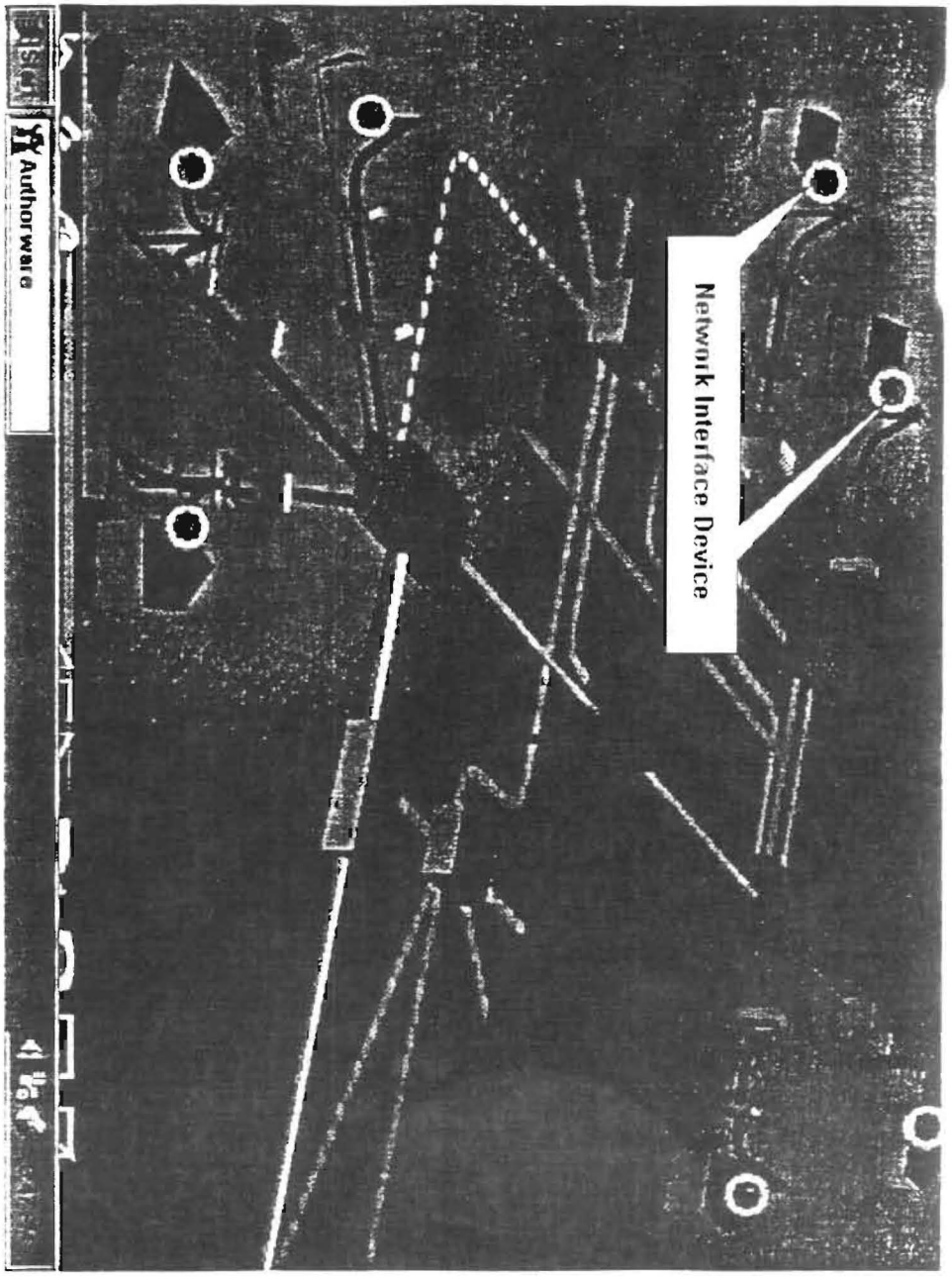
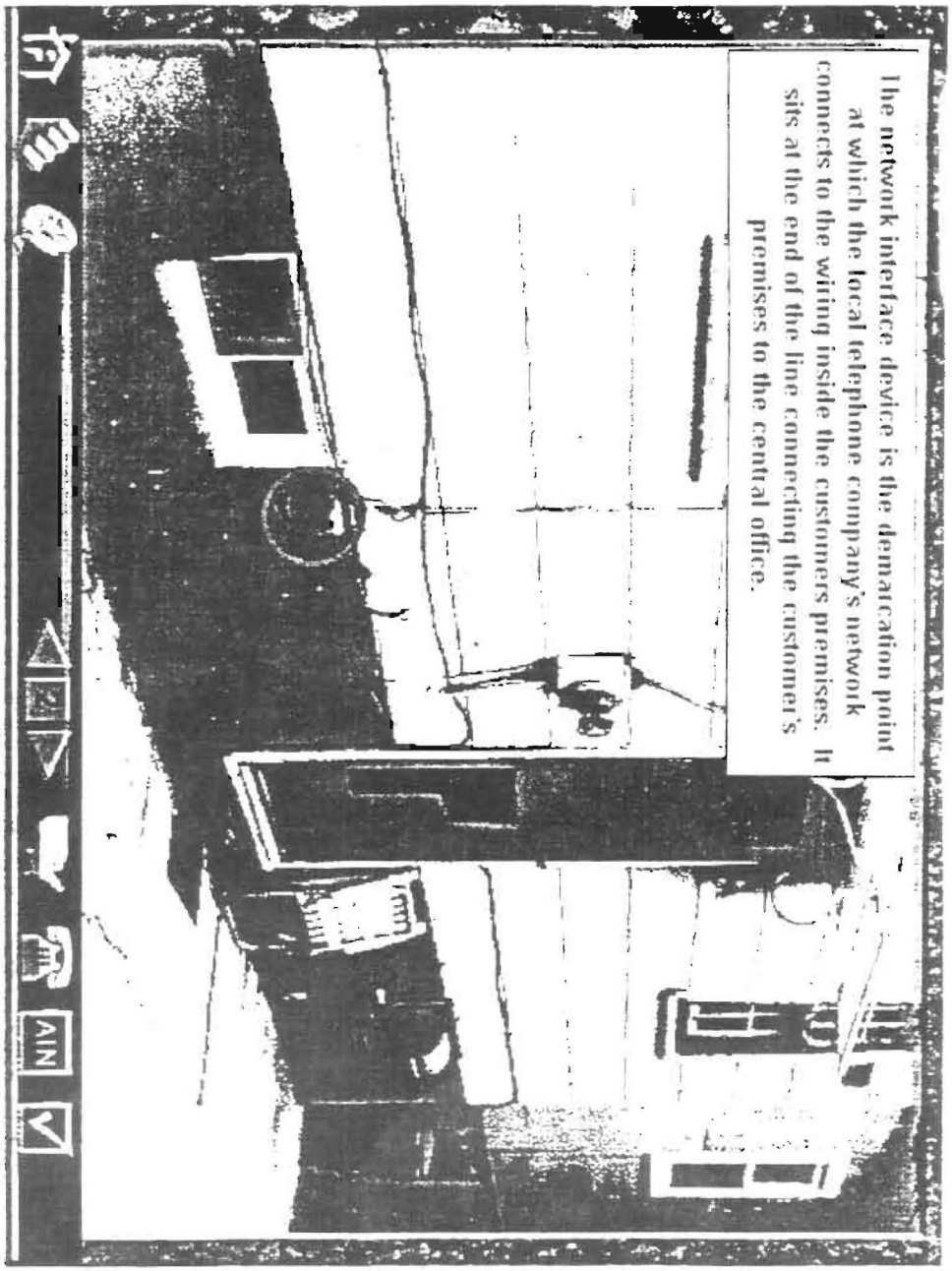
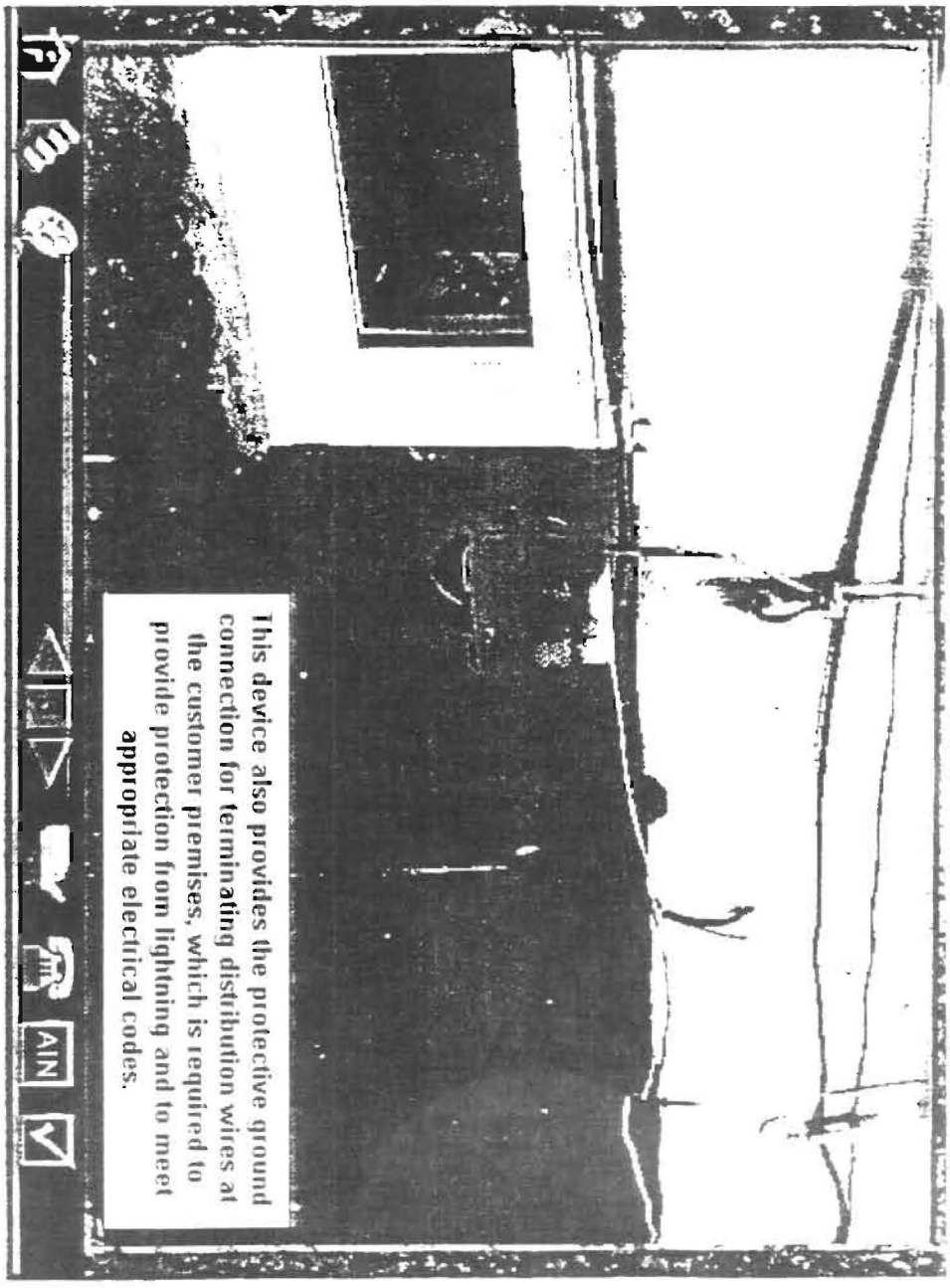
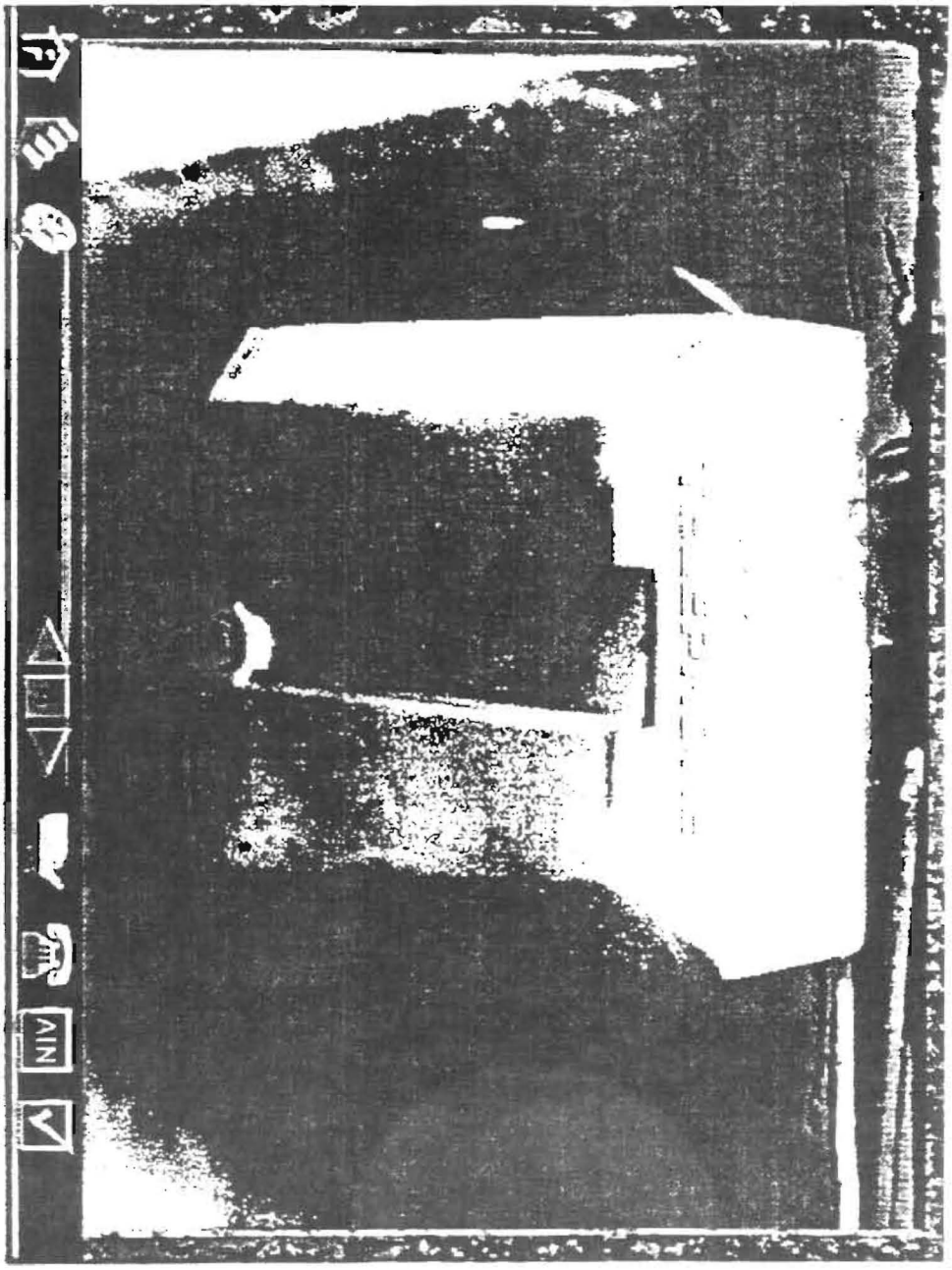


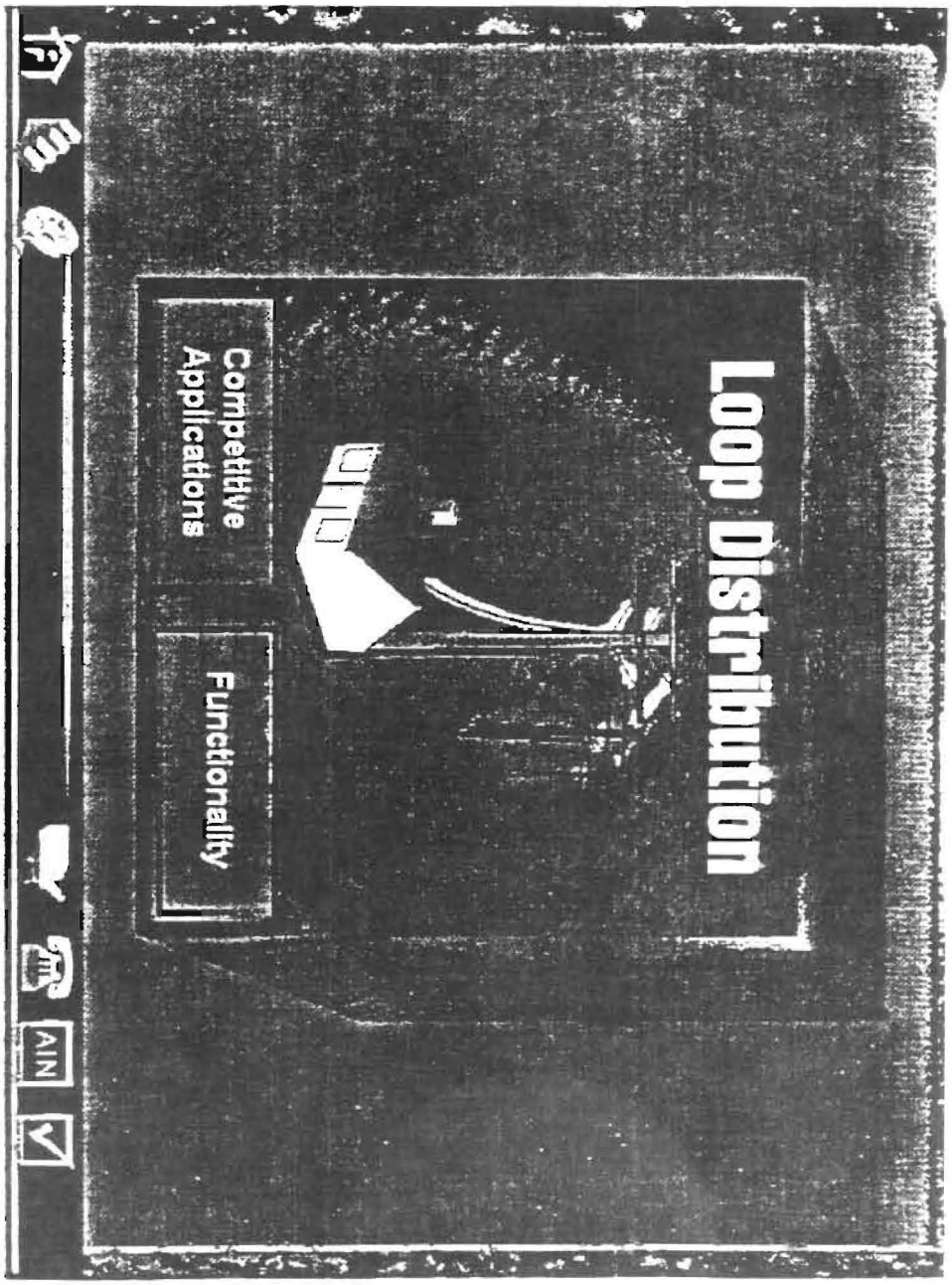
Without an unbundled NID, a competitive local service provider would either have to add an additional NID to the customer location and move the customer's inside wiring connection to that new NID, or lease an entire loop when it is not required.

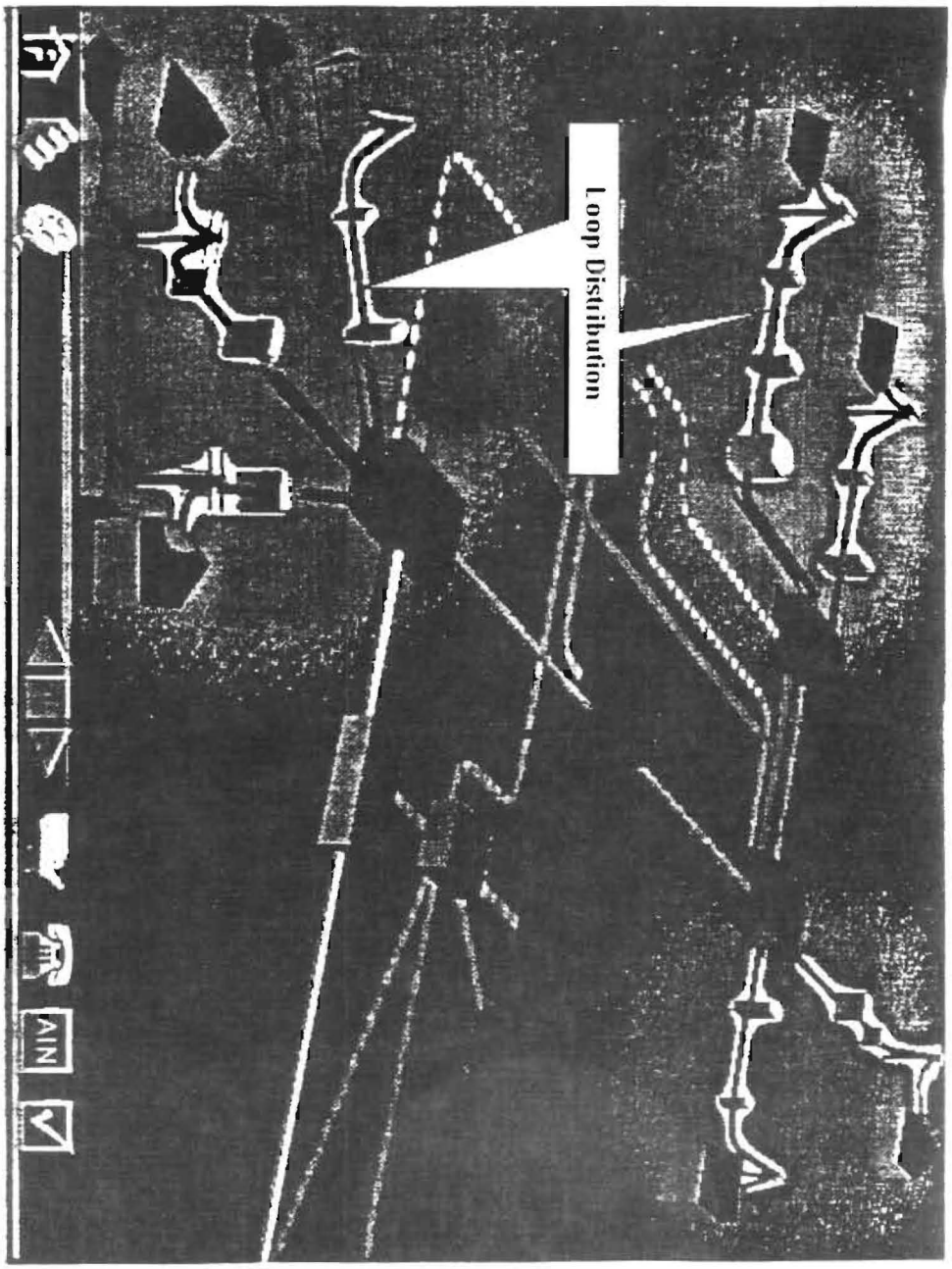

Network Interface Device
Authorware

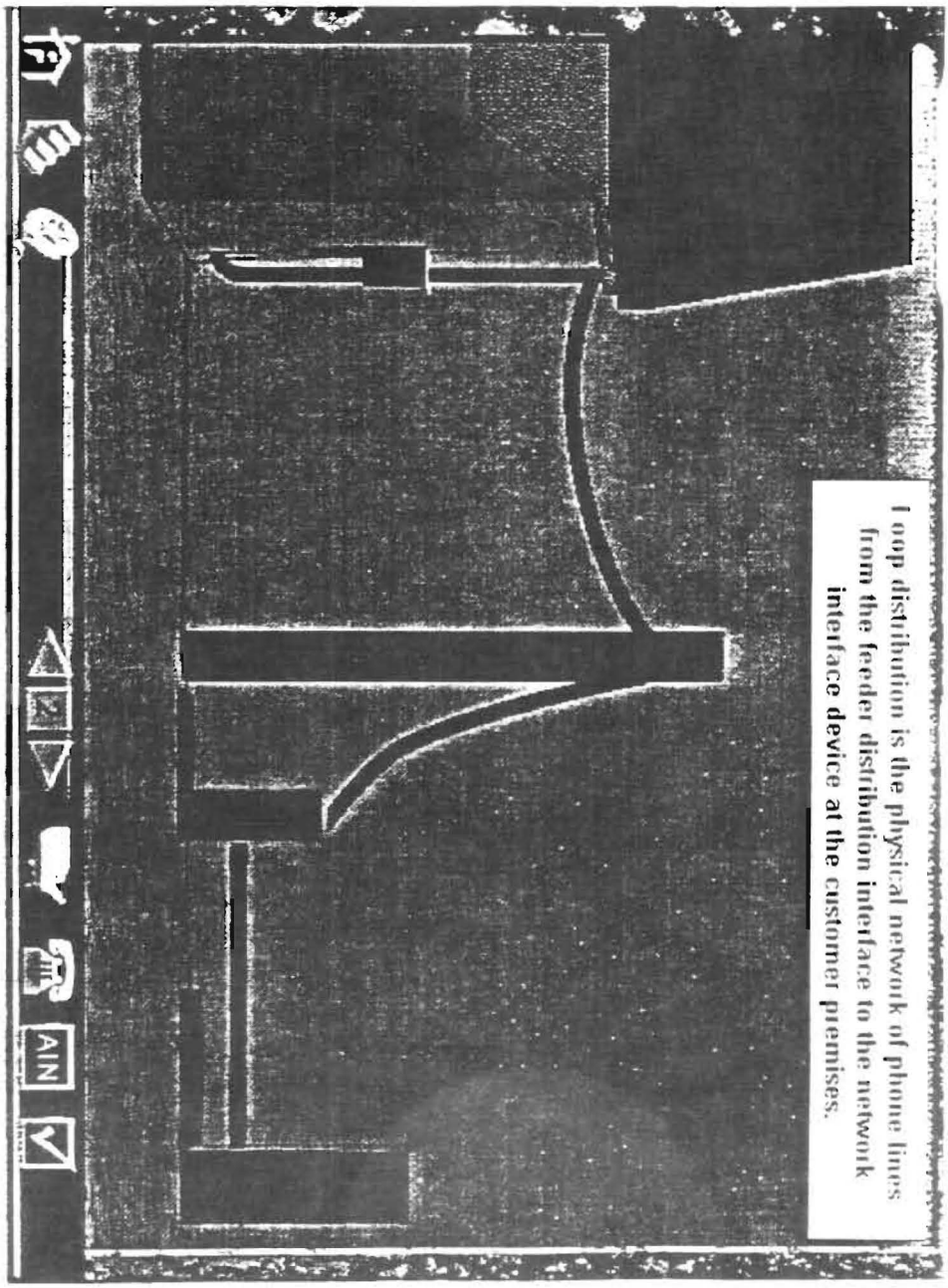

The network interface device is the demarcation point at which the local telephone company's network connects to the wiring inside the customers premises. It sits at the end of the line connecting the customer's premises to the central office.


This device also provides the protective ground connection for terminating distribution wires at the customer premises, which is required to provide protection from lightning and to meet appropriate electrical codes.
AIN

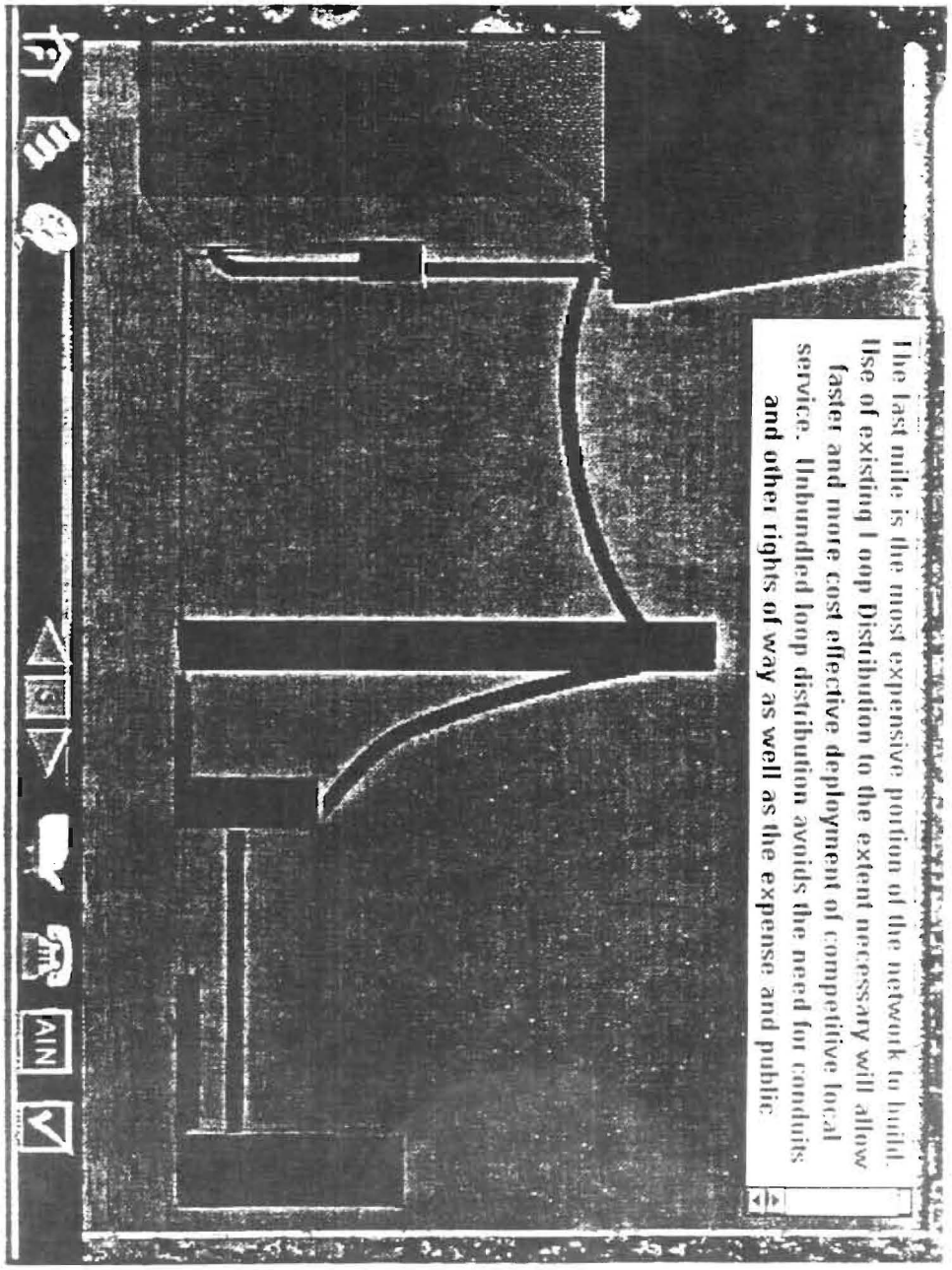



Loop Distribution
Competitive Applications
Functionality
AIN

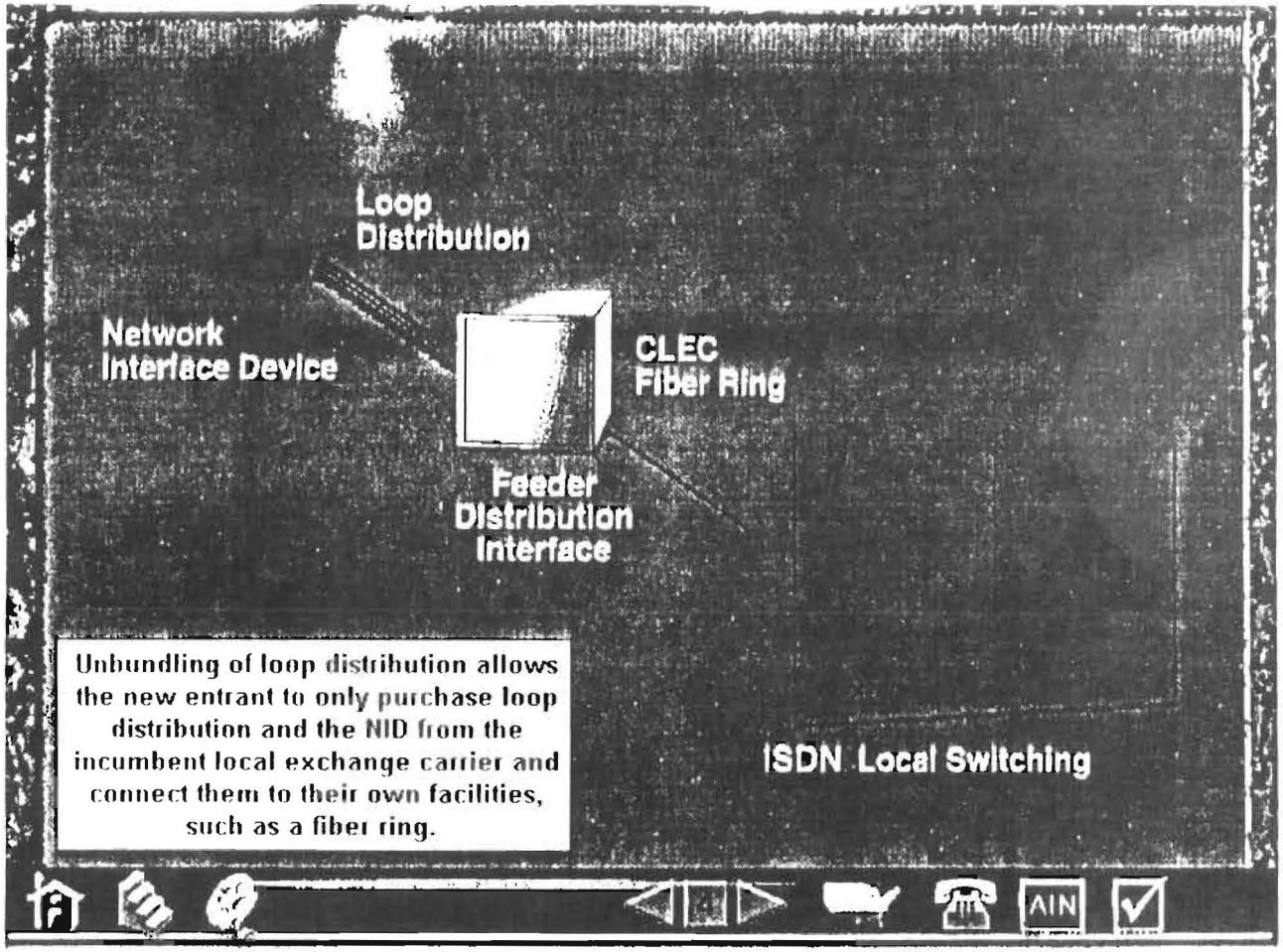

Loop Distribution

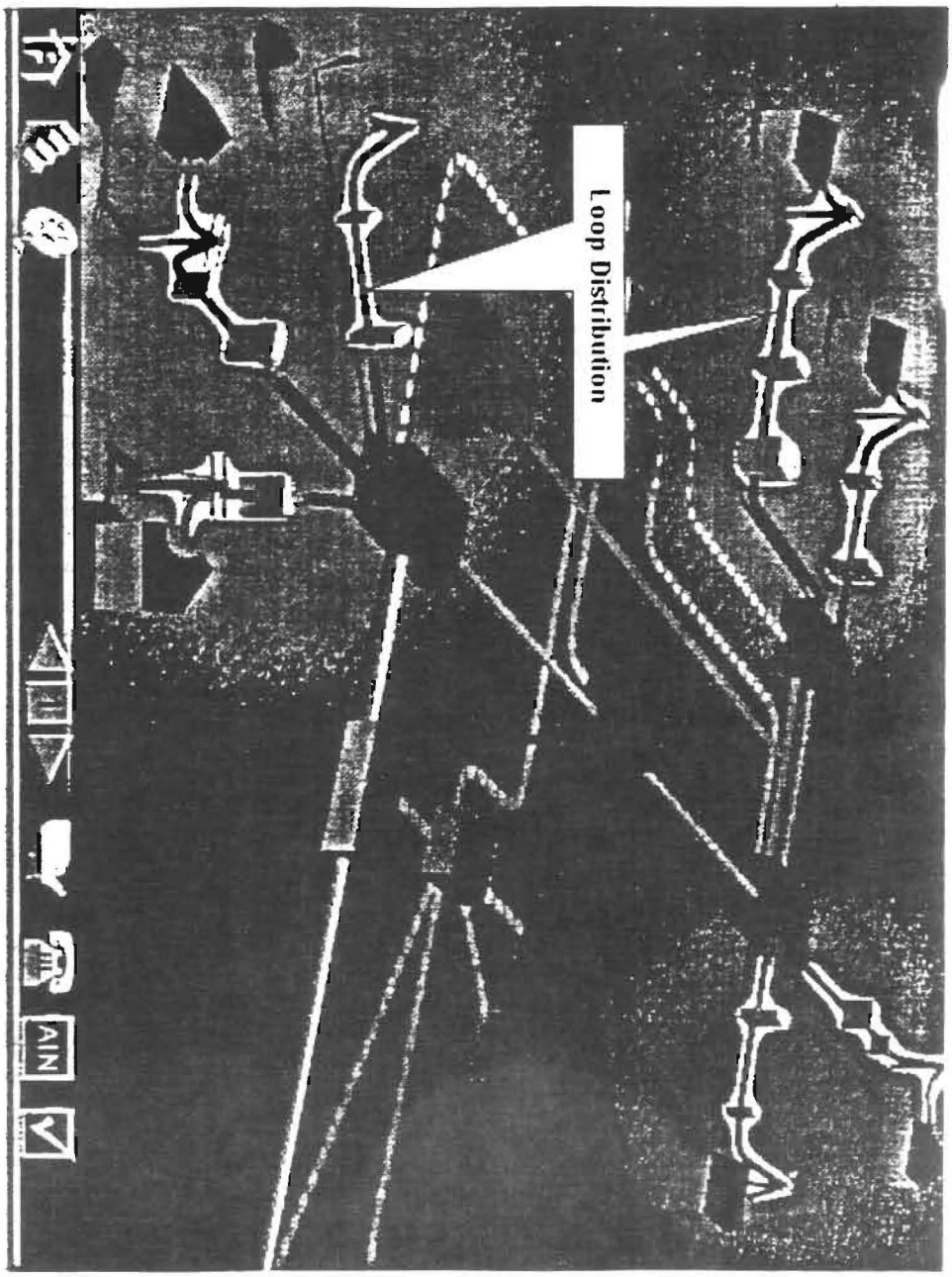


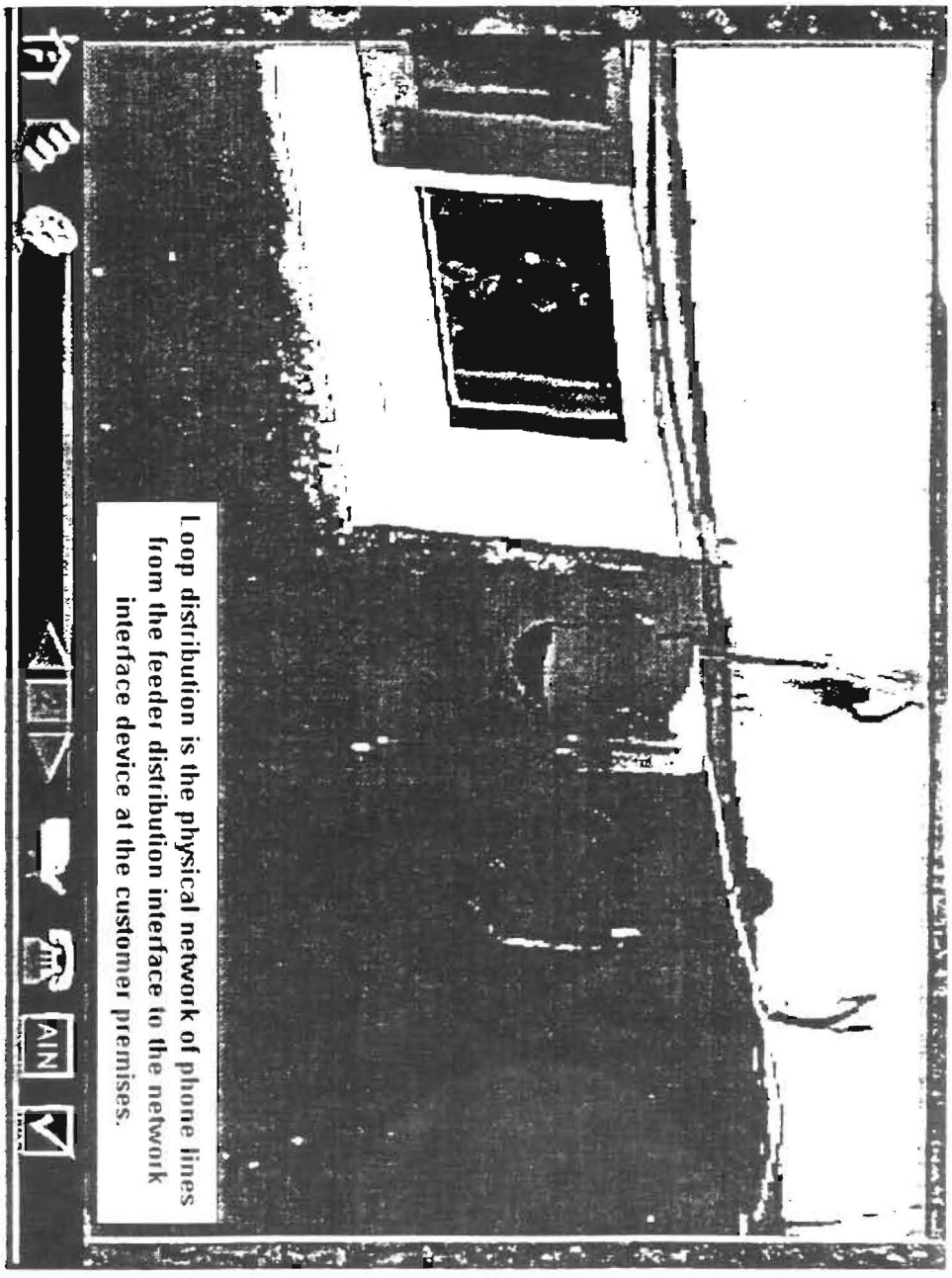
Loop distribution is the physical network of phone lines from the feeder distribution interface to the network interface device at the customer premises.

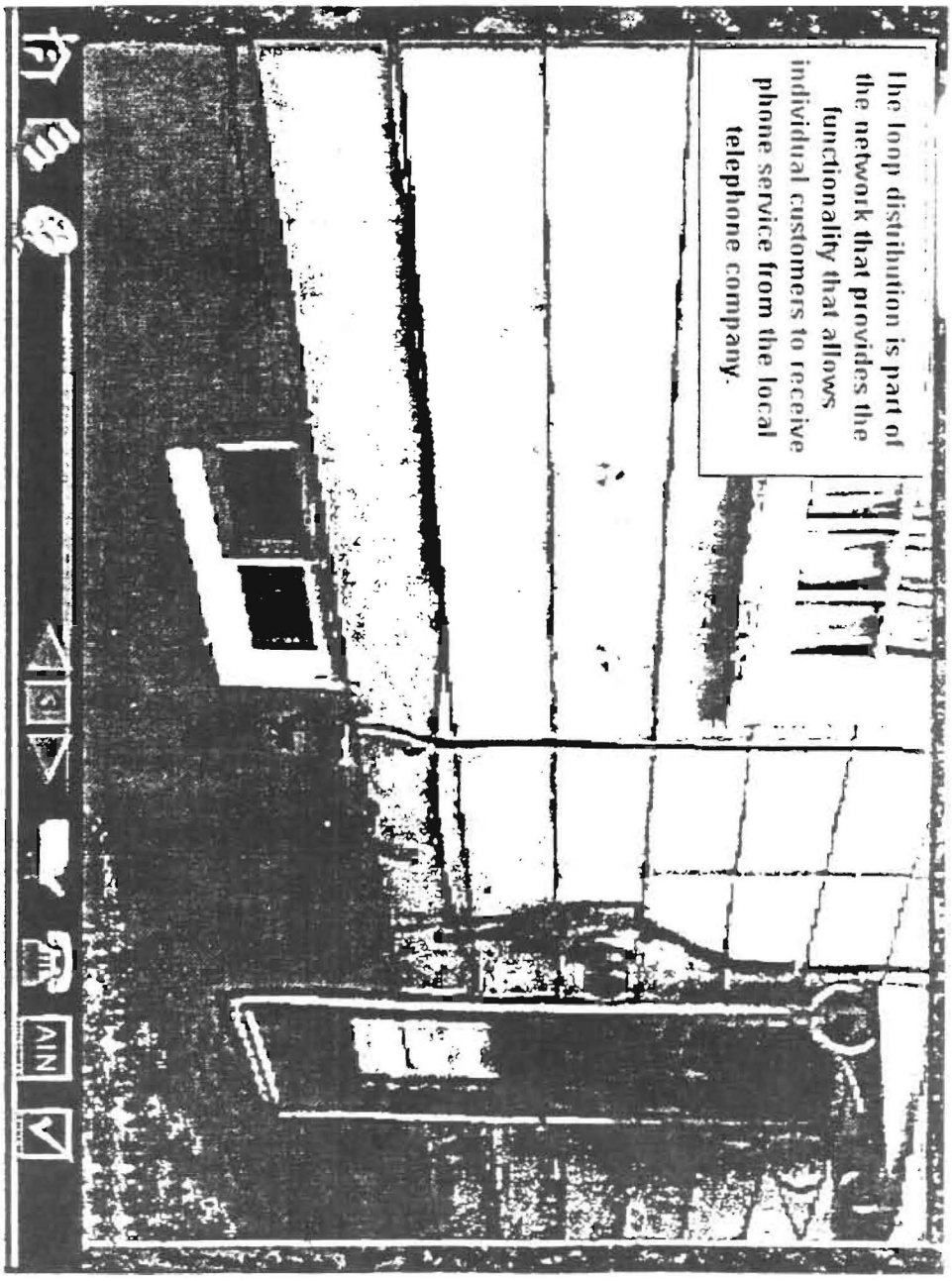

The last mile is the most expensive portion of the network to build. Use of existing Loop Distribution to the extent necessary will allow faster and more cost effective deployment of competitive local service. Unbundled loop distribution avoids the need for conduits and other rights of way as well as the expense and public
AIN

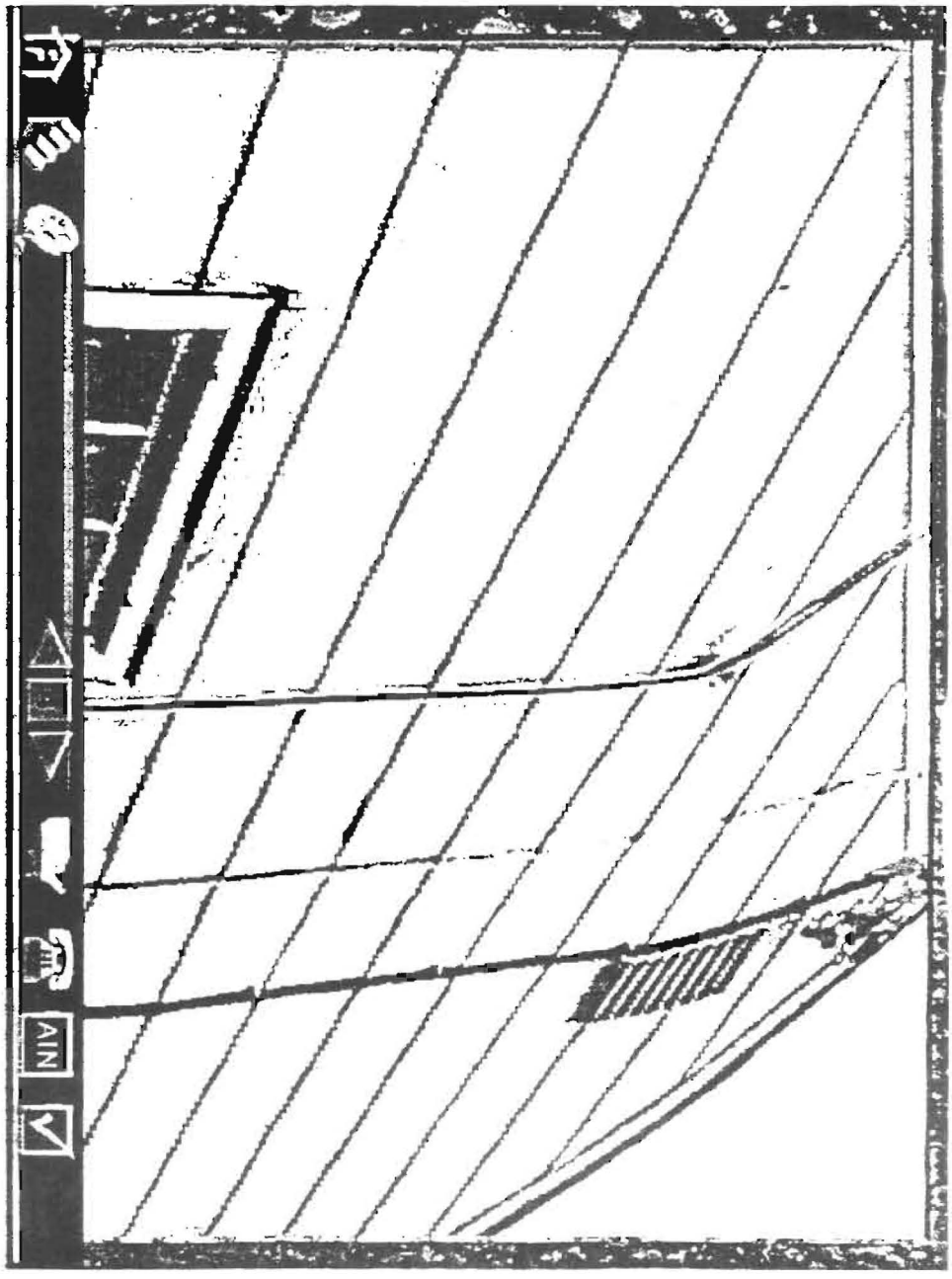
FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 100 OF 238




Loop Distribution
AIN


Loop distribution is the physical network of phone lines from the feeder distribution interface to the network interface device at the customer premises.
AIN


The loop distribution is part of the network that provides the functionality that allows individual customers to receive phone service from the local telephone company.
AIN


AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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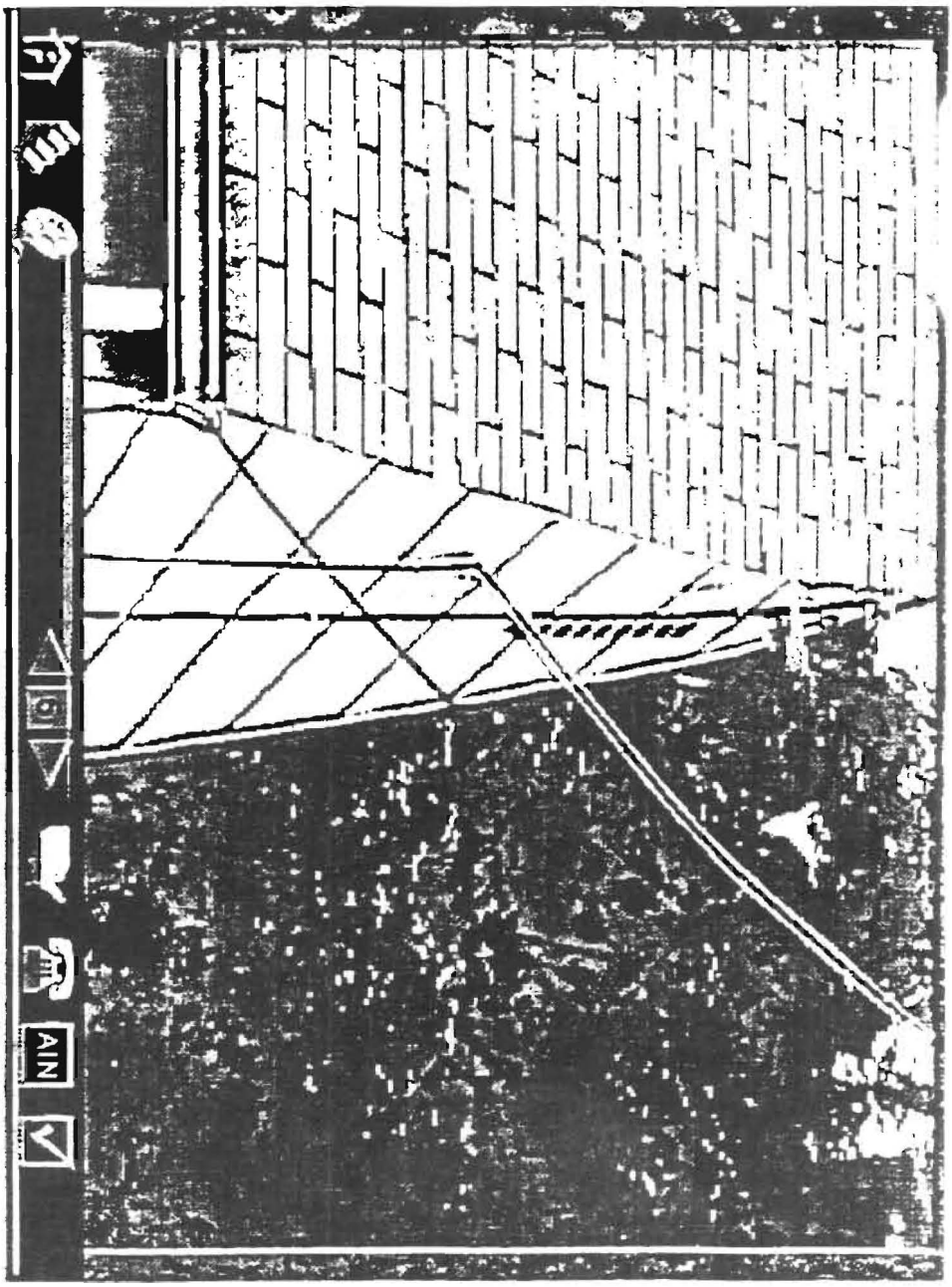

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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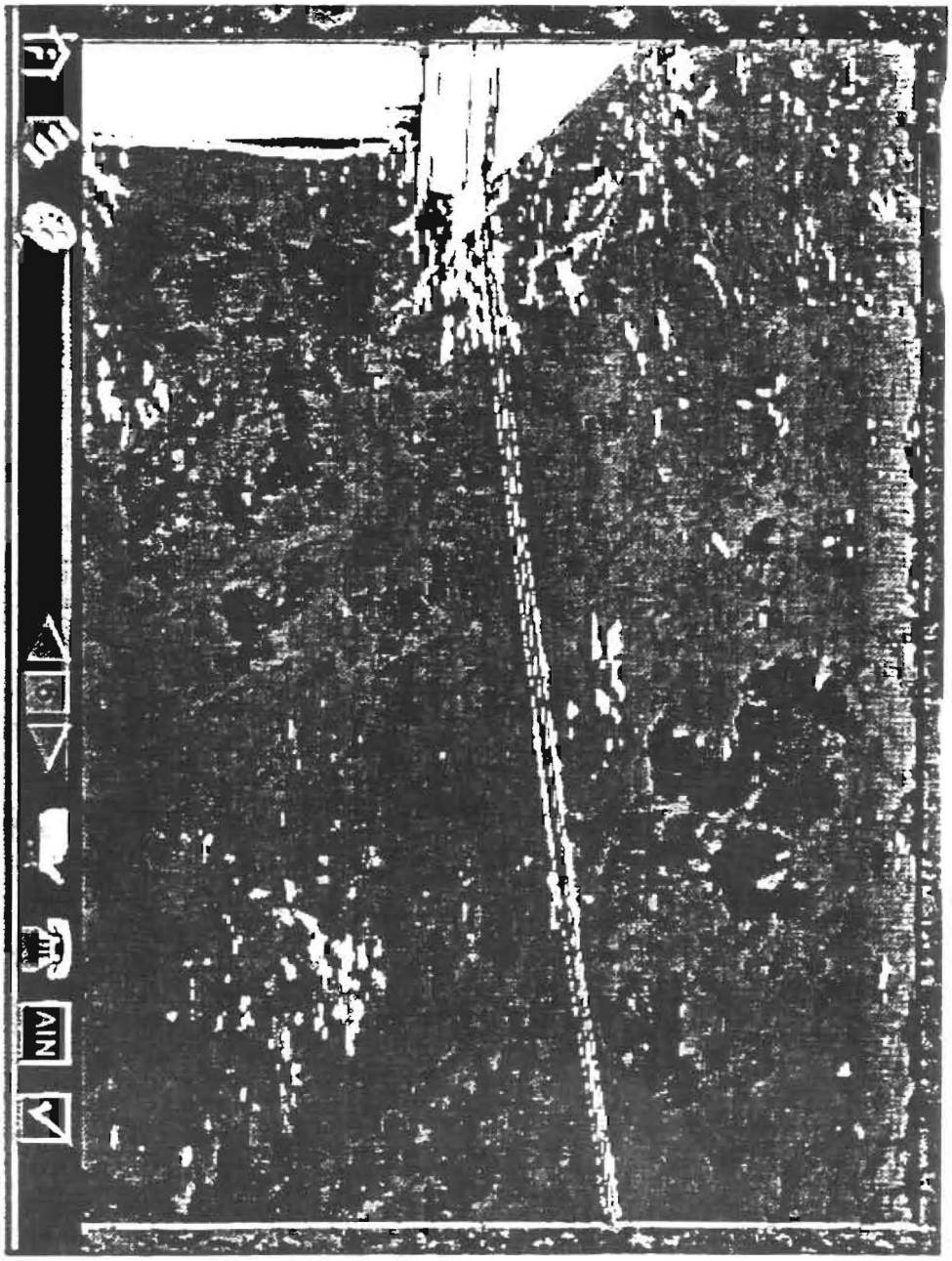

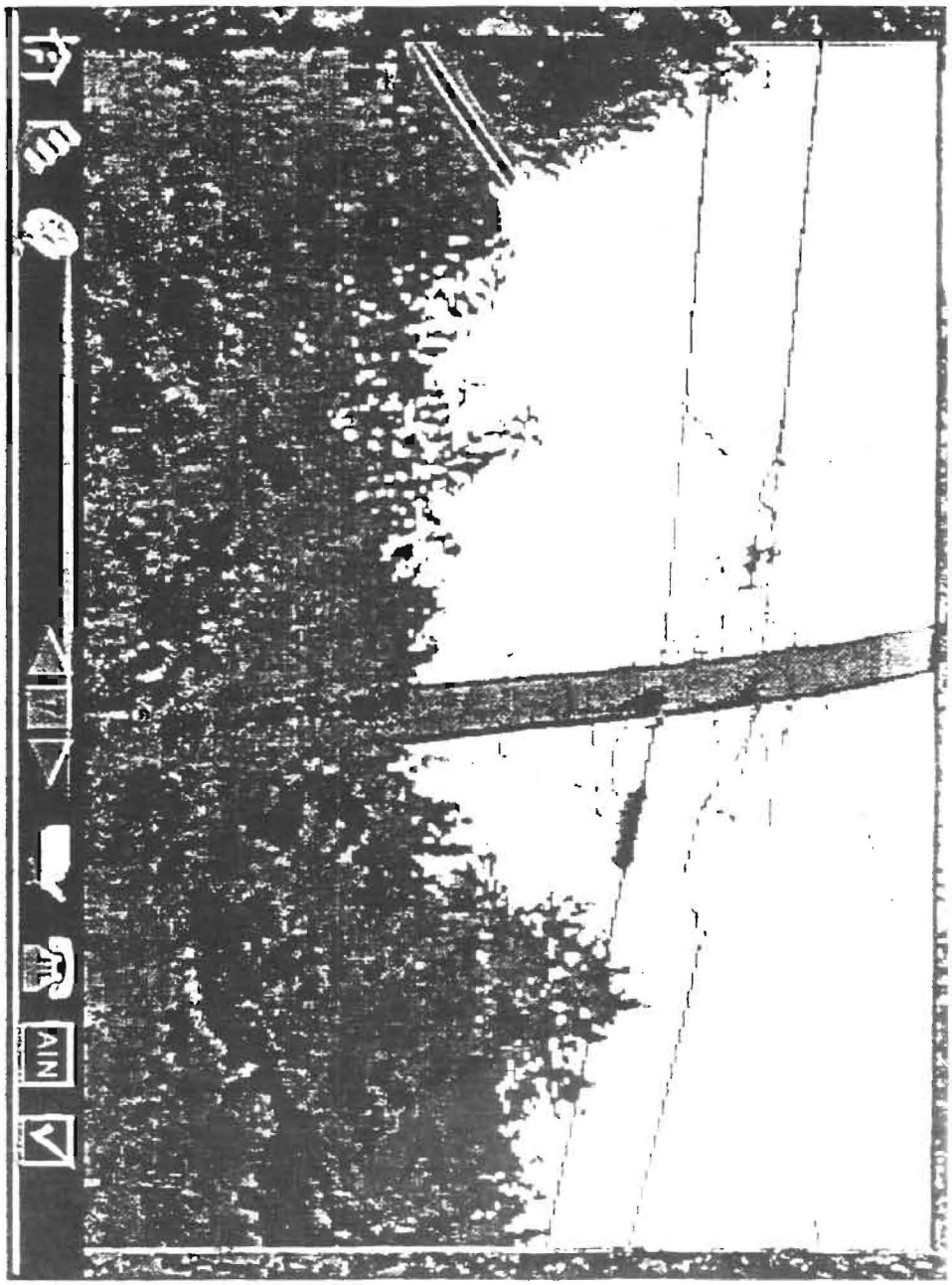

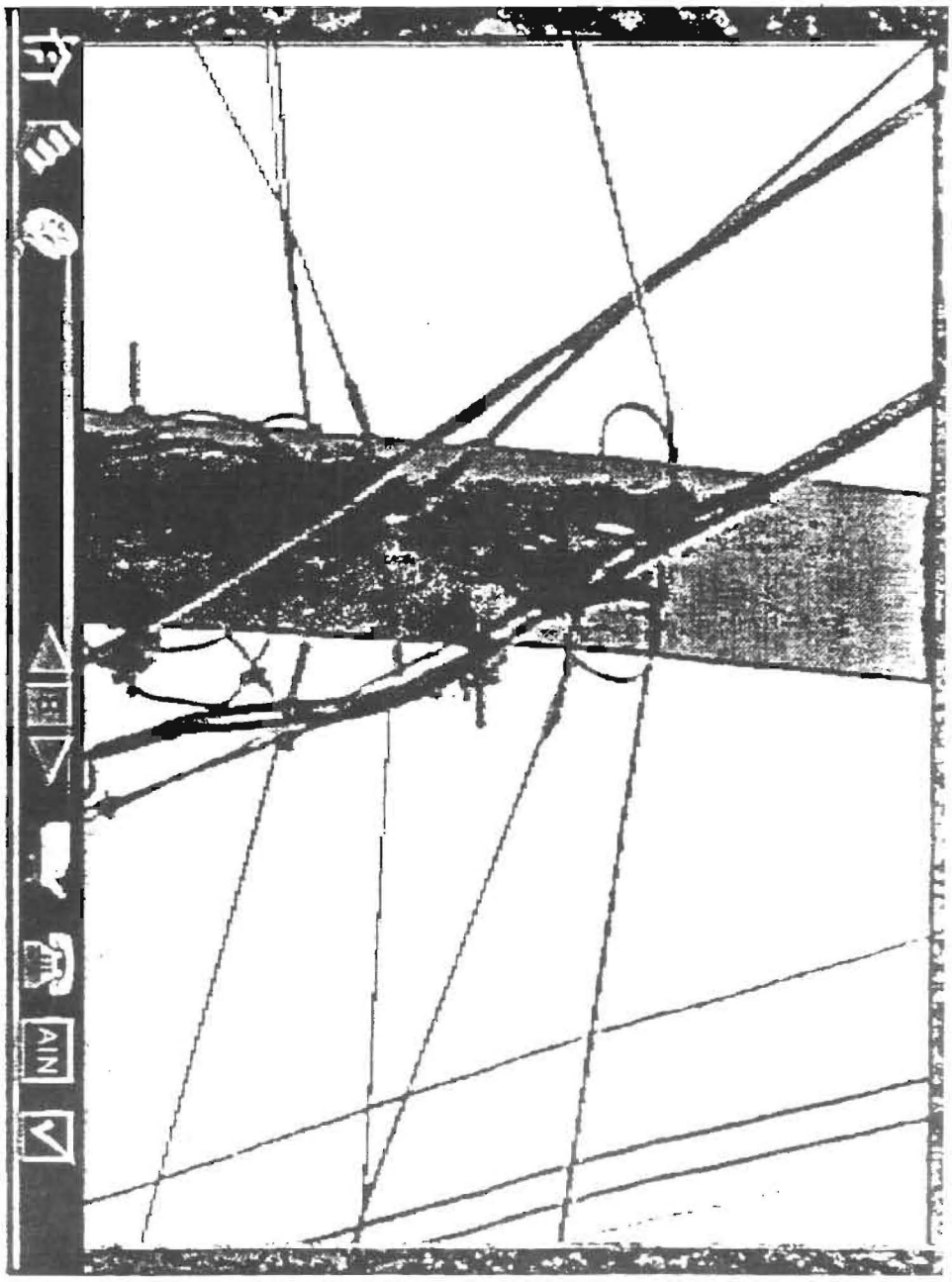
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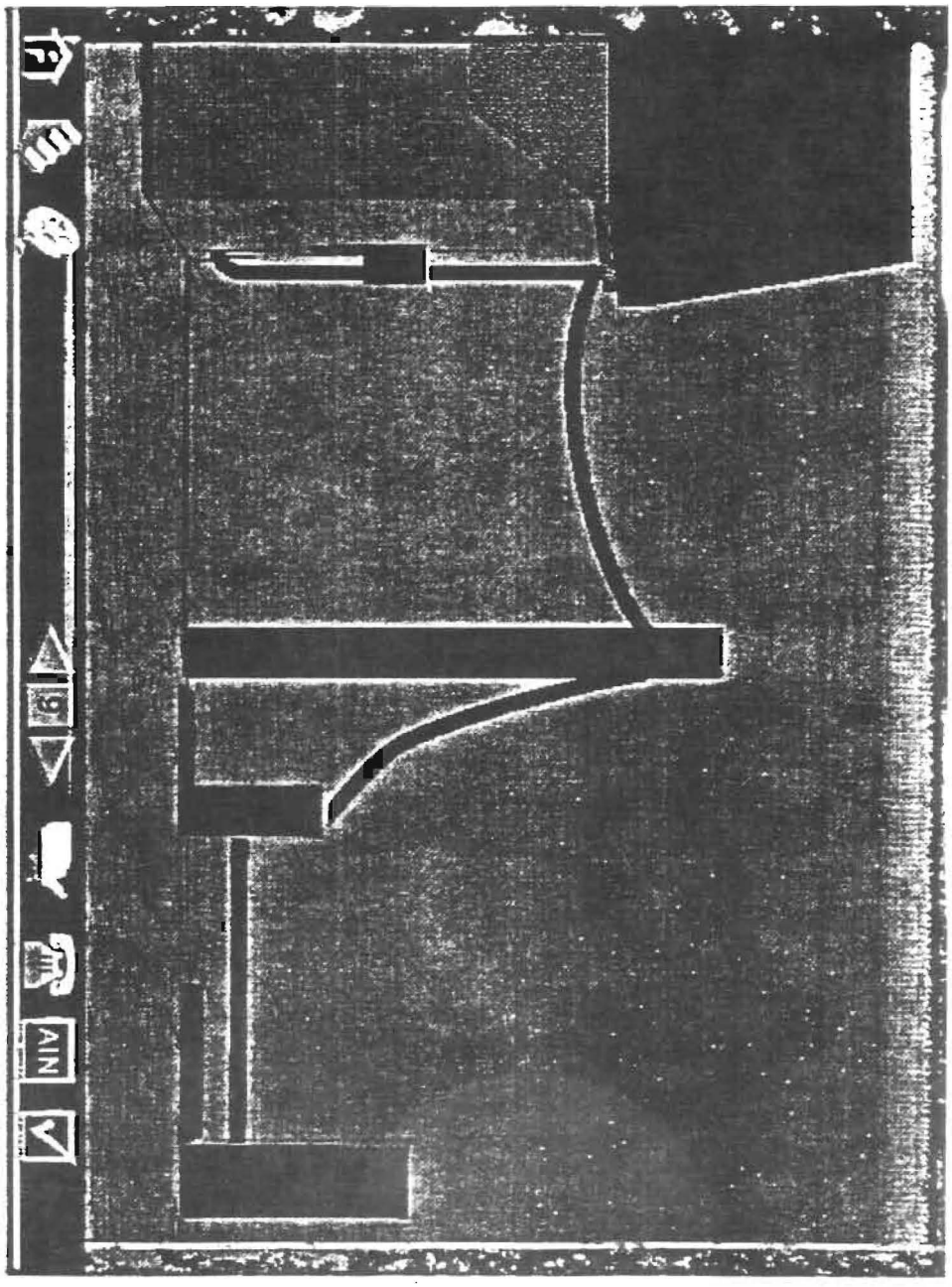
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FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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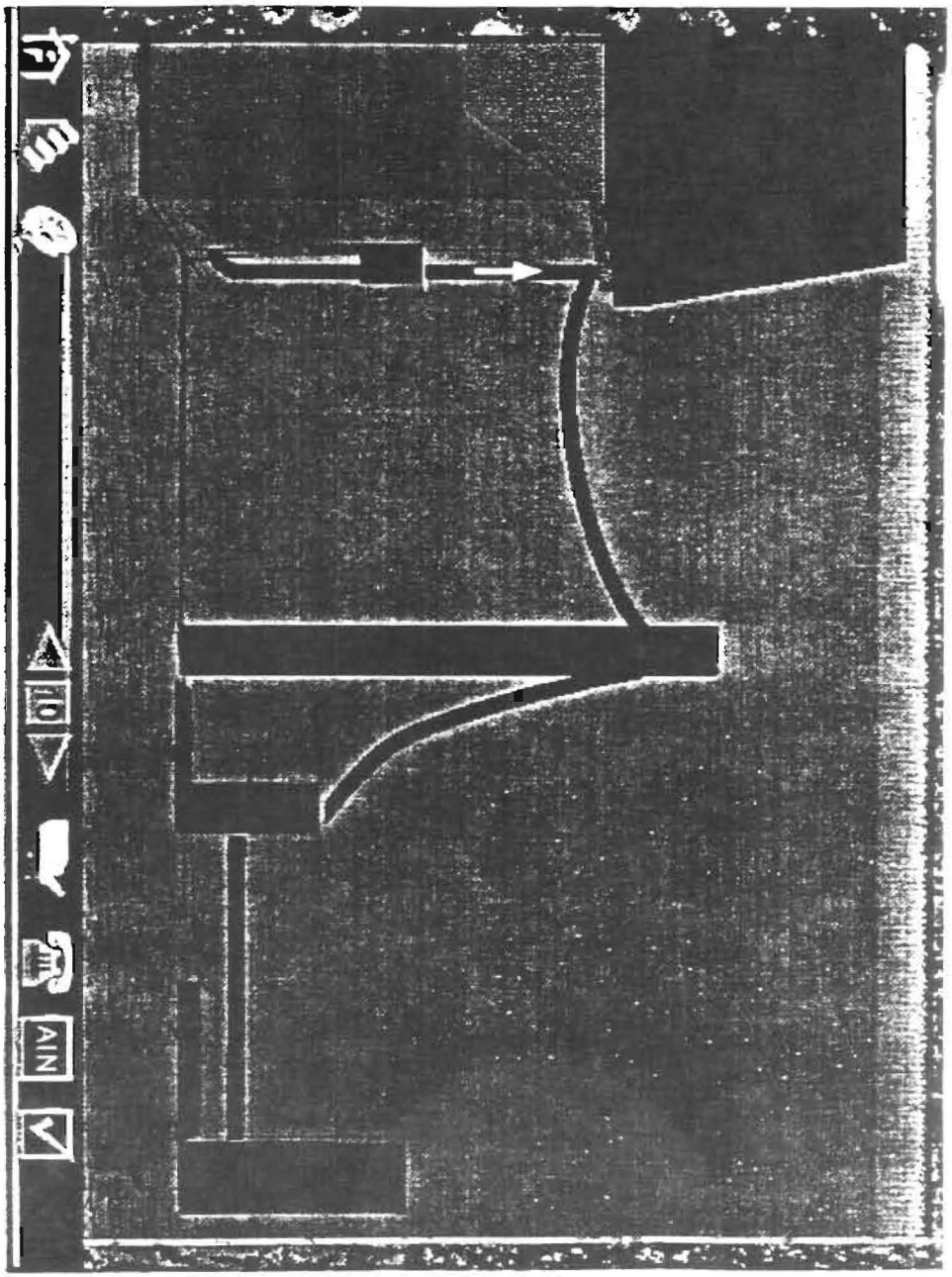
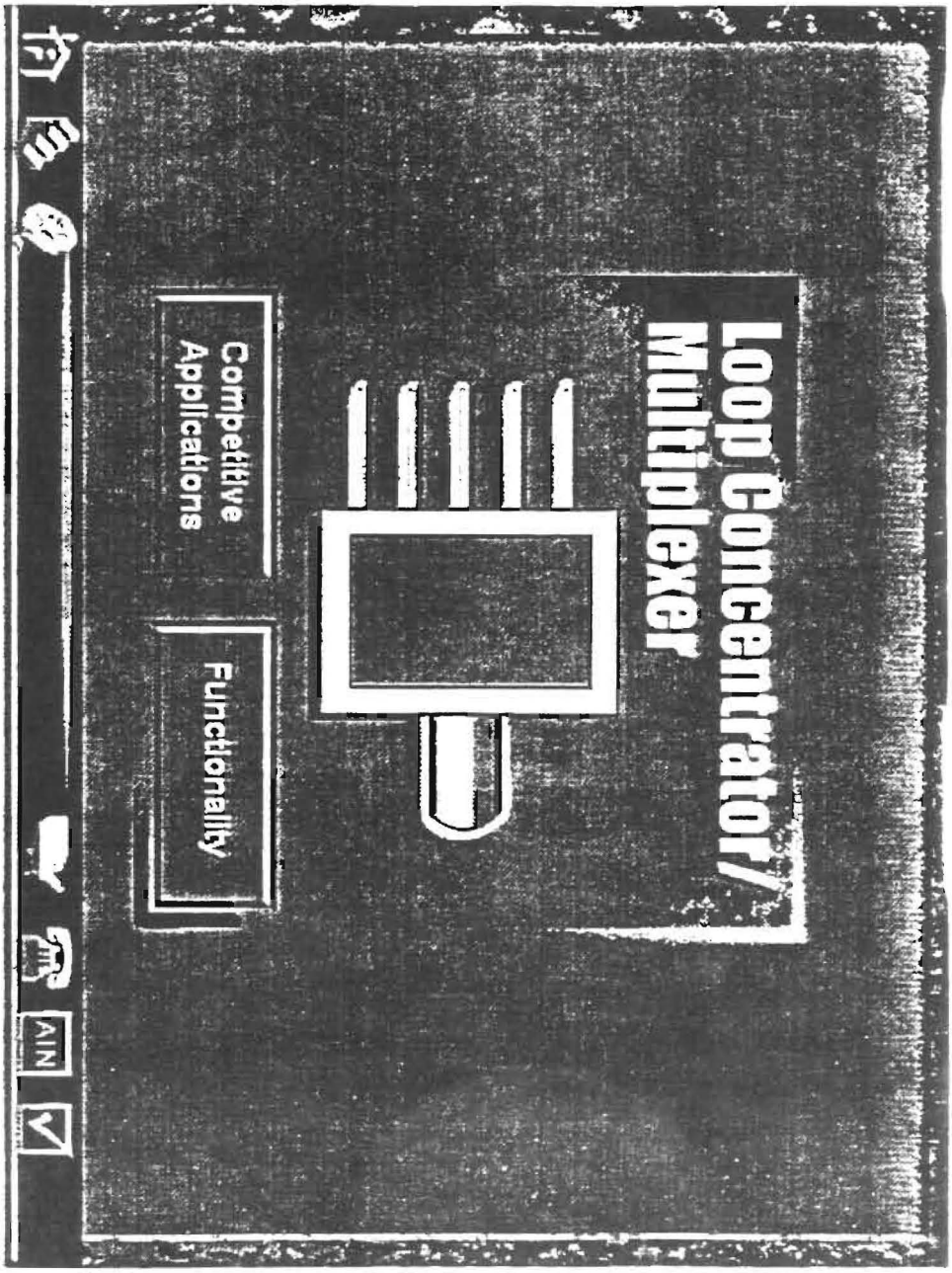
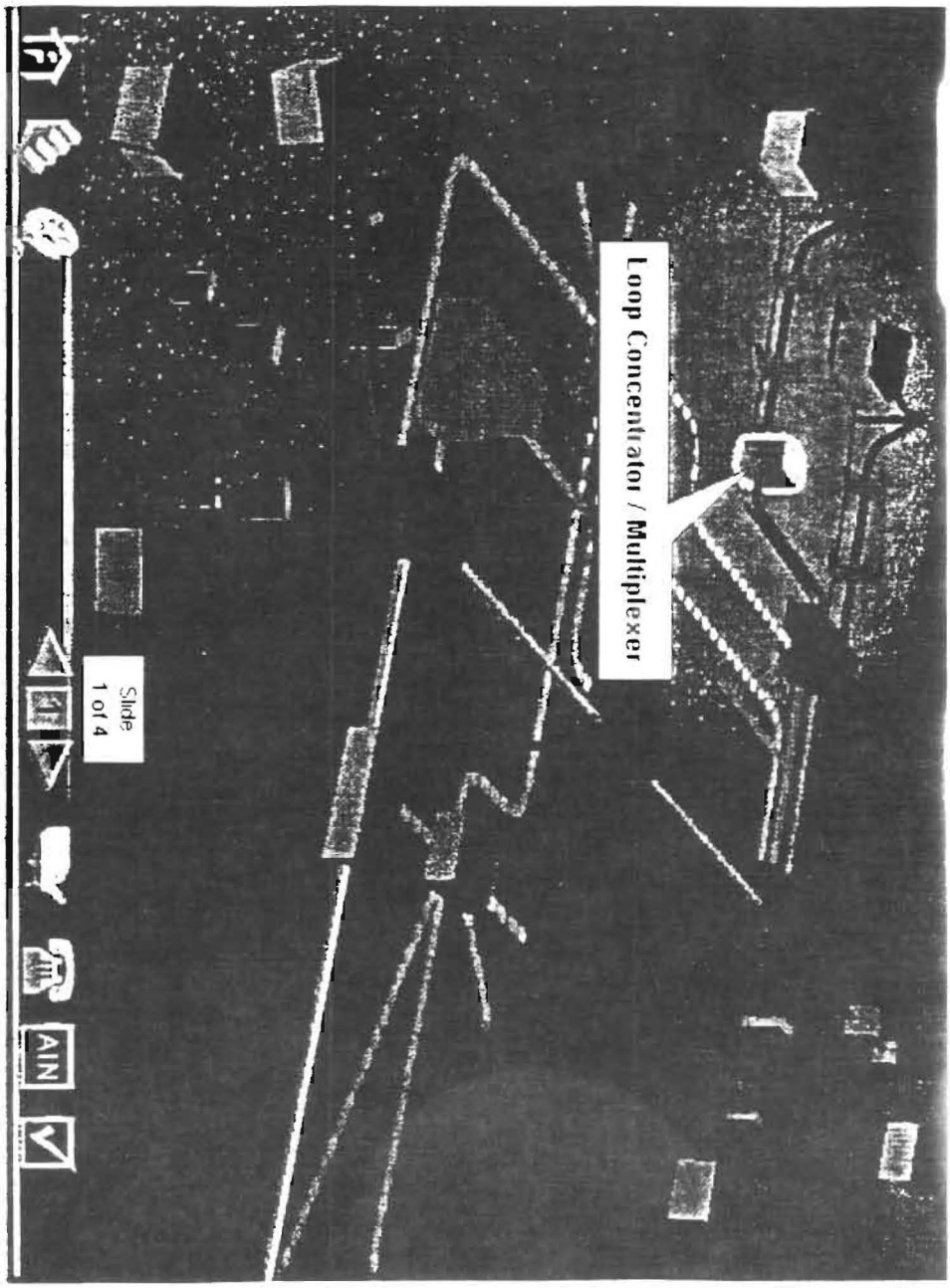
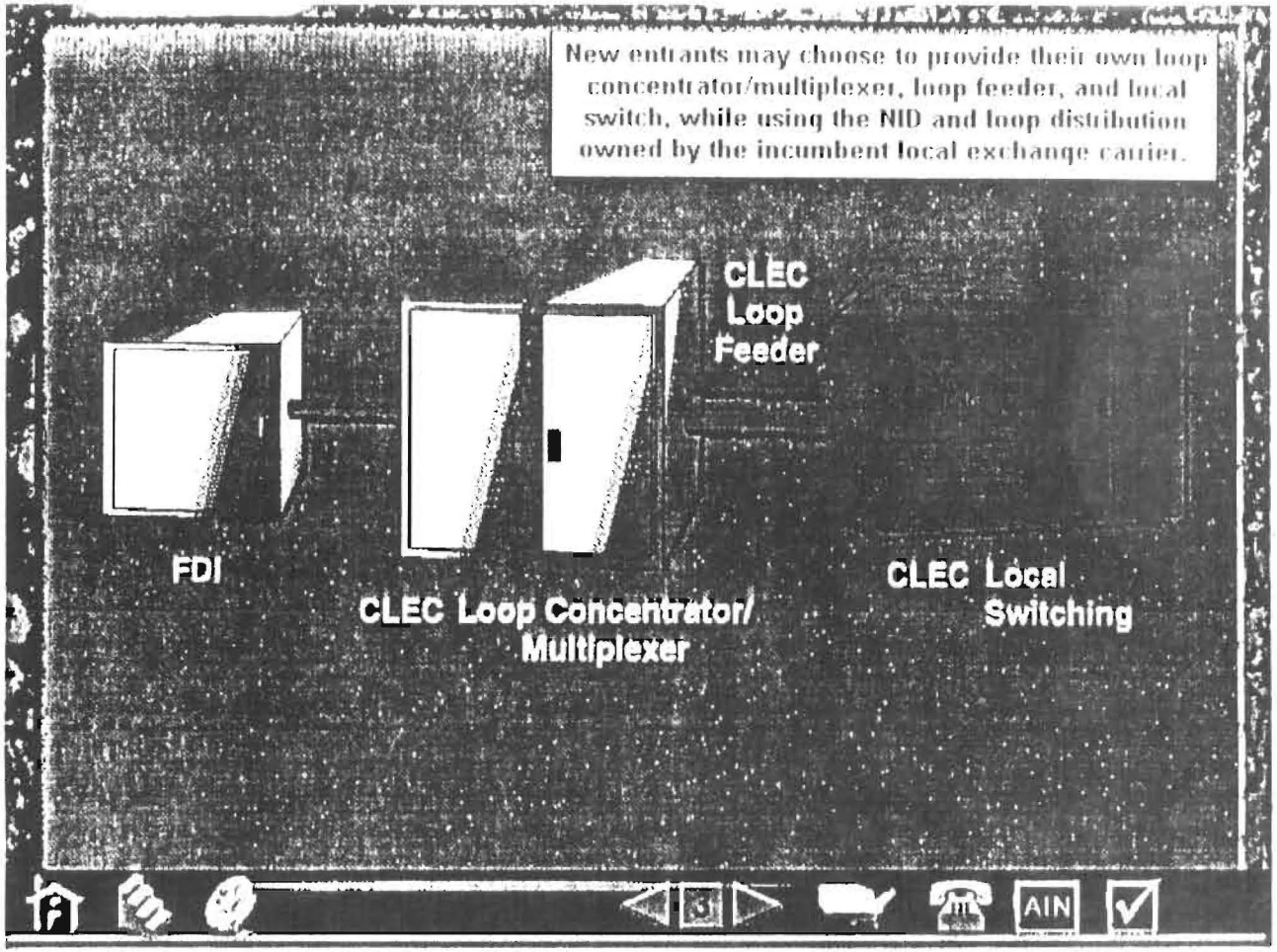



Loop Concentrator/ Multiplexer
Competitive Applications
Functionality
AIN


Loop Concentrator / Multiplexer
Slide
1 of 4
AIN

Loop concentrator/multiplexer provides the functionality that assists in the transmission of calls between the central office and the customer's location. It converts the analog signals coming in from the customers to digital signals that are sent across the network. The loop
Loop Feeder
Loop Distribution
Loop Concentrator/Multiplexer
AIN


New entrants may choose to provide their own loop concentrator/multiplexer, loop feeder, and local switch, while using the NID and loop distribution owned by the incumbent local exchange carrier.
CLEC Loop Feeder
FDI
CLEC Loop Concentrator/ Multiplexer
CLEC Local Switching
3
AIN

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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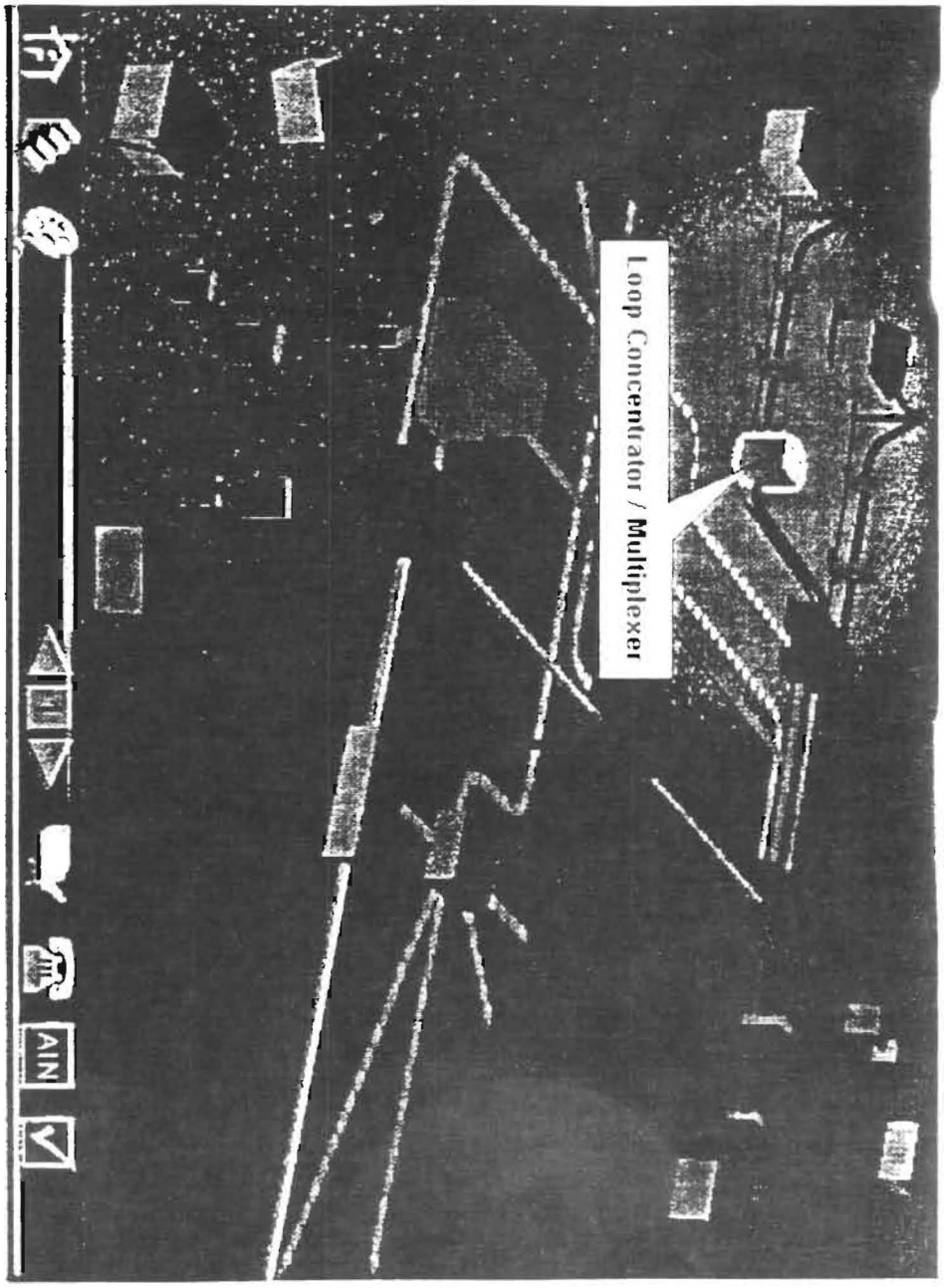
Loop Concentrator / Multiplexer
AIN


Soon to be a still frame
AIN

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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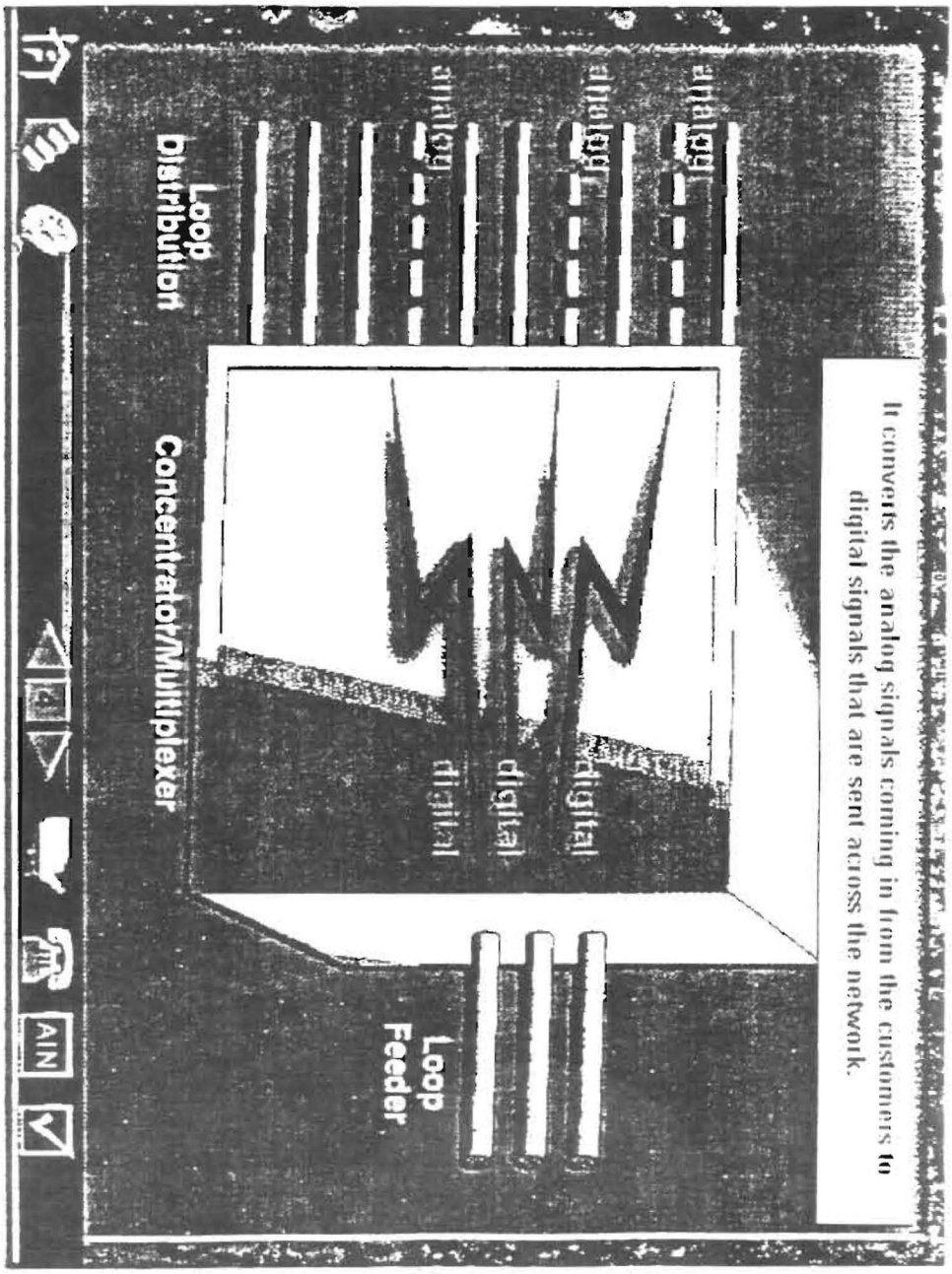
It converts the analog signals coming in from the customers to digital signals that are sent across the network.
analog
analog
analog
digital
digital
digital
Loop Feeder
Concentrator/Multiplexer
Loop distribution
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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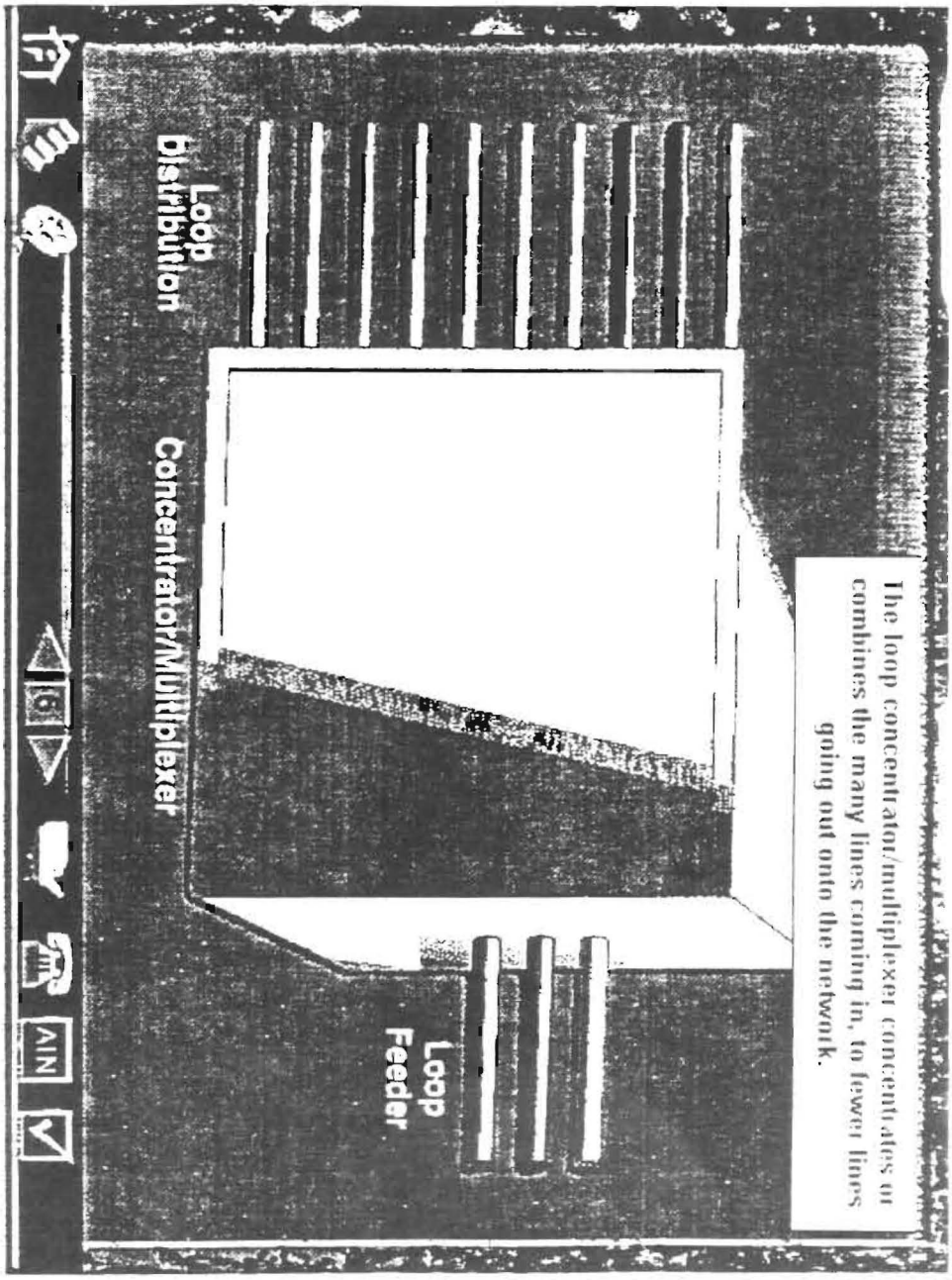
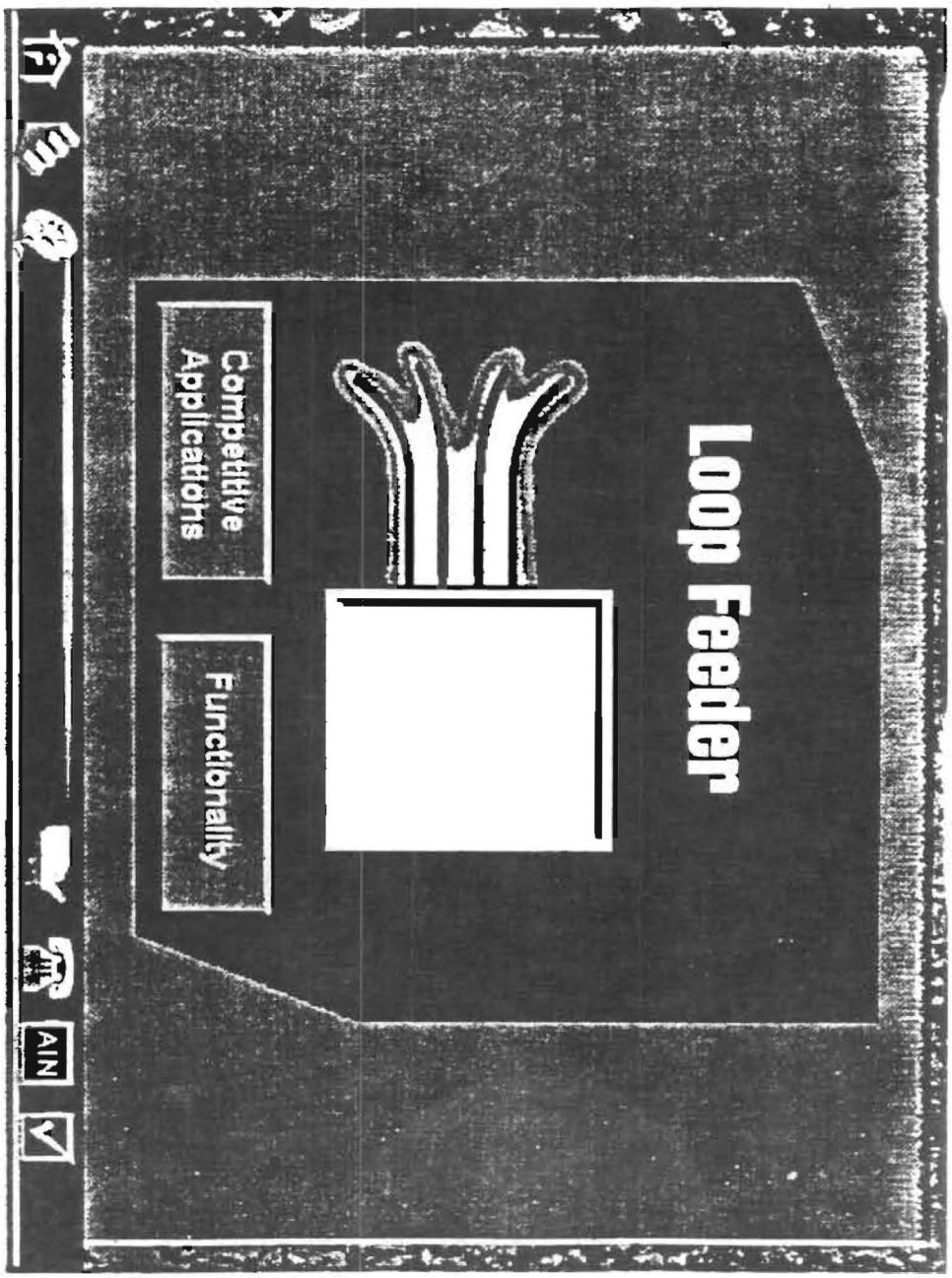
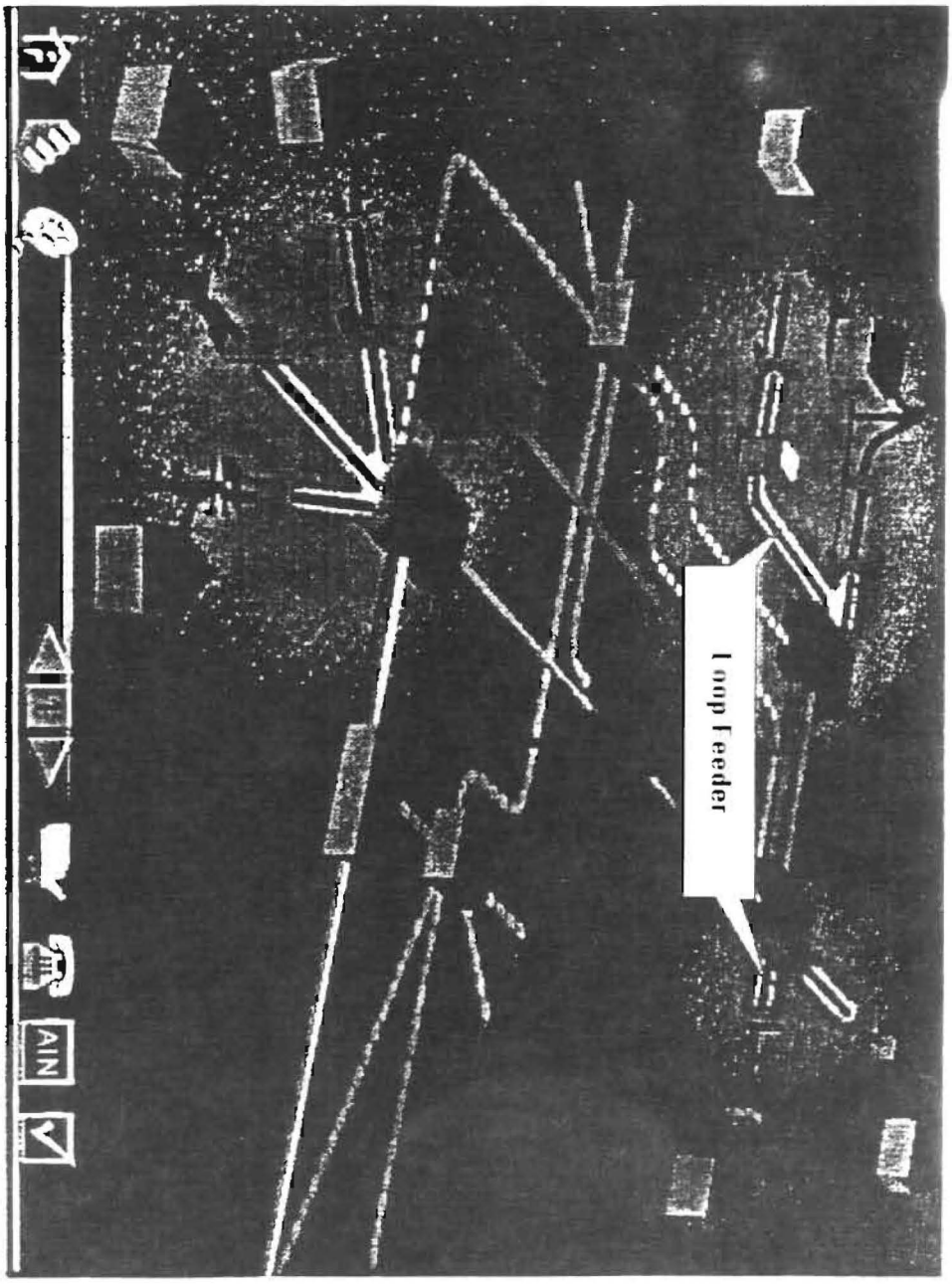
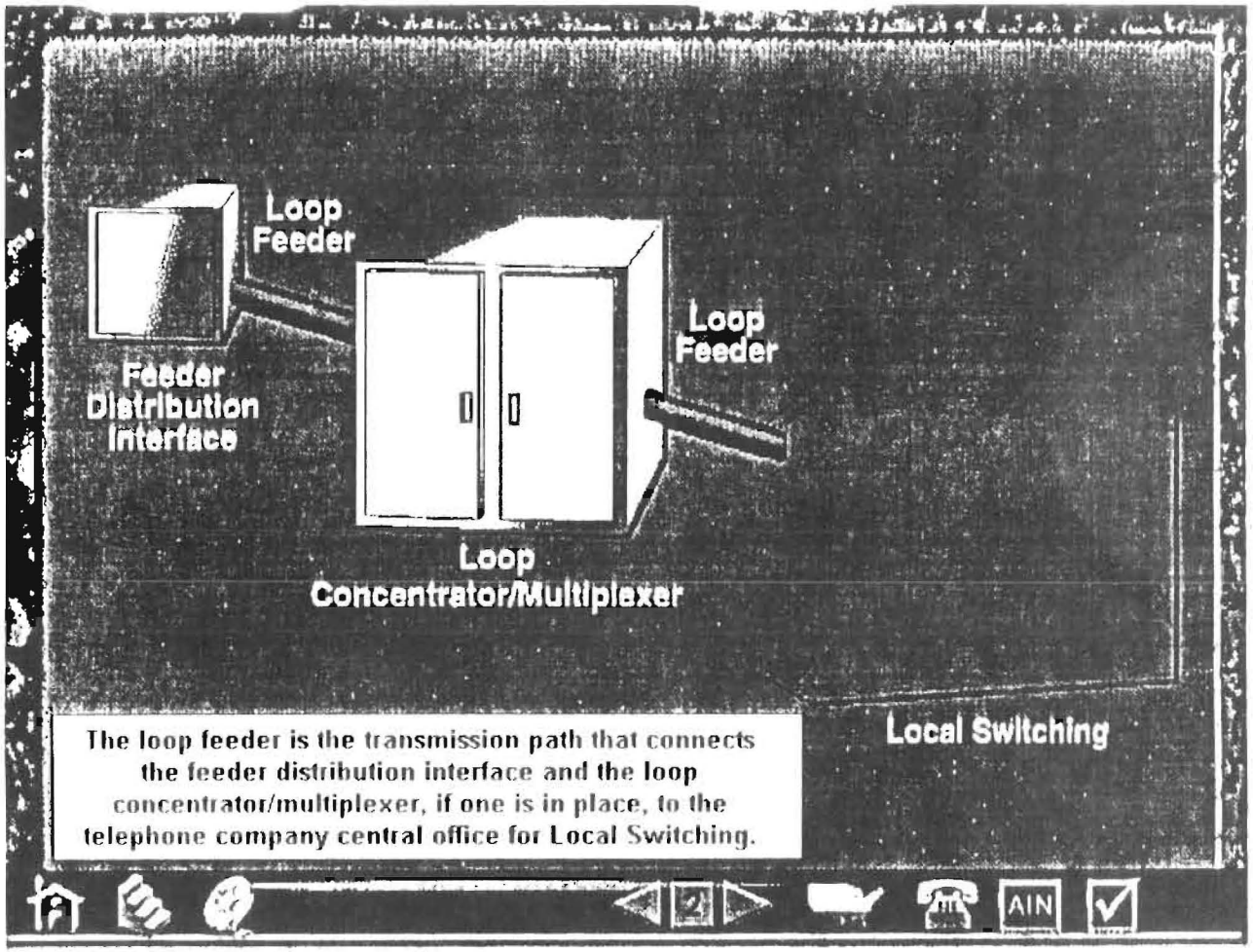


In order to transmit an even larger volume of calls, in addition to combining lines, the loop concentrator/multiplexer multiplexes calls, or interspereces many calls together on a single line, to the switching office.
Loop Feeder
Loop Distribution
Concentrator/Multiplexer
AIN


Loop Feeder
Competitive Applications
Functionality
AIN


AIN
Loop Feeder


Loop Feeder
Feeder Distribution Interface
Loop Feeder
Loop Concentrator/Multiplexer
The loop feeder is the transmission path that connects the feeder distribution interface and the loop concentrator/multiplexer, if one is in place, to the telephone company central office for Local Switching.
Local Switching
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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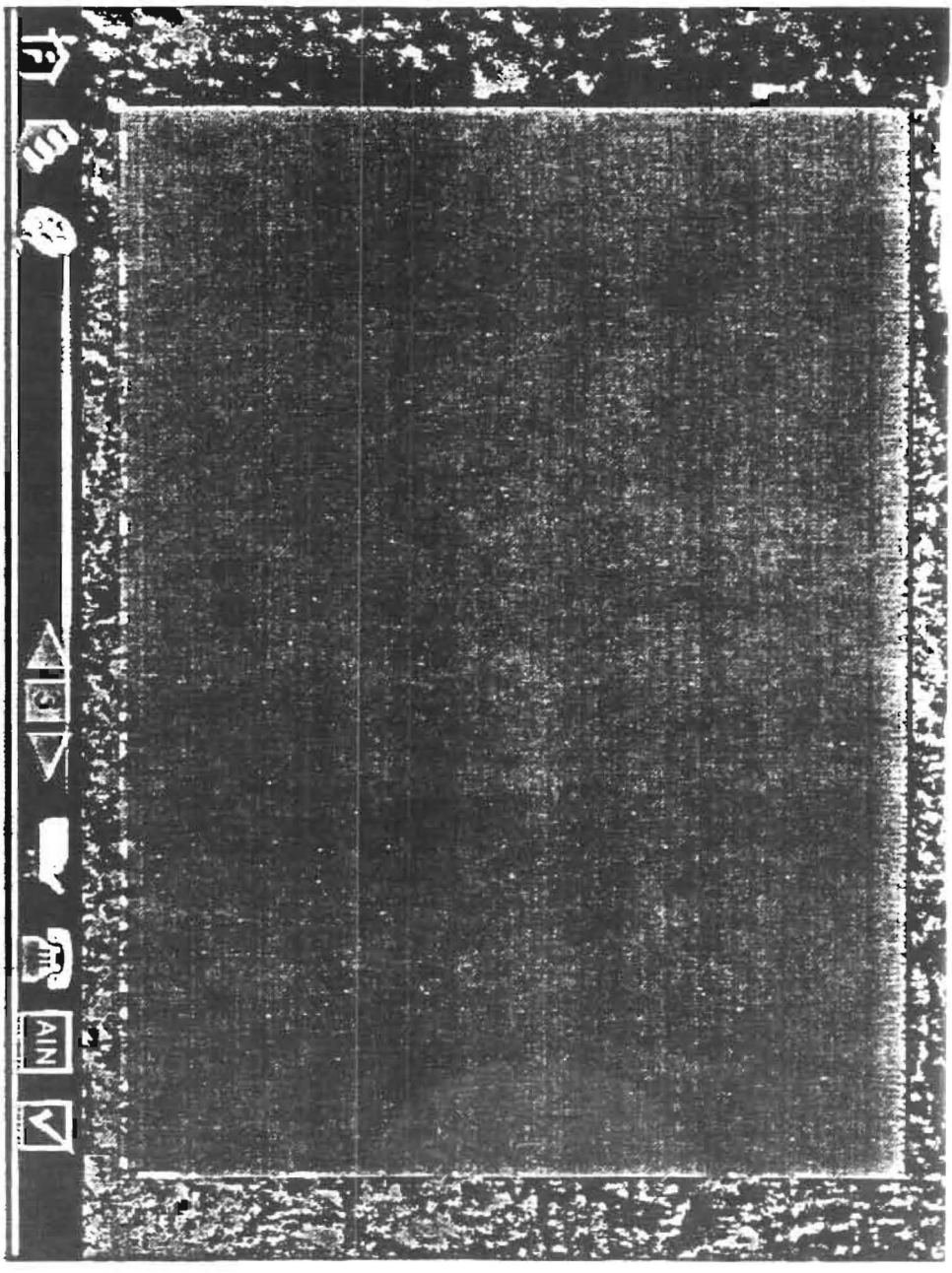

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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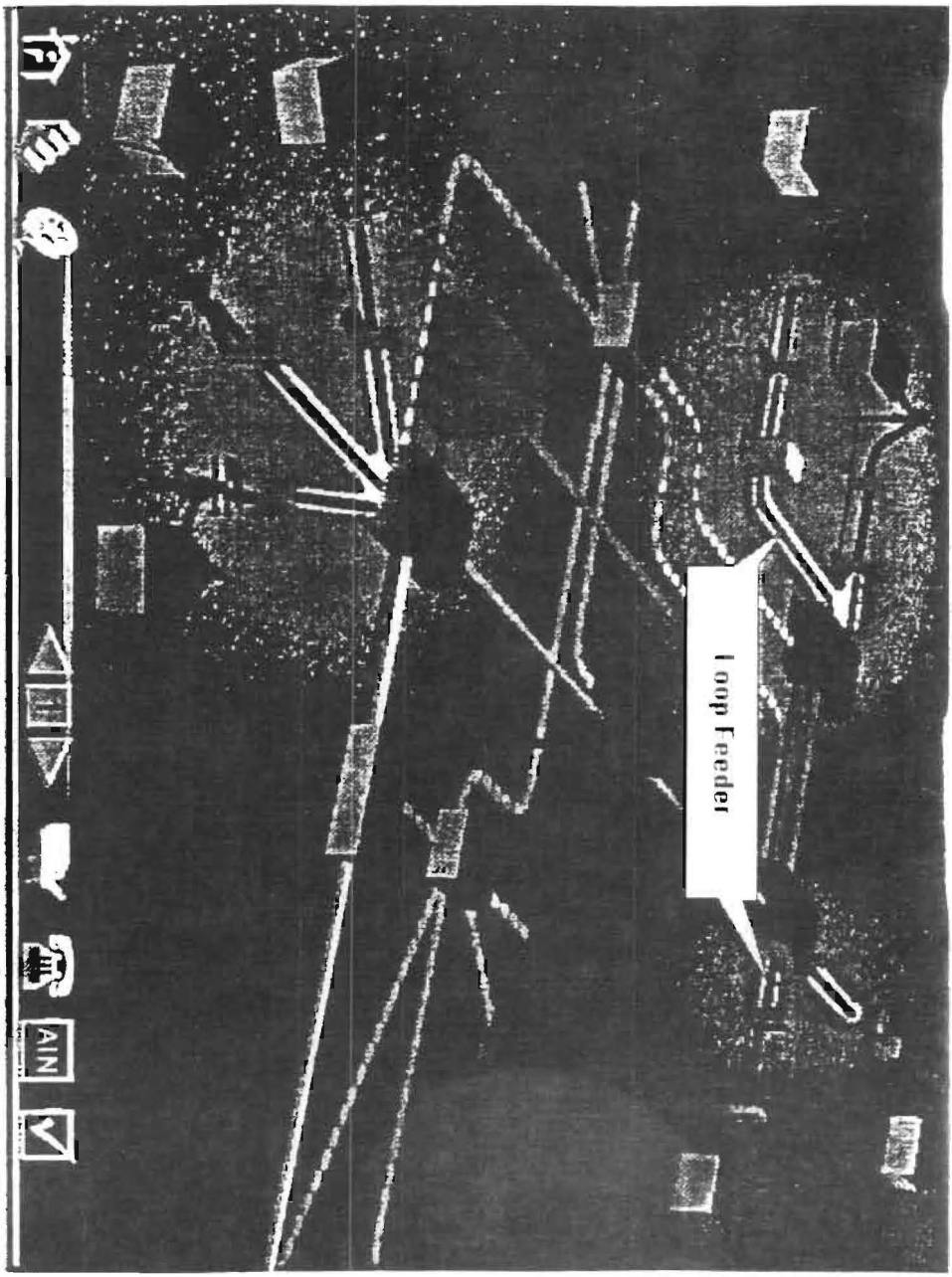
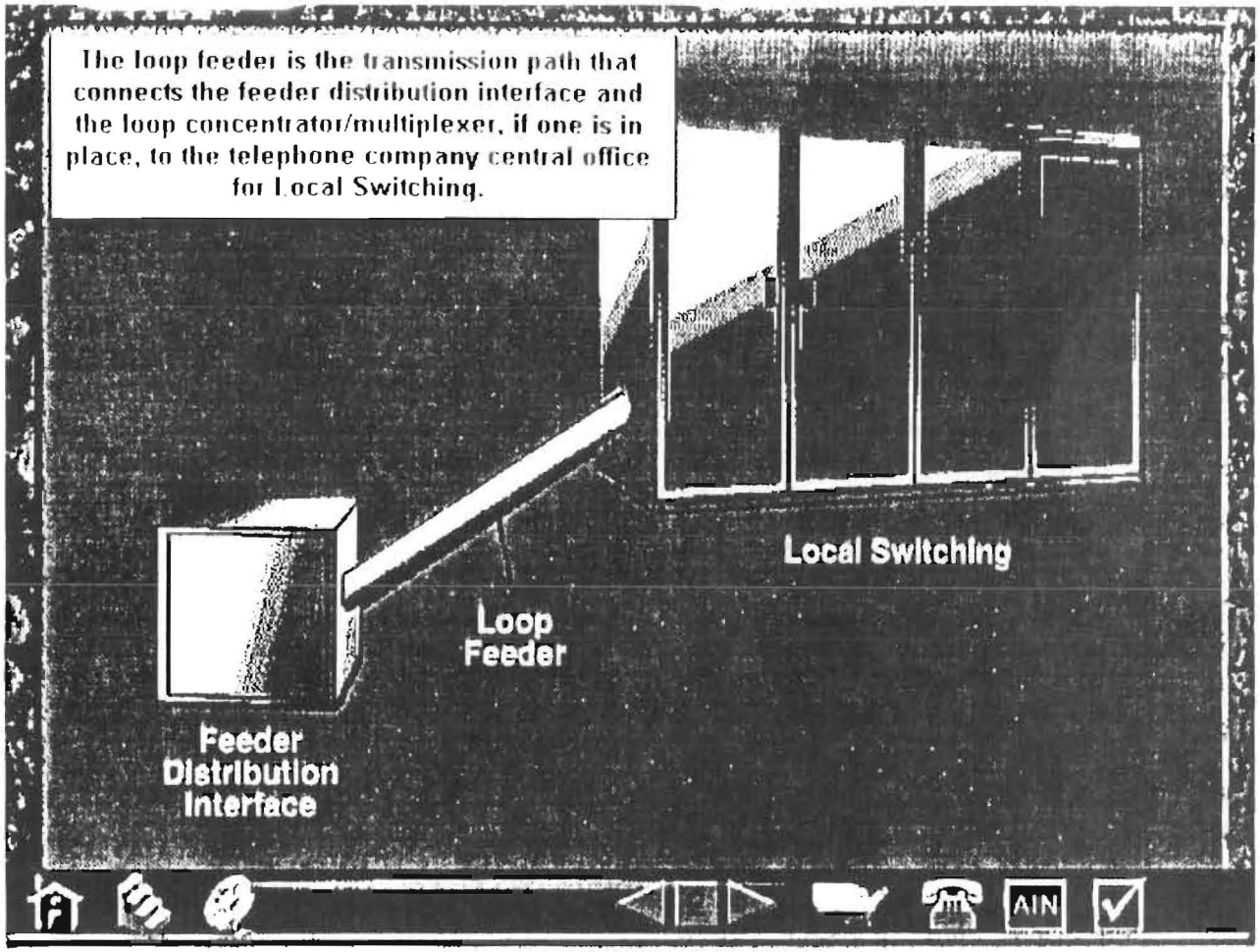

Loop Feeder
AIN


The loop feeder is the transmission path that connects the feeder distribution interface and the loop concentrator/multiplexer, if one is in place, to the telephone company central office for Local Switching.
Local Switching
Loop Feeder
Feeder Distribution Interface
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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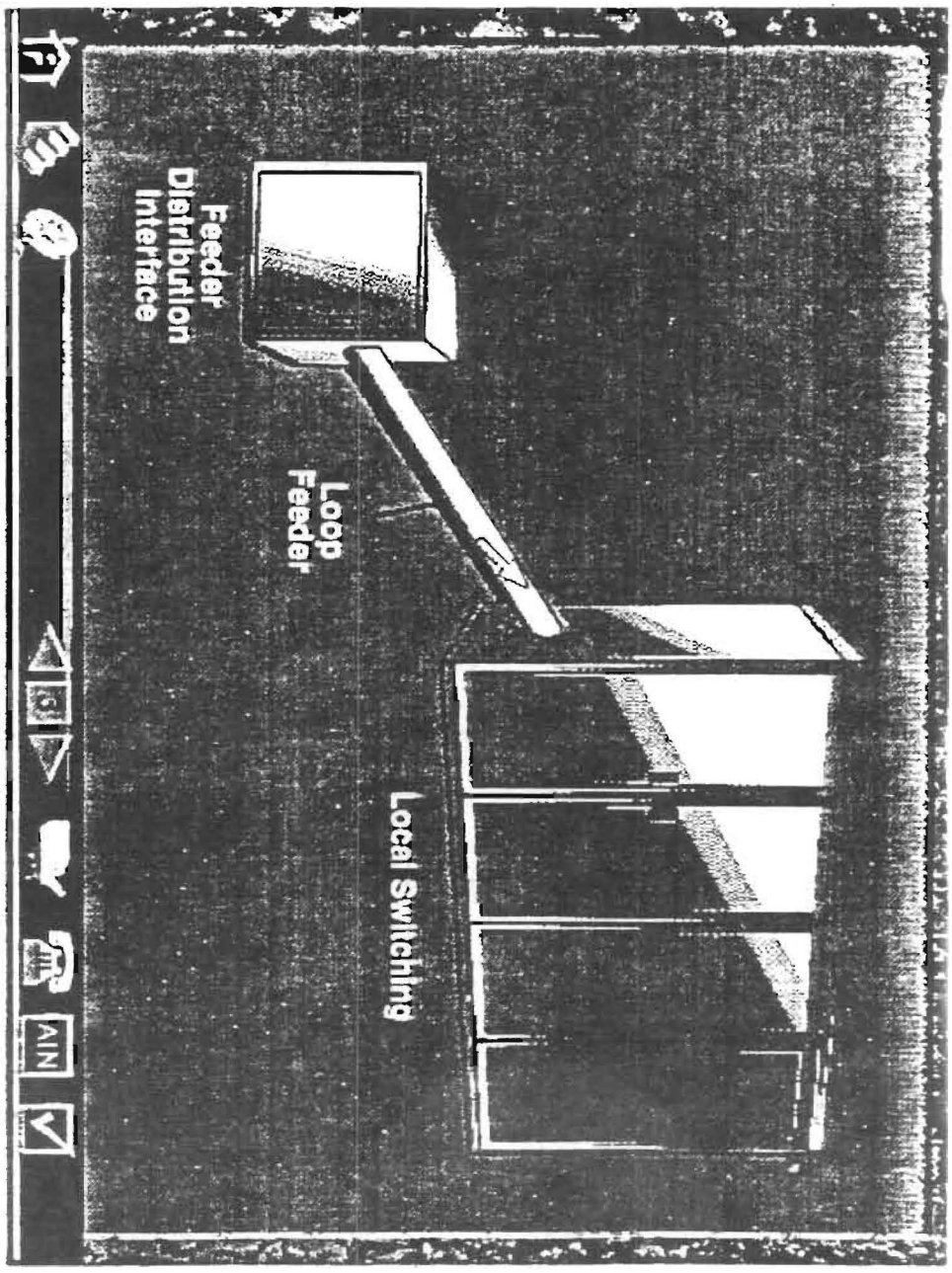
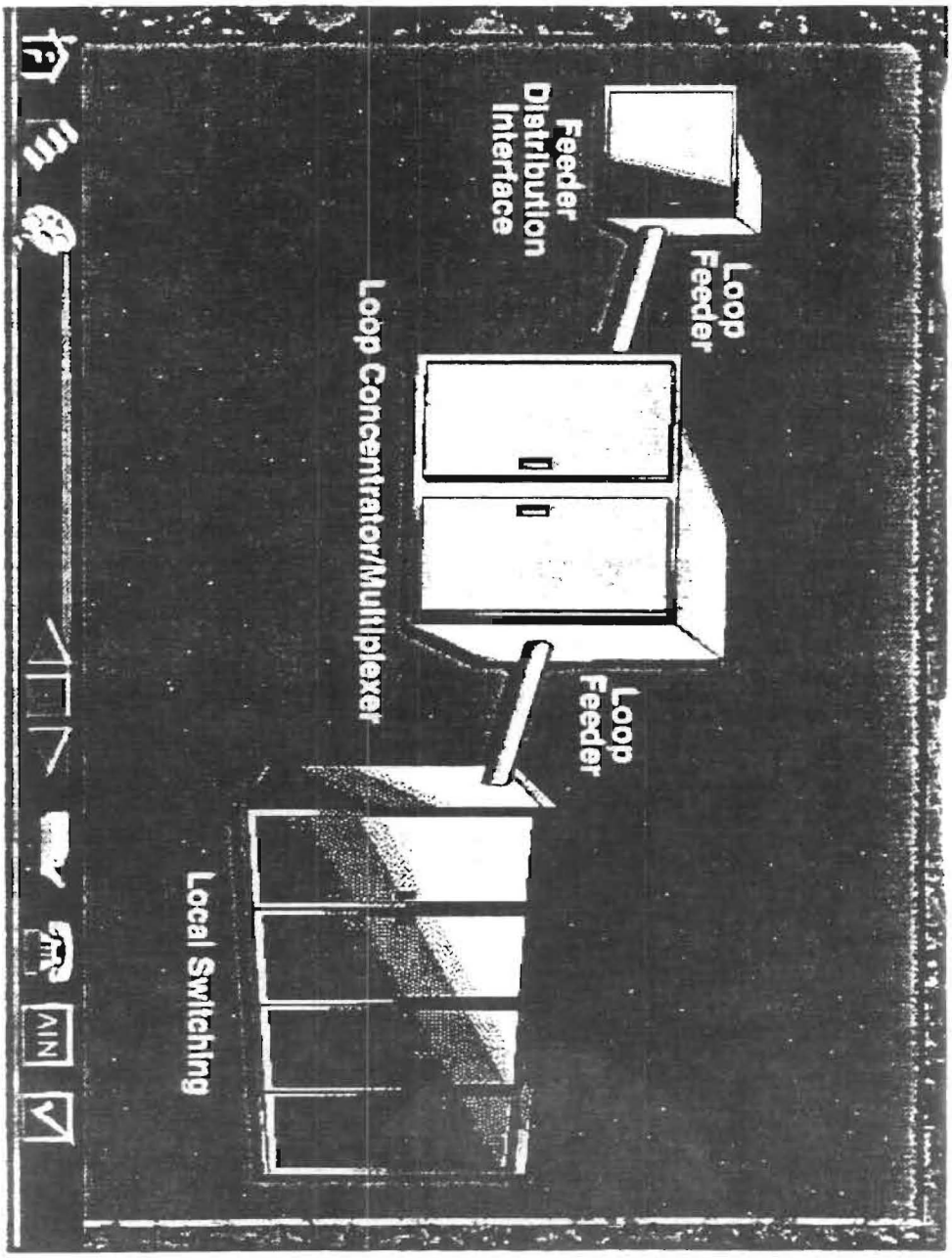
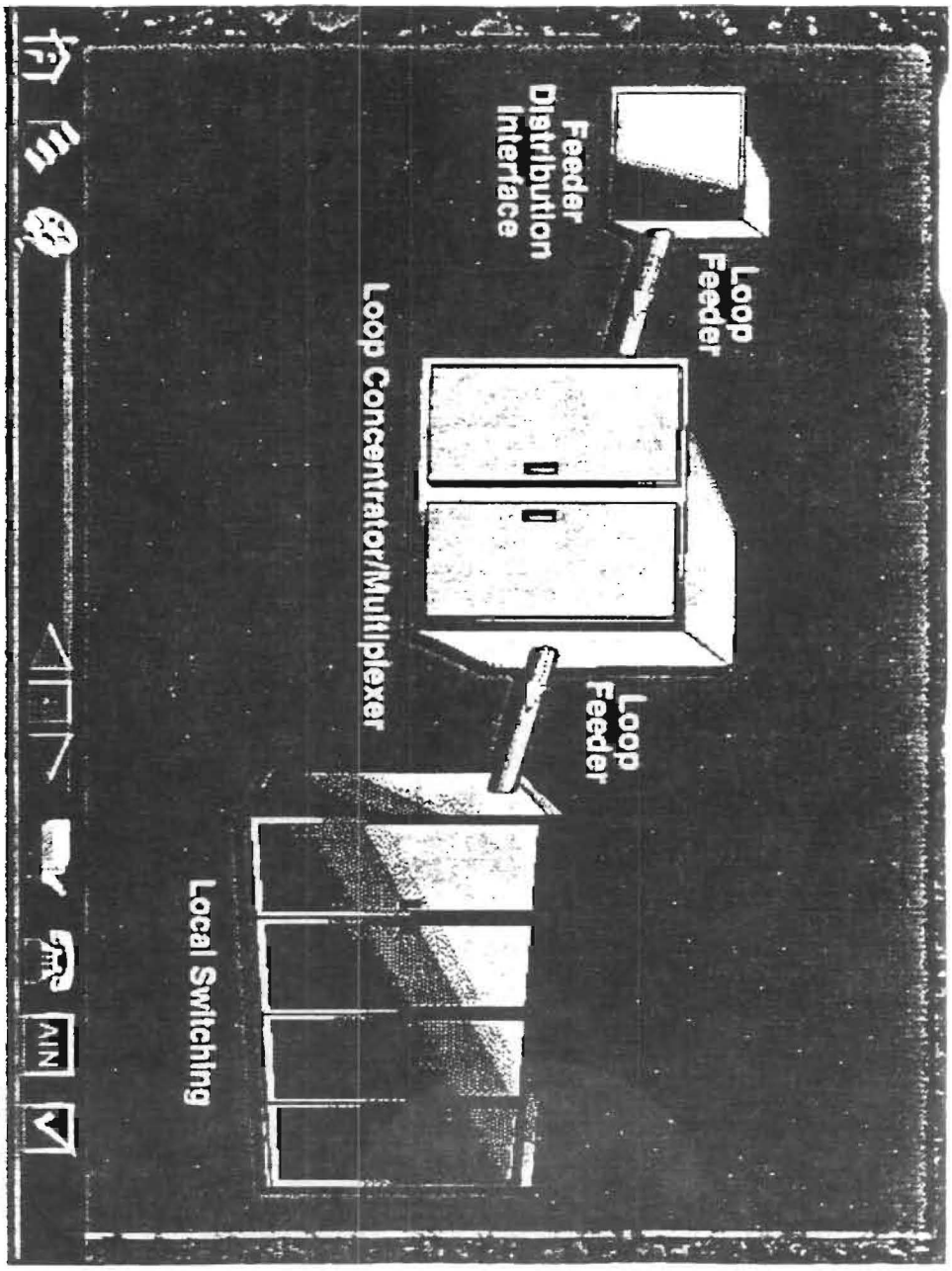
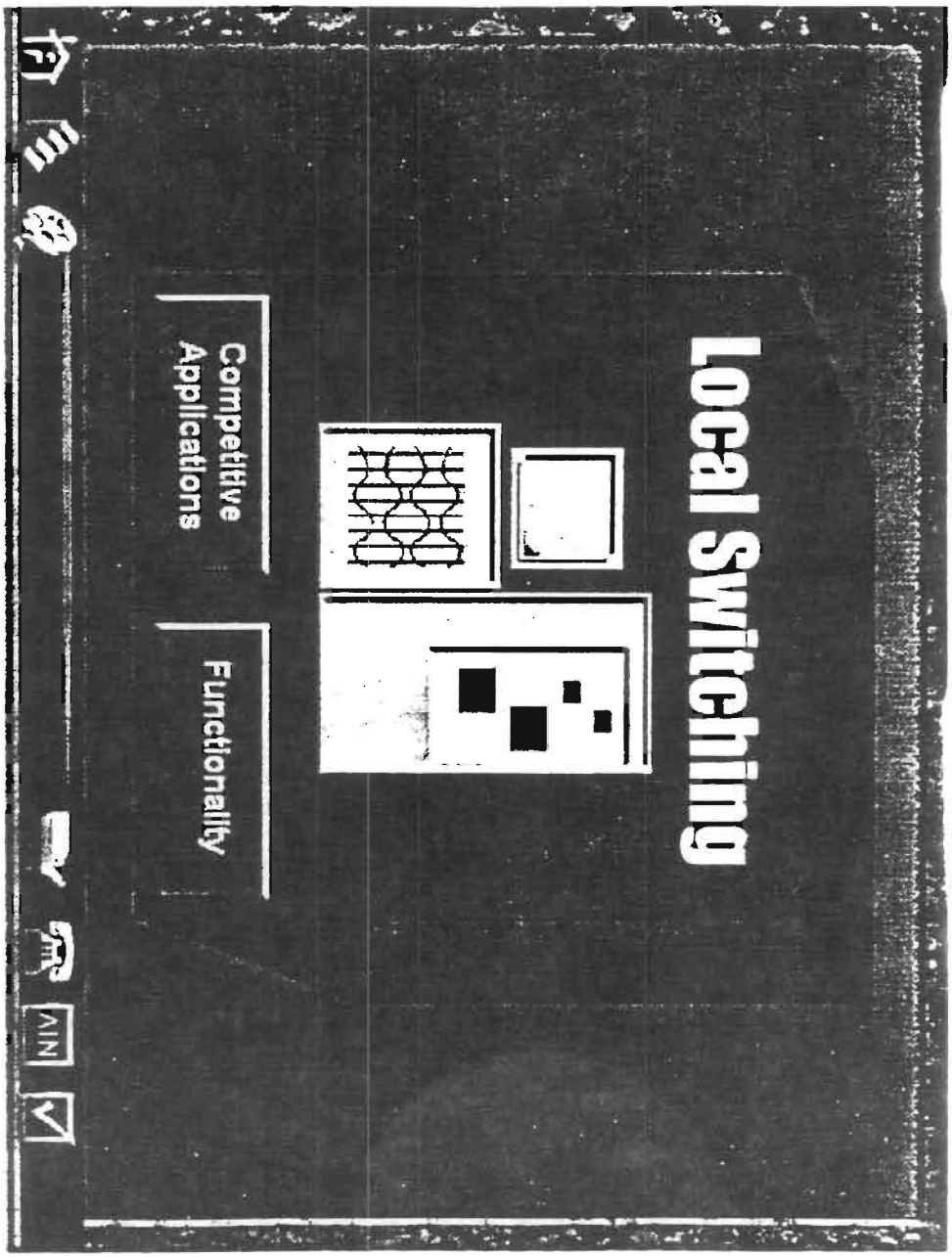
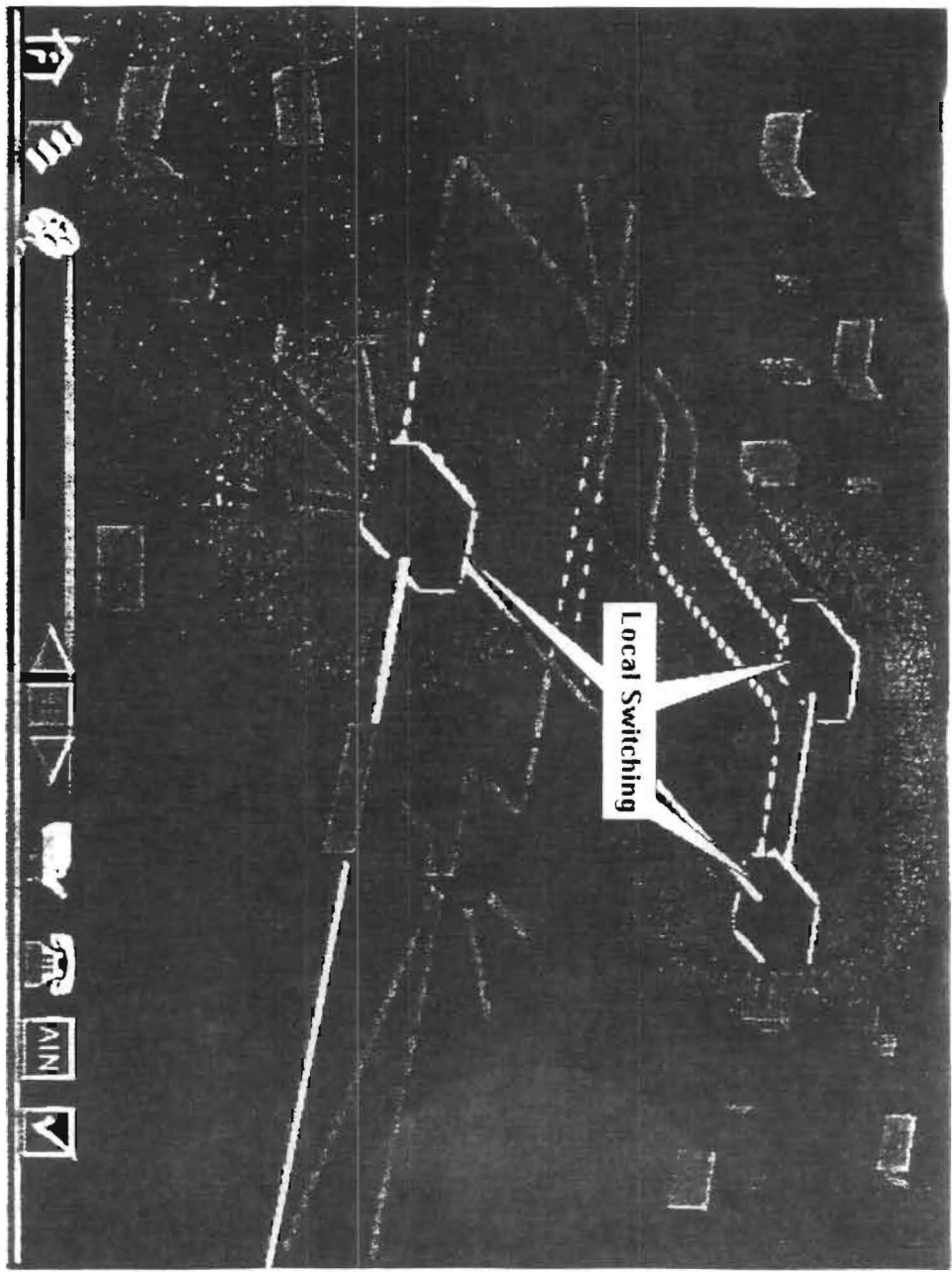
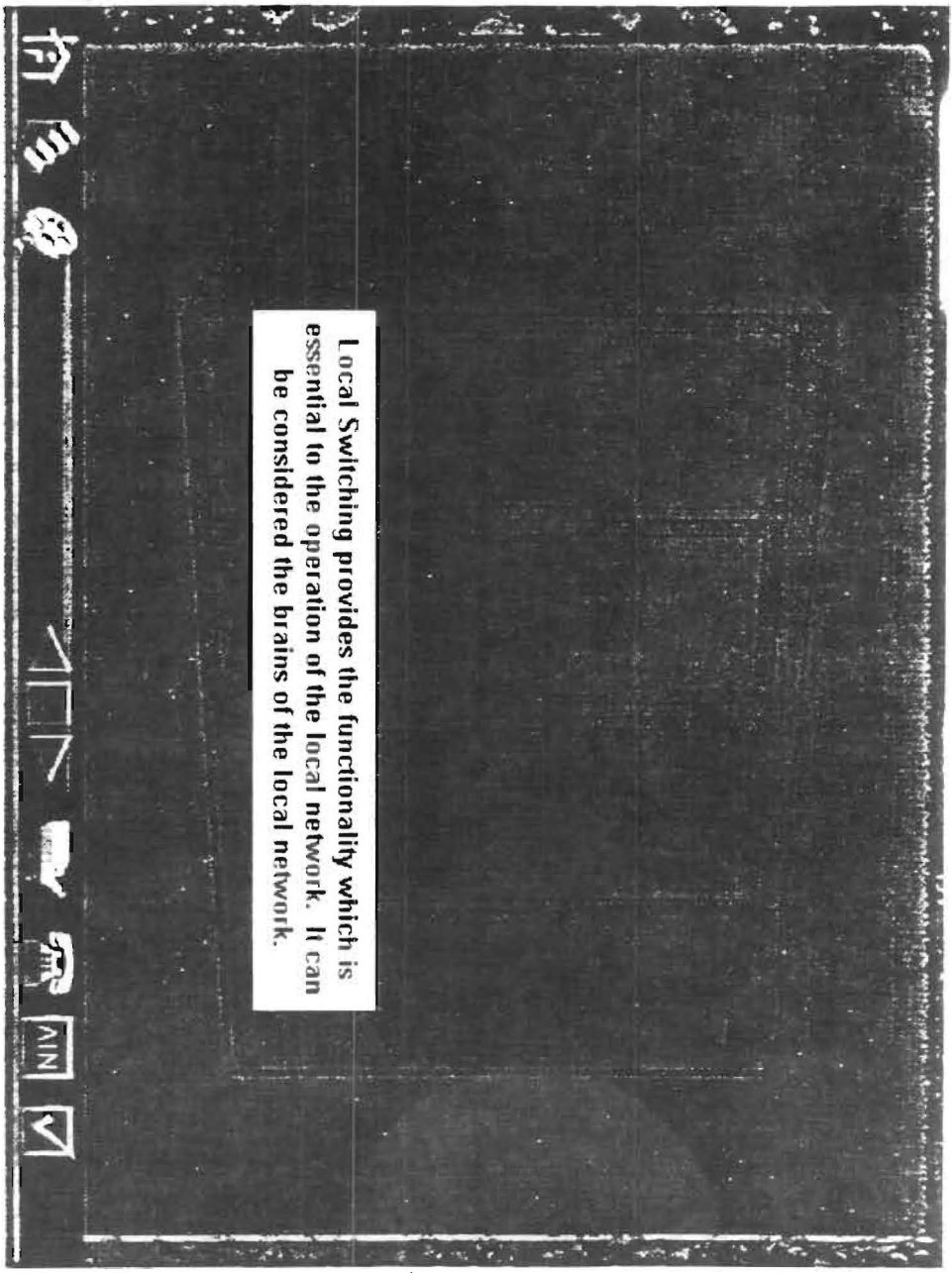



Loop Feeder
Feeder Distribution Interface
Loop Concentrator/Multiplexer
Loop Feeder
Local Switching
AIN


Feeder Distribution Interface
Loop Feeder
Loop Concentrator/Multiplexer
Loop Feeder
Local Switching
AIN


Local Switching
Competitive Applications
Functionality
AIN


Local Switching


Local Switching provides the functionality which is essential to the operation of the local network. It can be considered the brains of the local network.

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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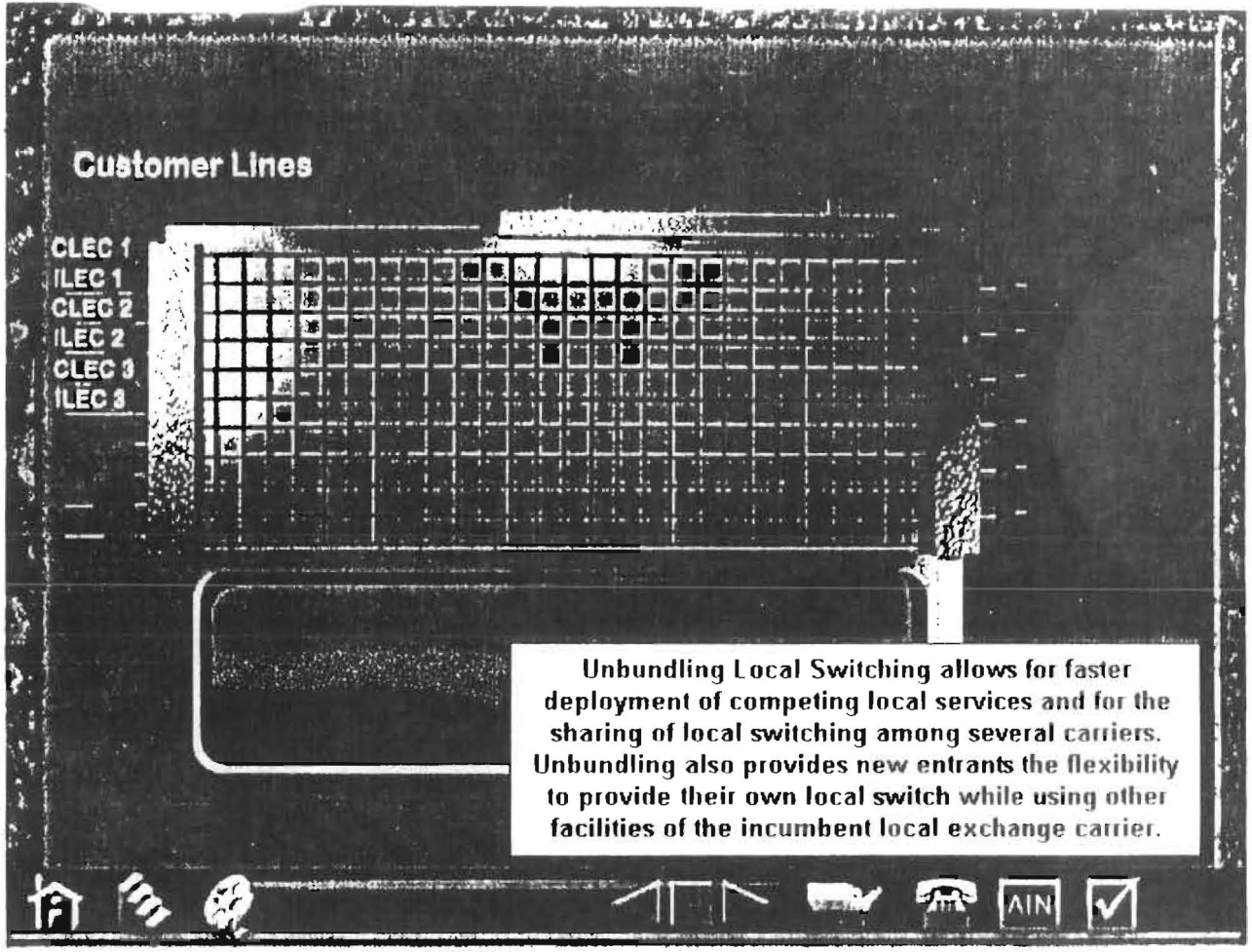

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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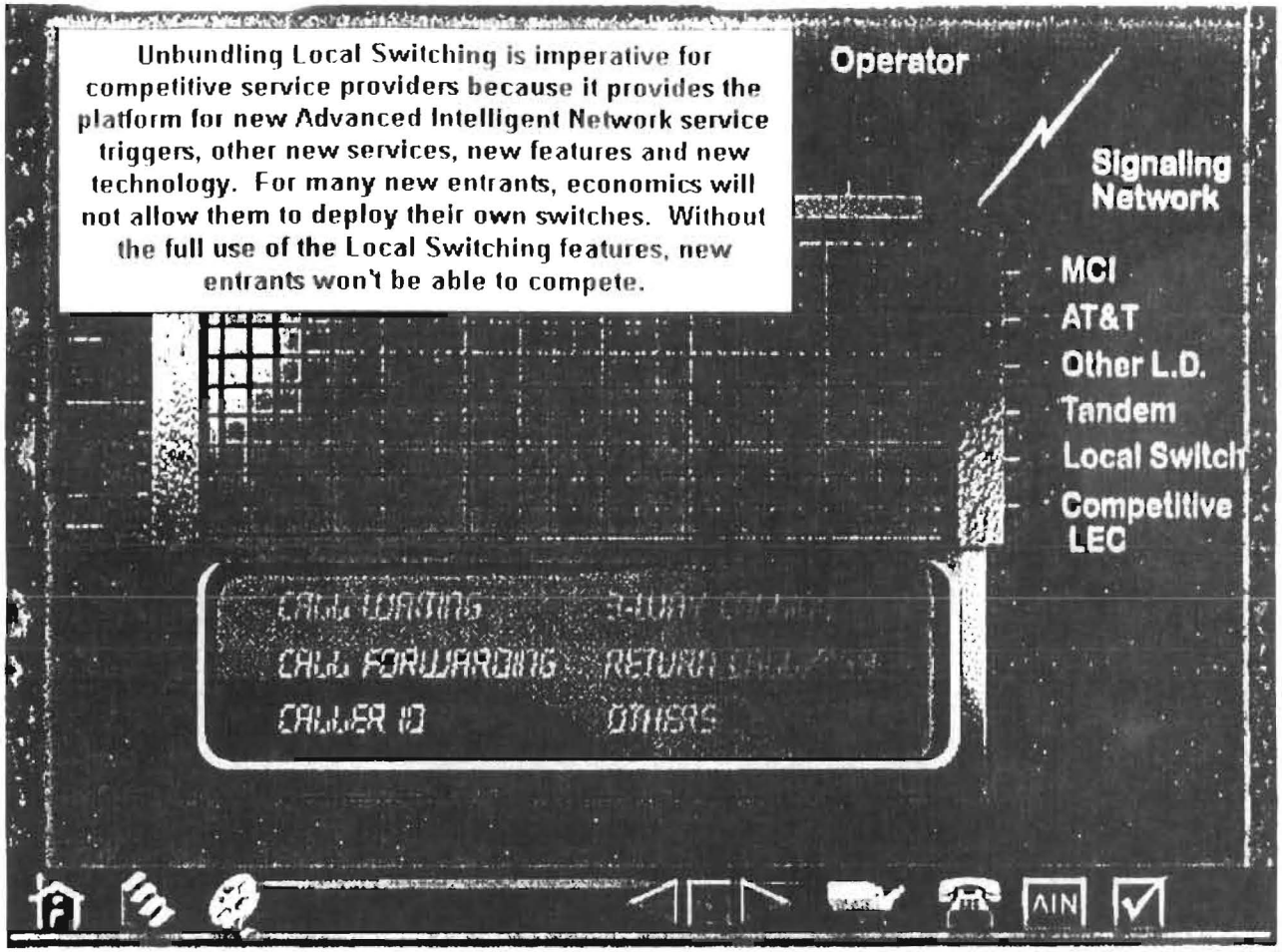
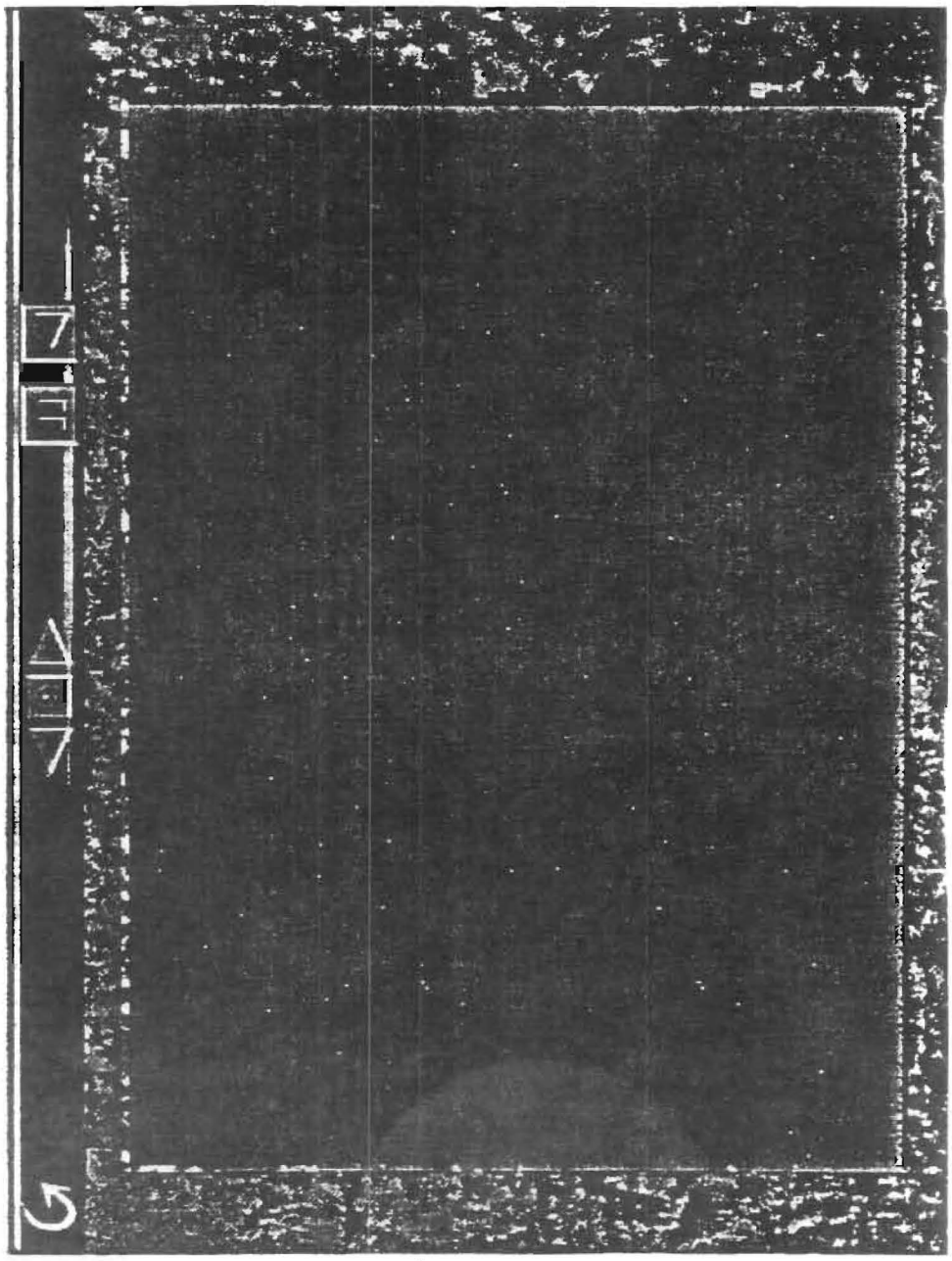
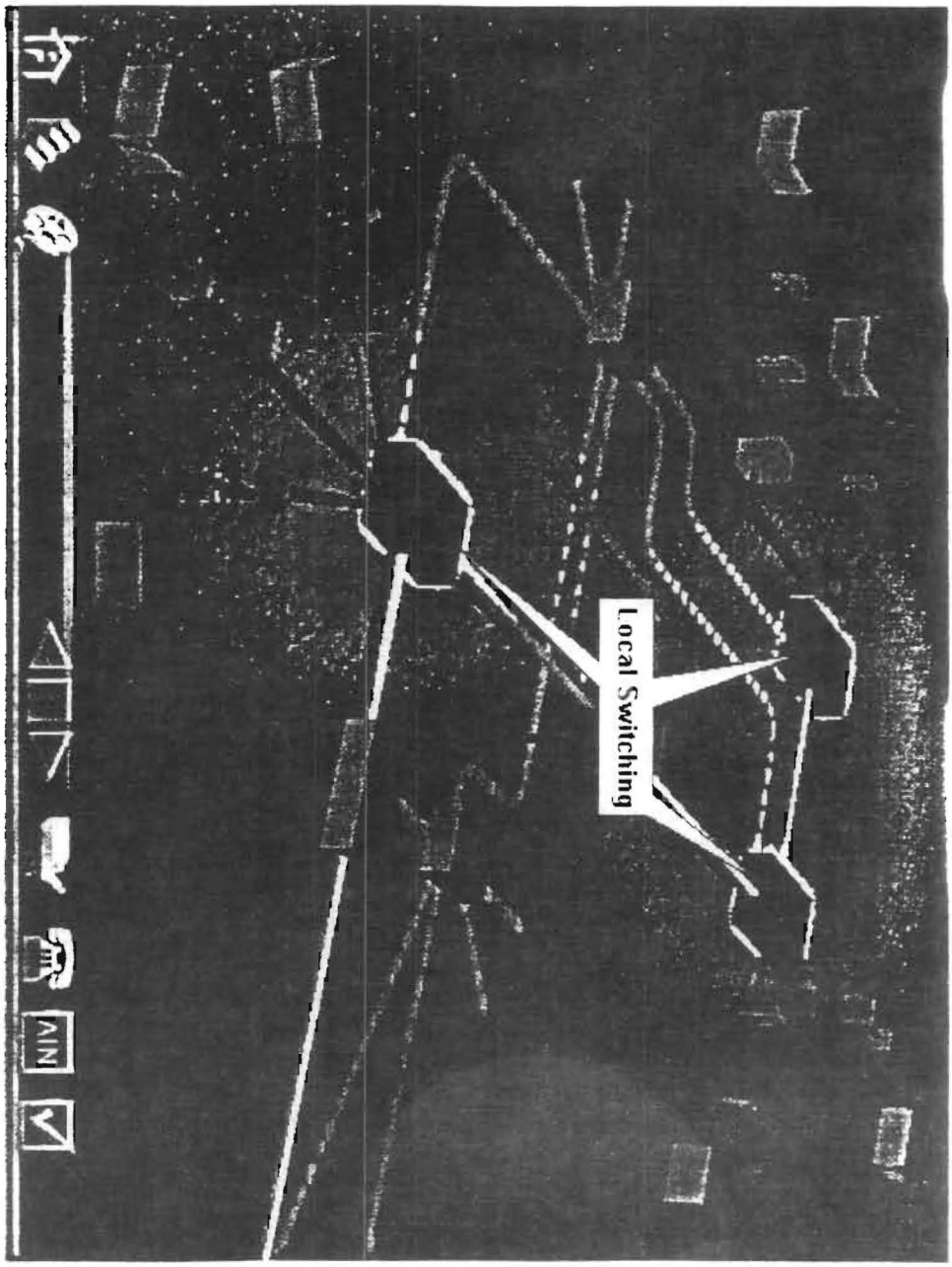
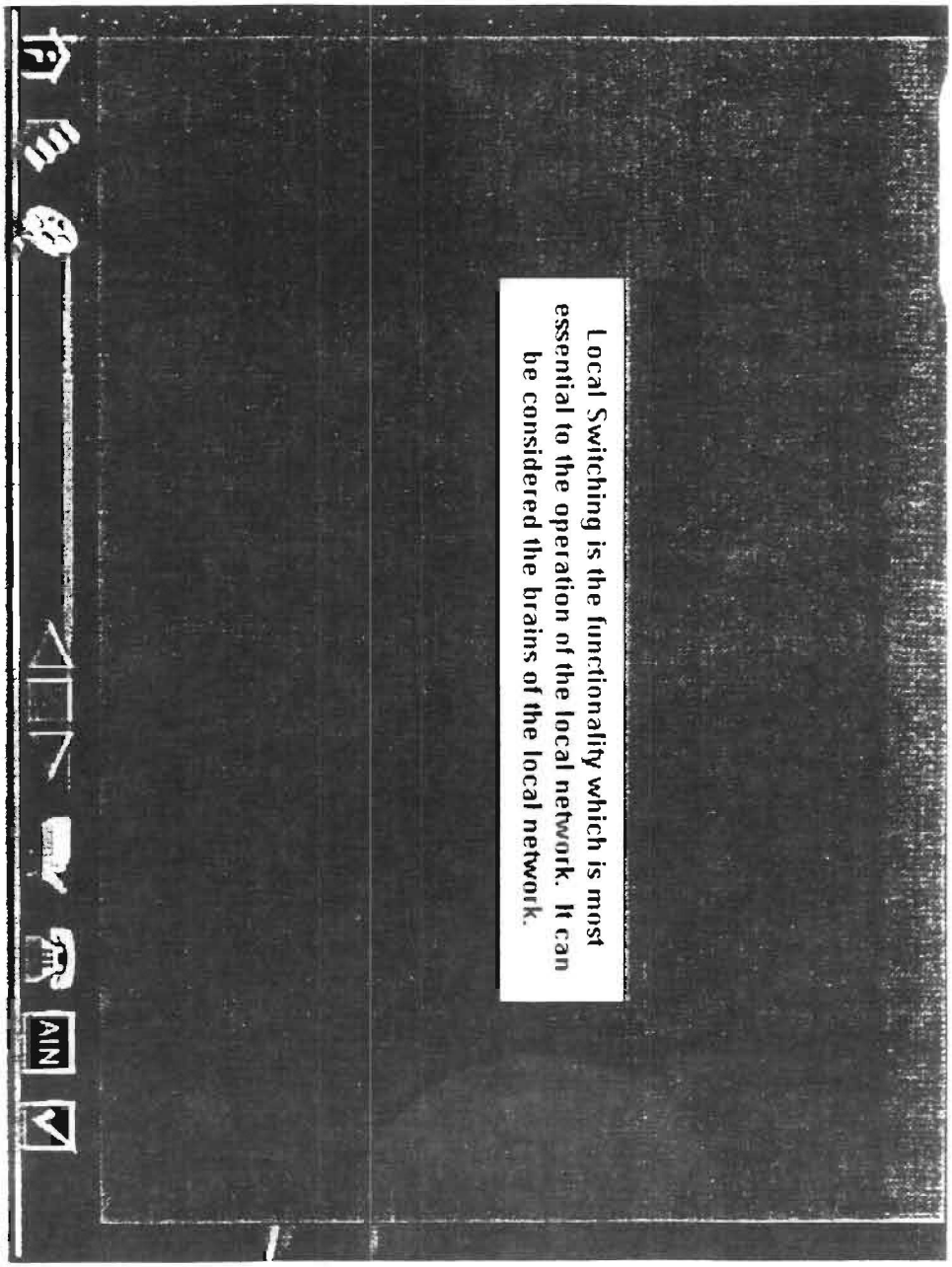





Local Switching


AIN
Local Switching is the functionality which is most essential to the operation of the local network. It can be considered the brains of the local network.

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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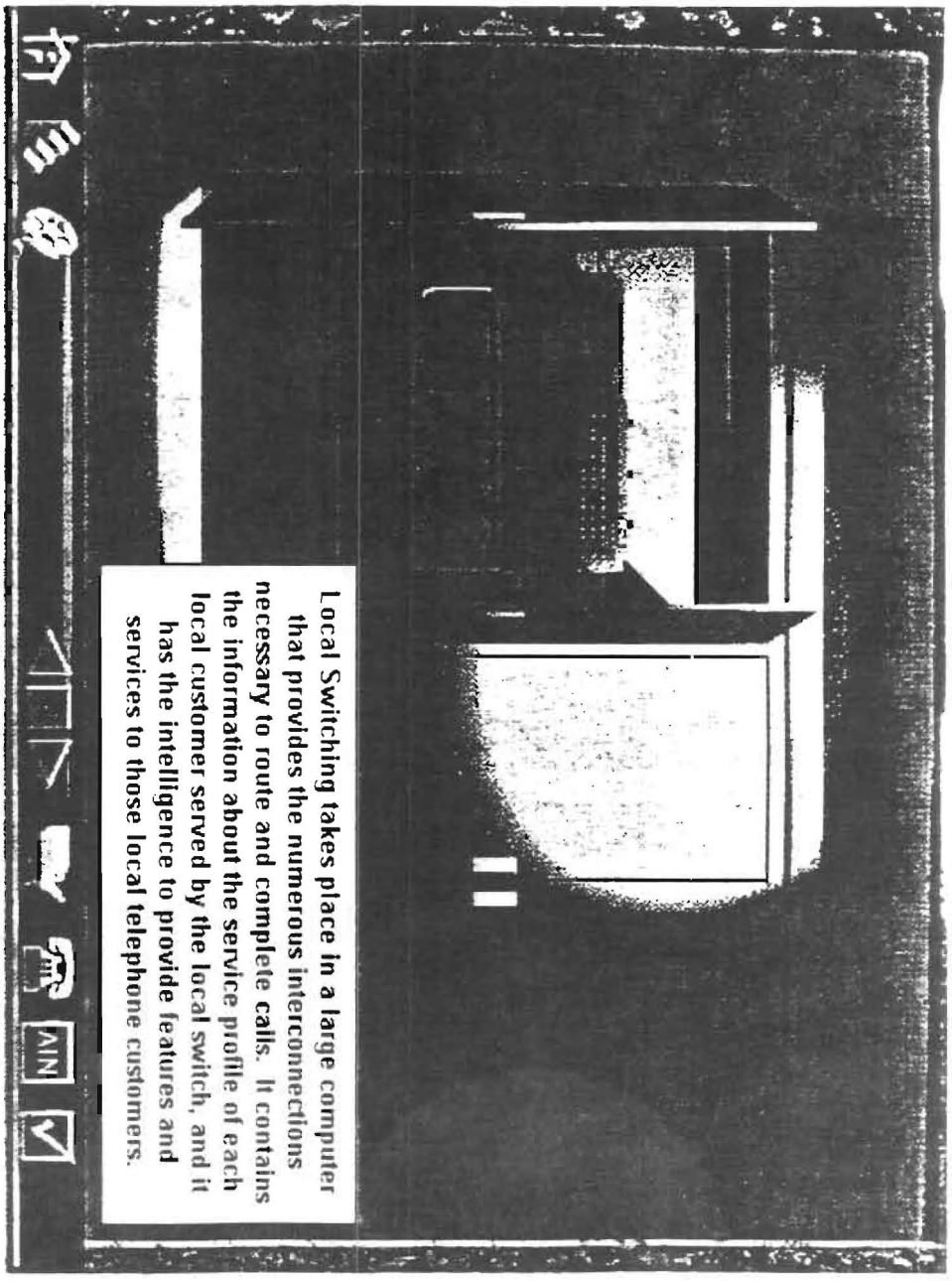
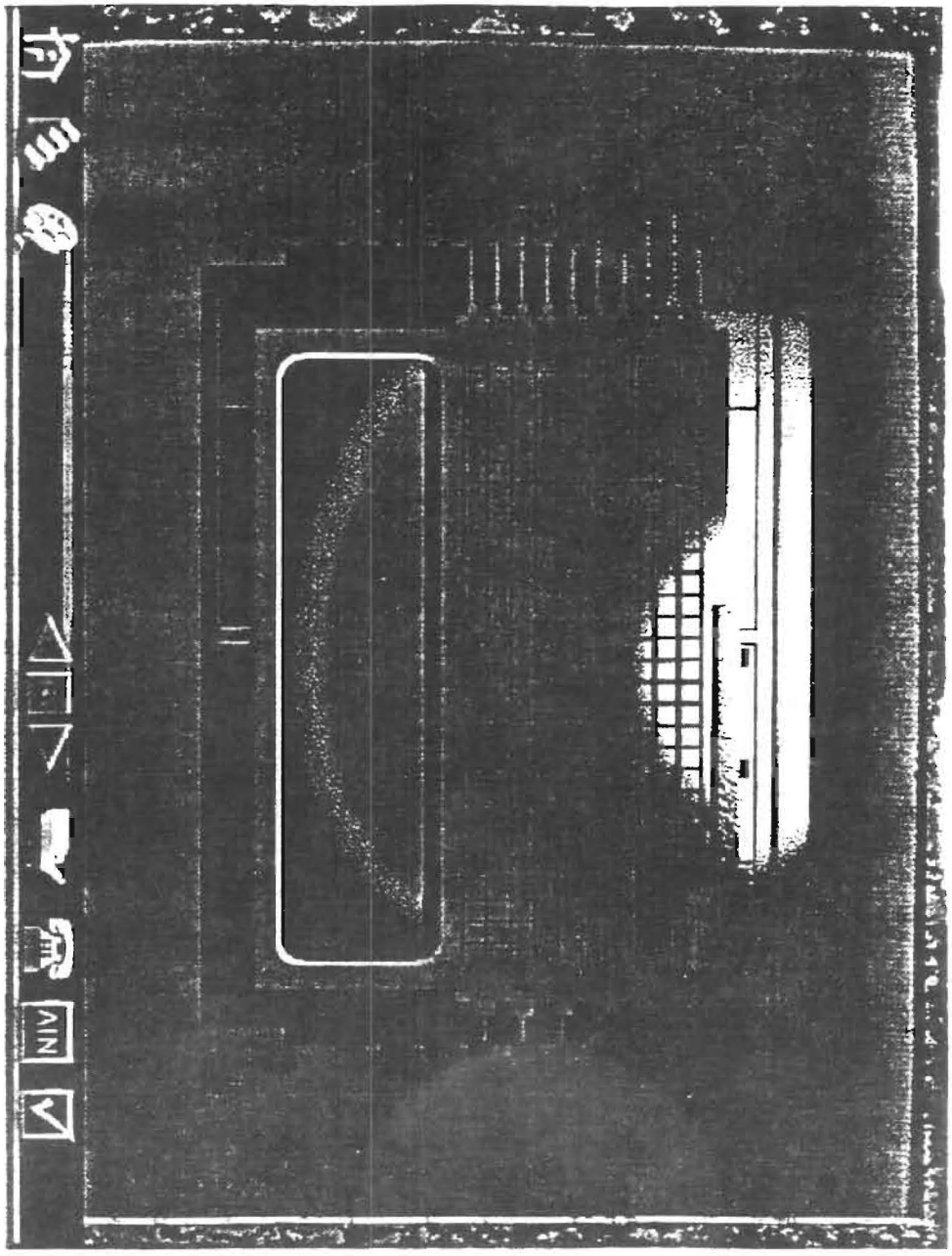
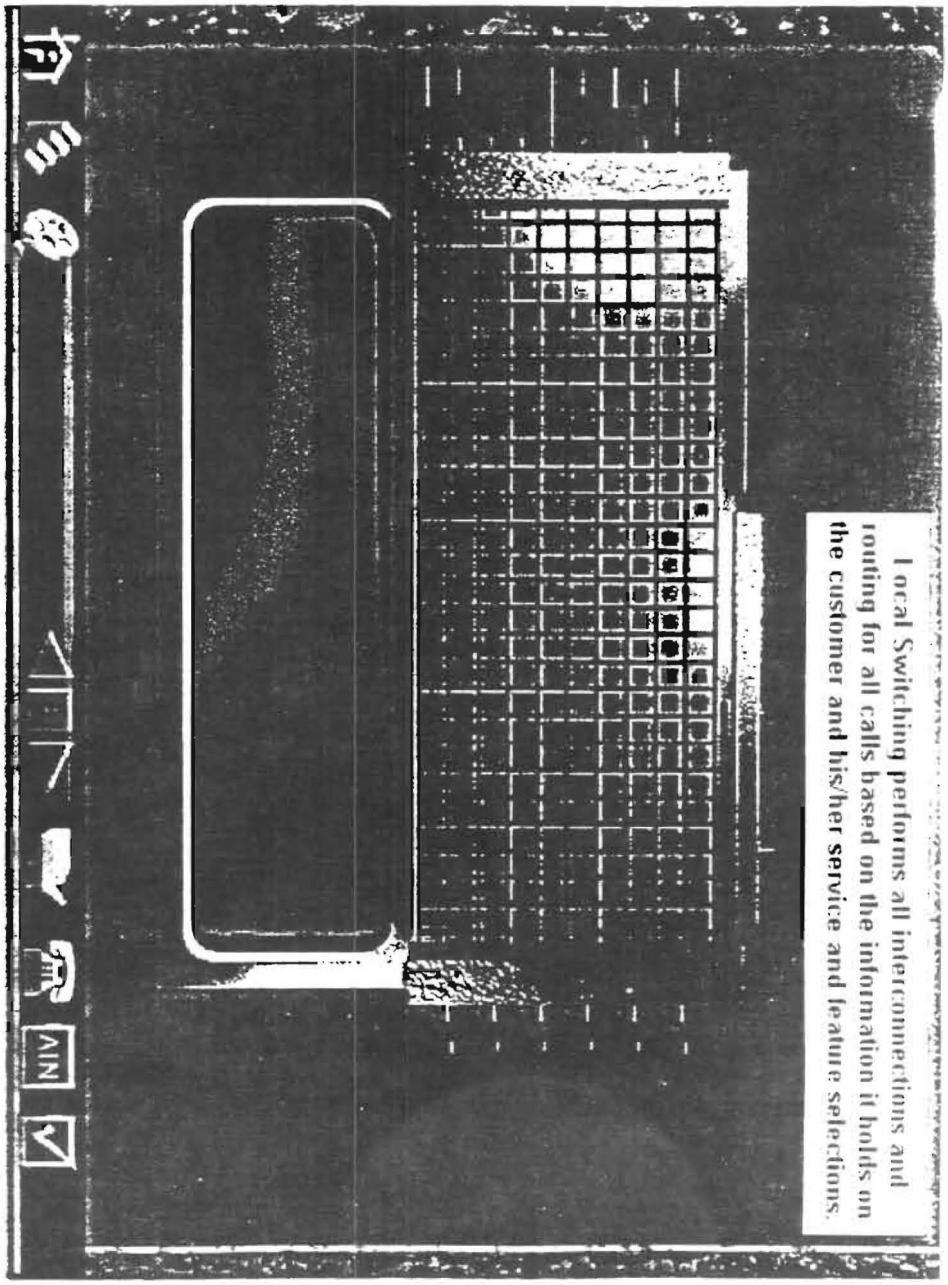

Local Switching takes place in a large computer that provides the numerous interconnections necessary to route and complete calls. It contains the information about the service profile of each local customer served by the local switch, and it has the intelligence to provide features and services to those local telephone customers.
AIN




Local Switching performs all interconnections and routing for all calls based on the information it holds on the customer and his/her service and feature selections.

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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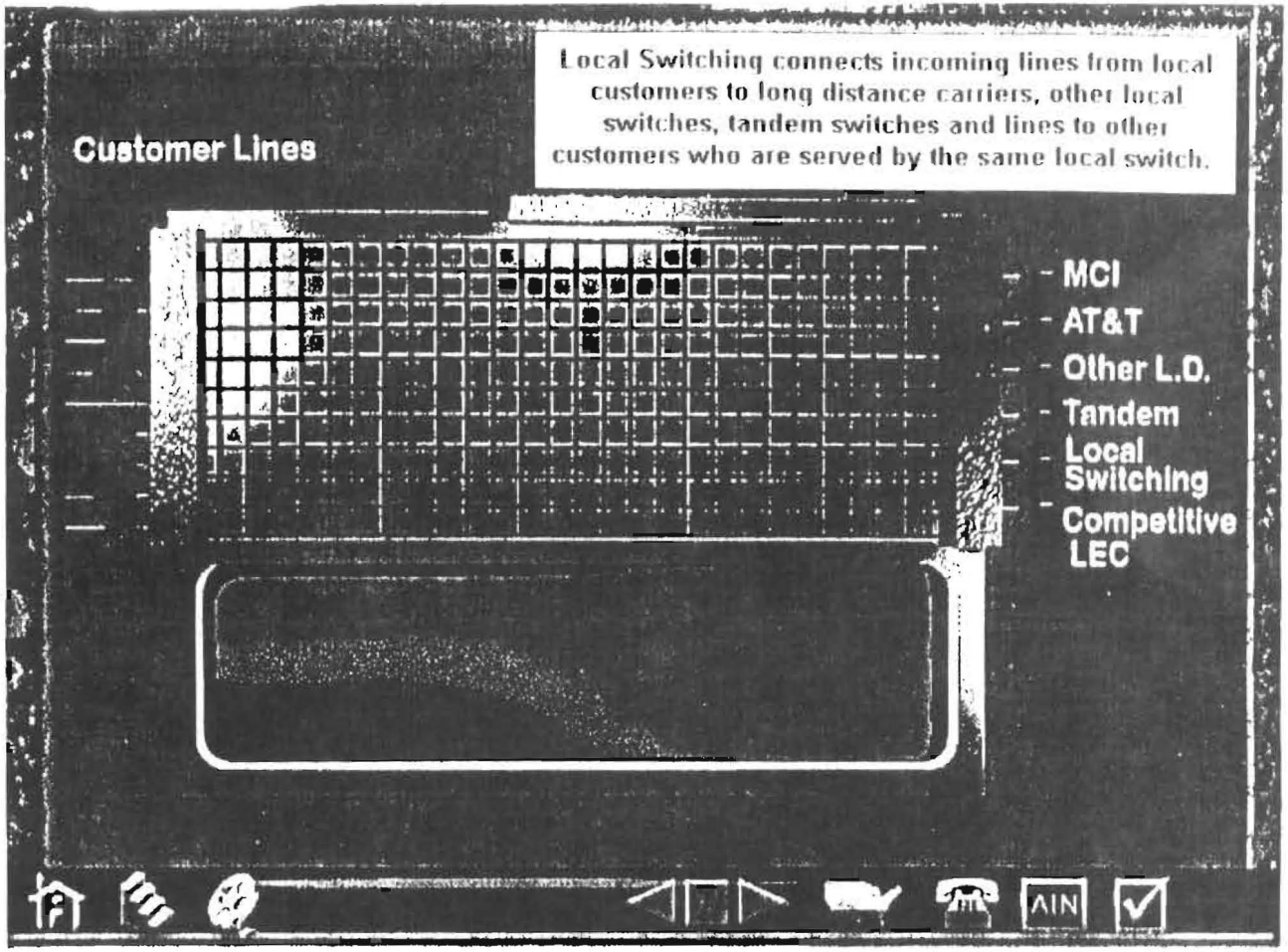
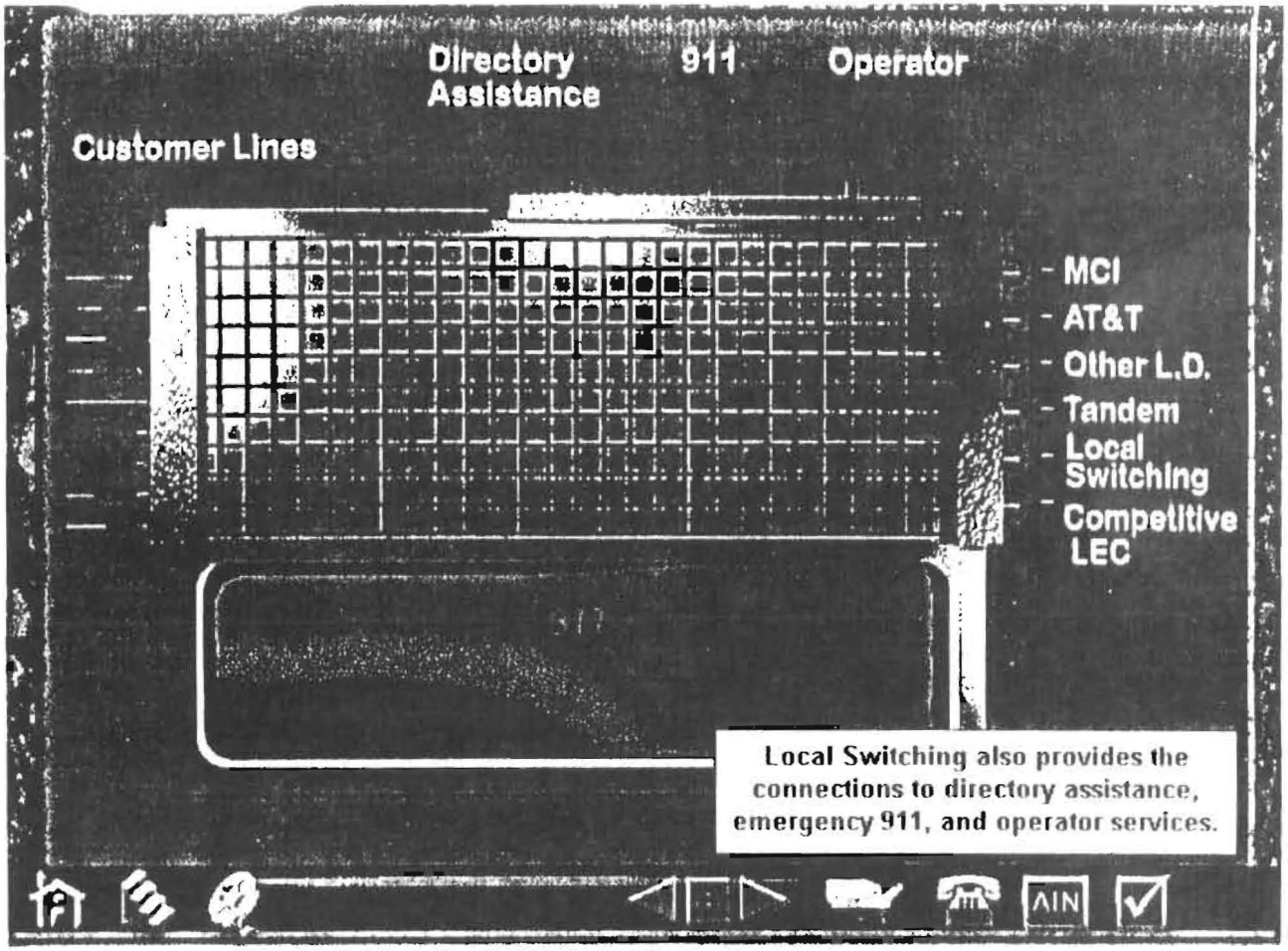
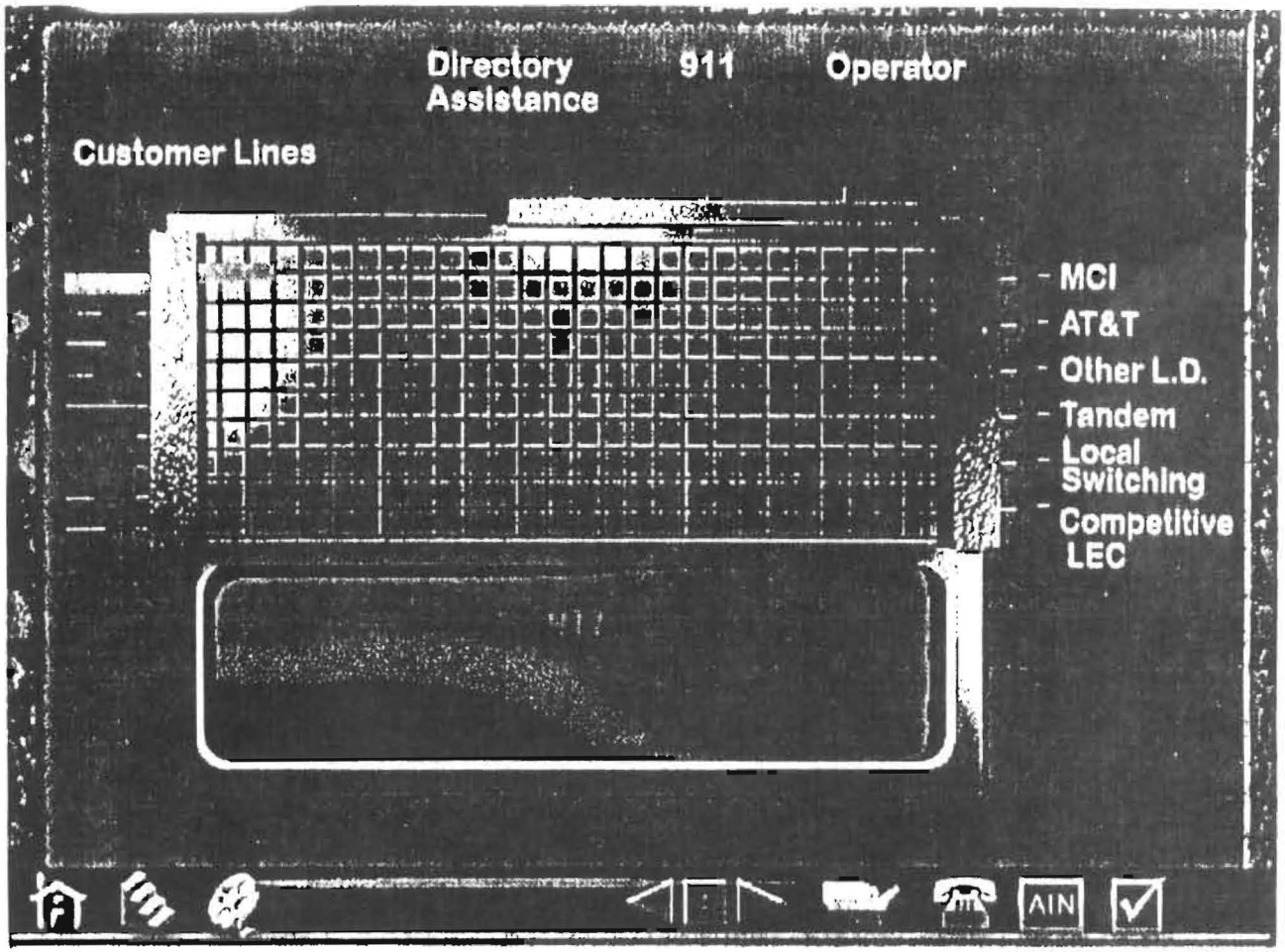
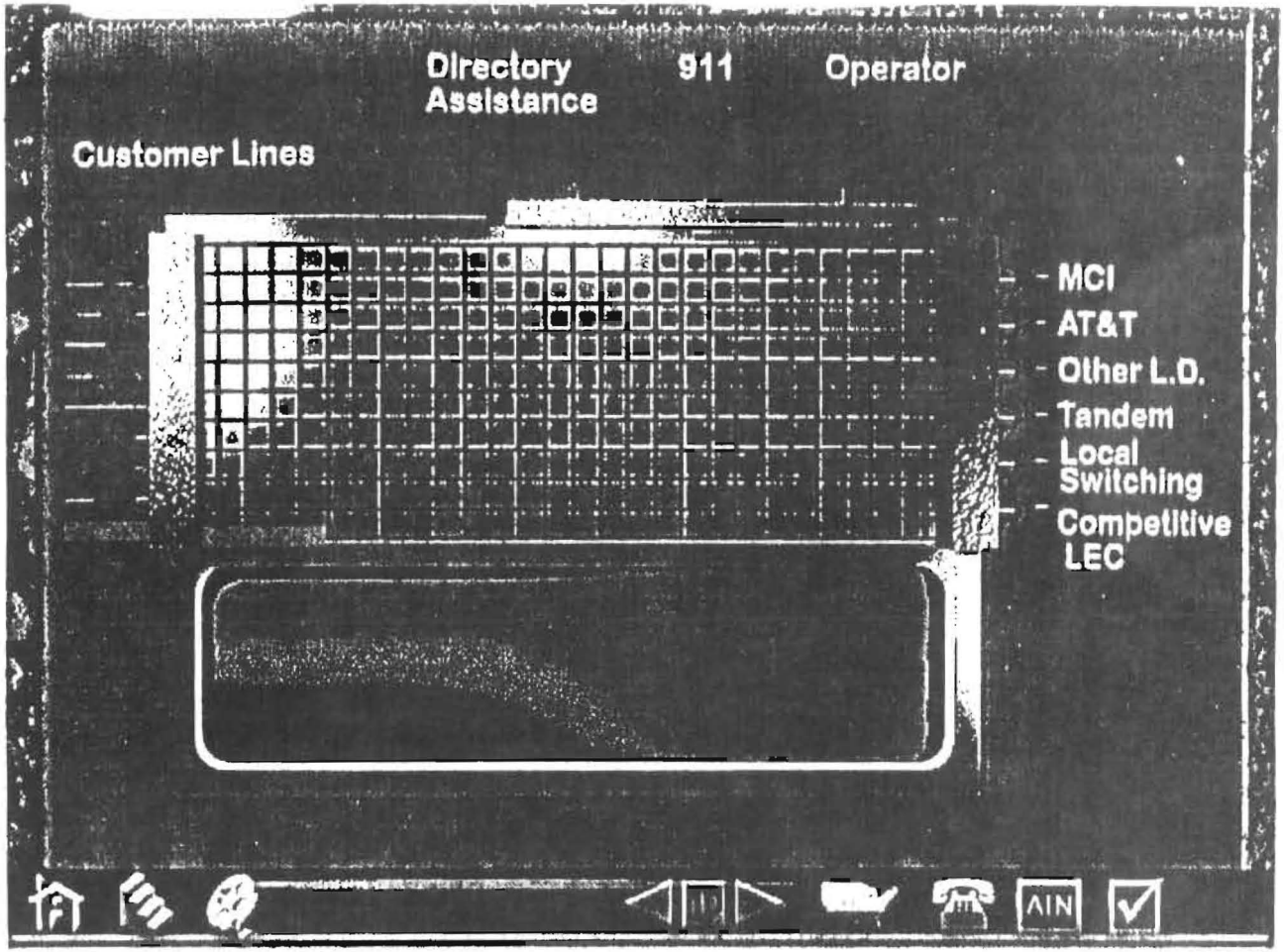
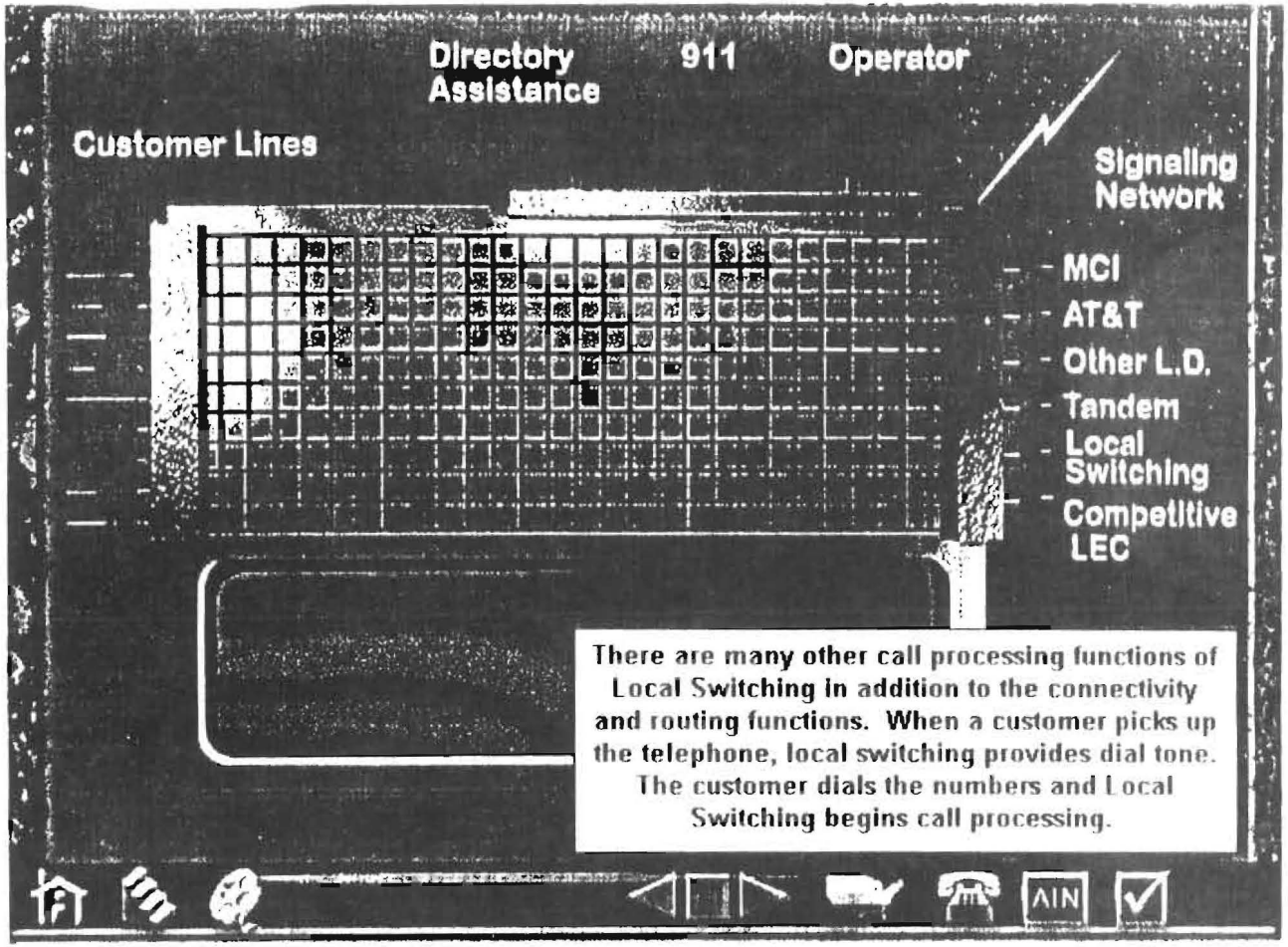
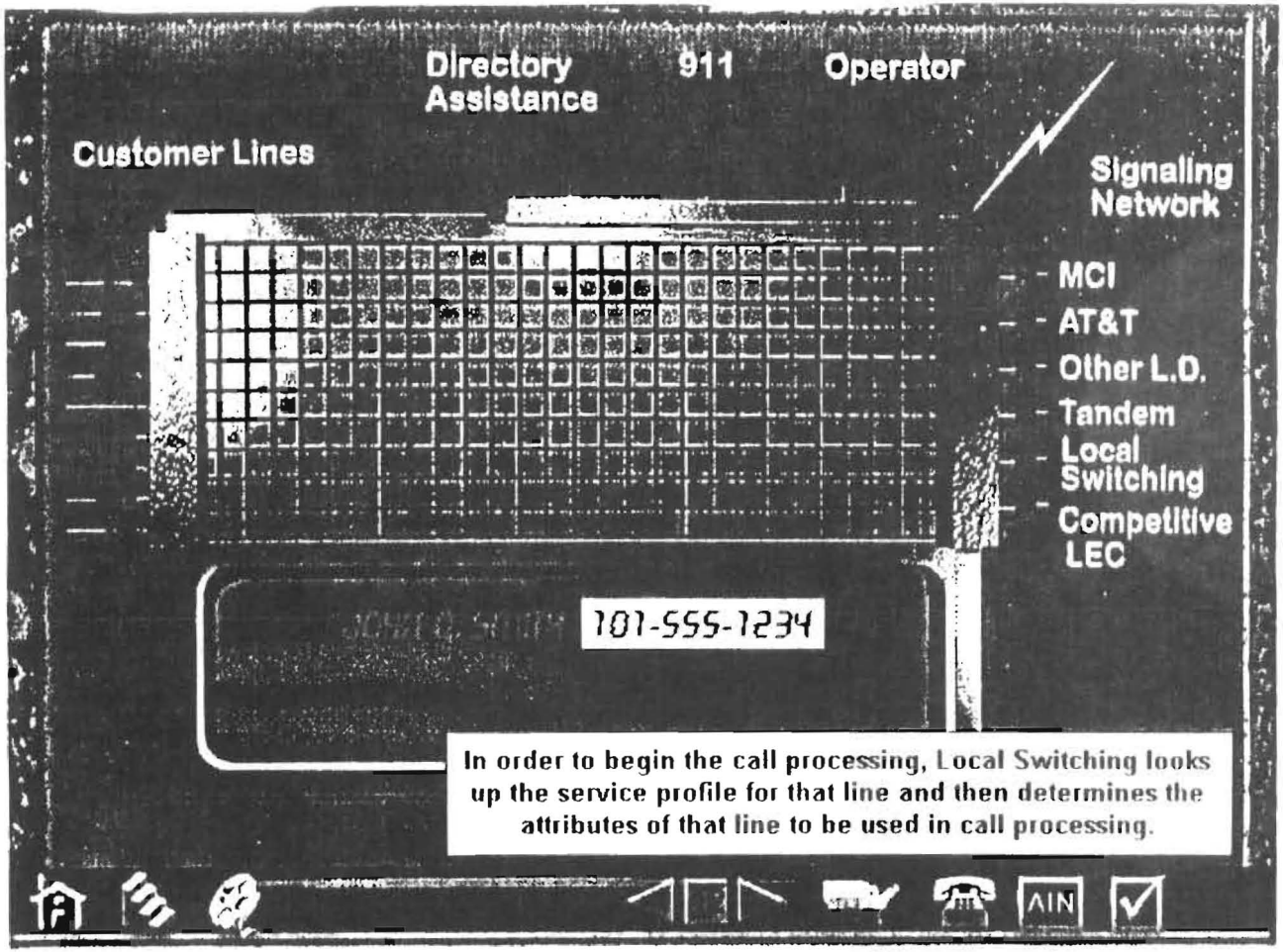



Directory Assistance
911
Operator
Customer Lines
- MCI
- AT&T
- Other L.D.
- Tandem
- Local Switching
- Competitive LEC
Local Switching also provides the connections to directory assistance, emergency 911, and operator services.
AIN


Directory Assistance
911
Operator
Customer Lines
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
AIN


Directory Assistance
911
Operator
Customer Lines
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
AIN


Directory Assistance
911
Operator
Customer Lines
Signaling Network
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
There are many other call processing functions of Local Switching in addition to the connectivity and routing functions. When a customer picks up the telephone, local switching provides dial tone. The customer dials the numbers and Local Switching begins call processing.
AIN


Directory Assistance
911
Operator
Customer Lines
Signaling Network
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
101-555-1234
In order to begin the call processing, Local Switching looks up the service profile for that line and then determines the attributes of that line to be used in call processing.
AIN

FPSC EXHIBIT NUMBER ____
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CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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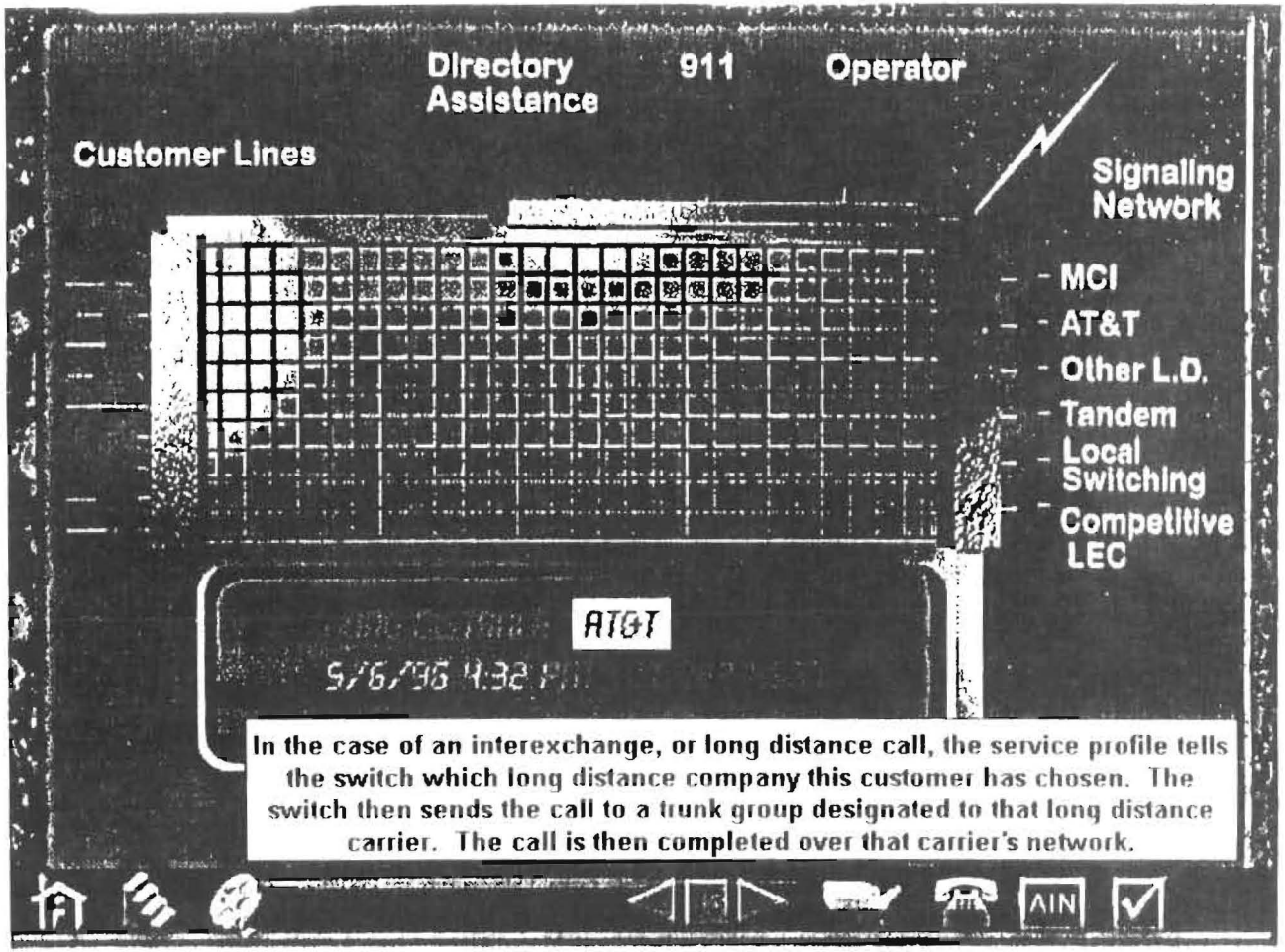
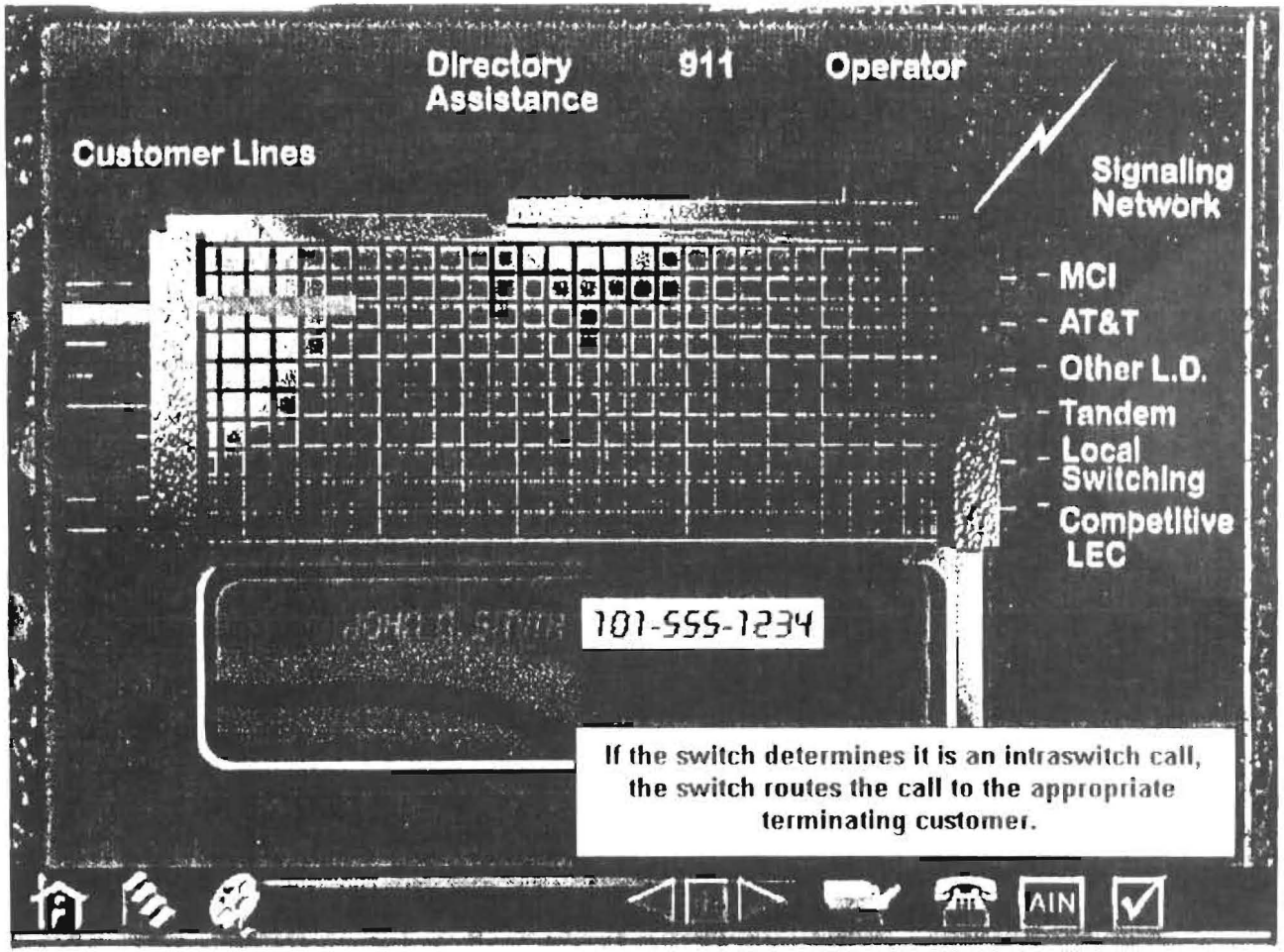
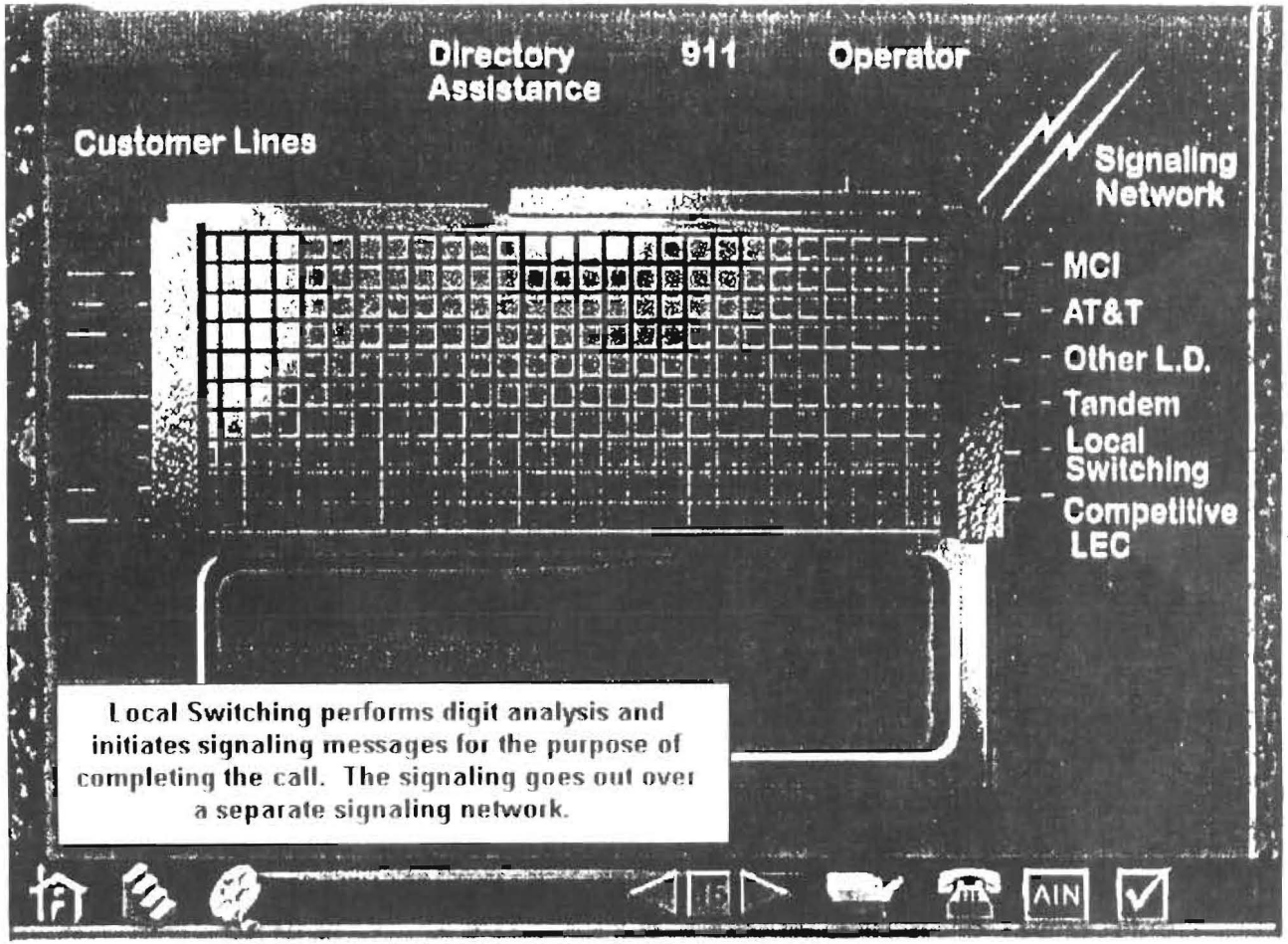
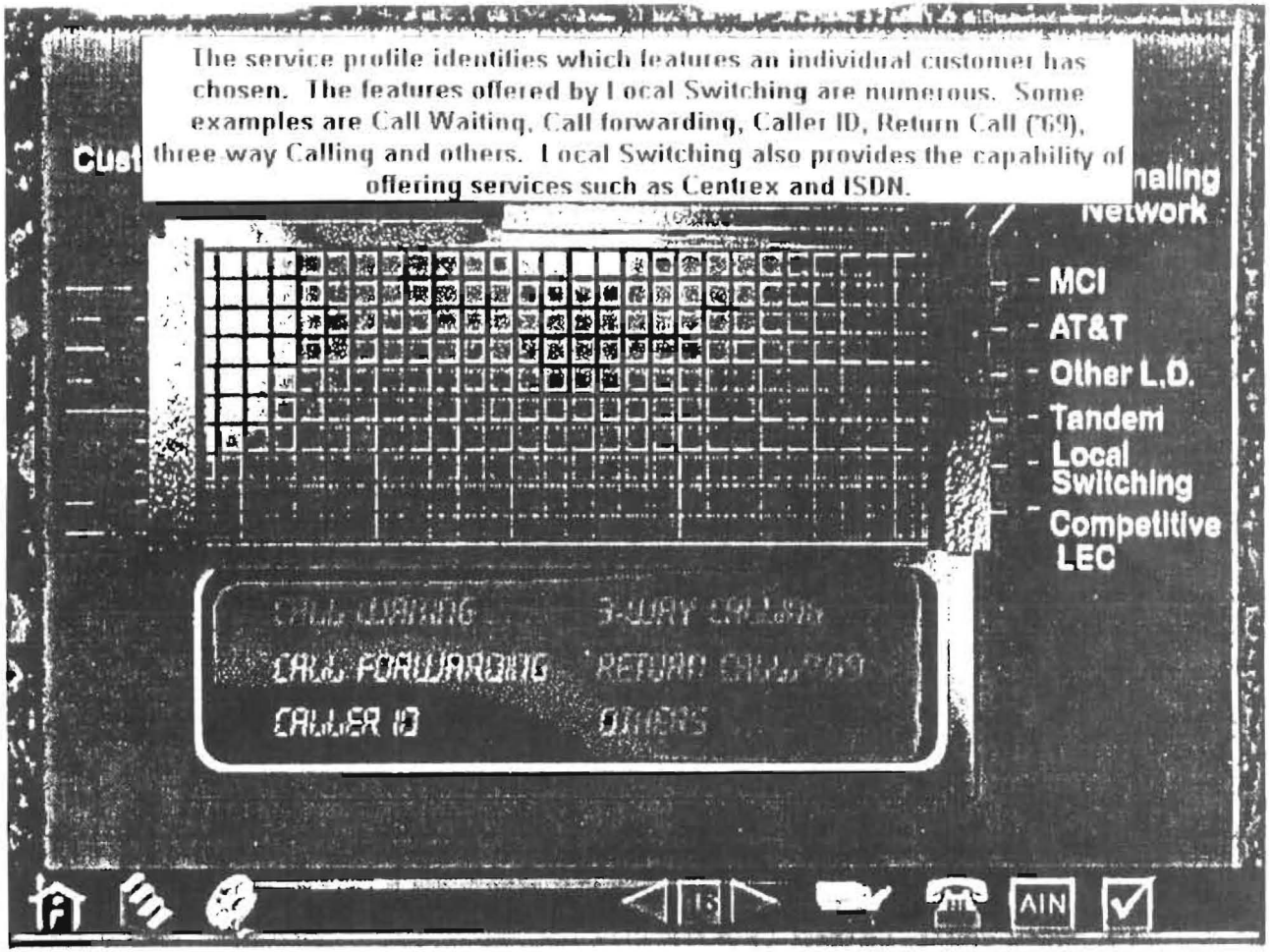



Directory Assistance
911
Operator
Customer Lines
Signaling Network
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
JOHN SMITH
101-555-1234
If the switch determines it is an intraswitch call, the switch routes the call to the appropriate terminating customer.
AIN


Directory Assistance
911
Operator
Customer Lines
Signaling Network
MCI
AT&T
Other L.D.
Tandem
Local Switching
Competitive LEC
Local Switching performs digit analysis and initiates signaling messages for the purpose of completing the call. The signaling goes out over a separate signaling network.
AIN


The service profile identifies which features an individual customer has chosen. The features offered by Local Switching are numerous. Some examples are Call Waiting, Call forwarding, Caller ID, Return Call (*69), three way Calling and others. Local Switching also provides the capability of offering services such as Centrex and ISDN.
Cust
naling Network
- MCI
- AT&T
- Other L.D.
- Tandem
- Local Switching
- Competitive LEC
CALL WAITING
3-WAY CALLING
CALL FORWARDING
RETURN CALL *69
CALLER ID
OTHERS
AIN


Call waiting informs you that a call is coming in when you are already on the line by sounding a tone.

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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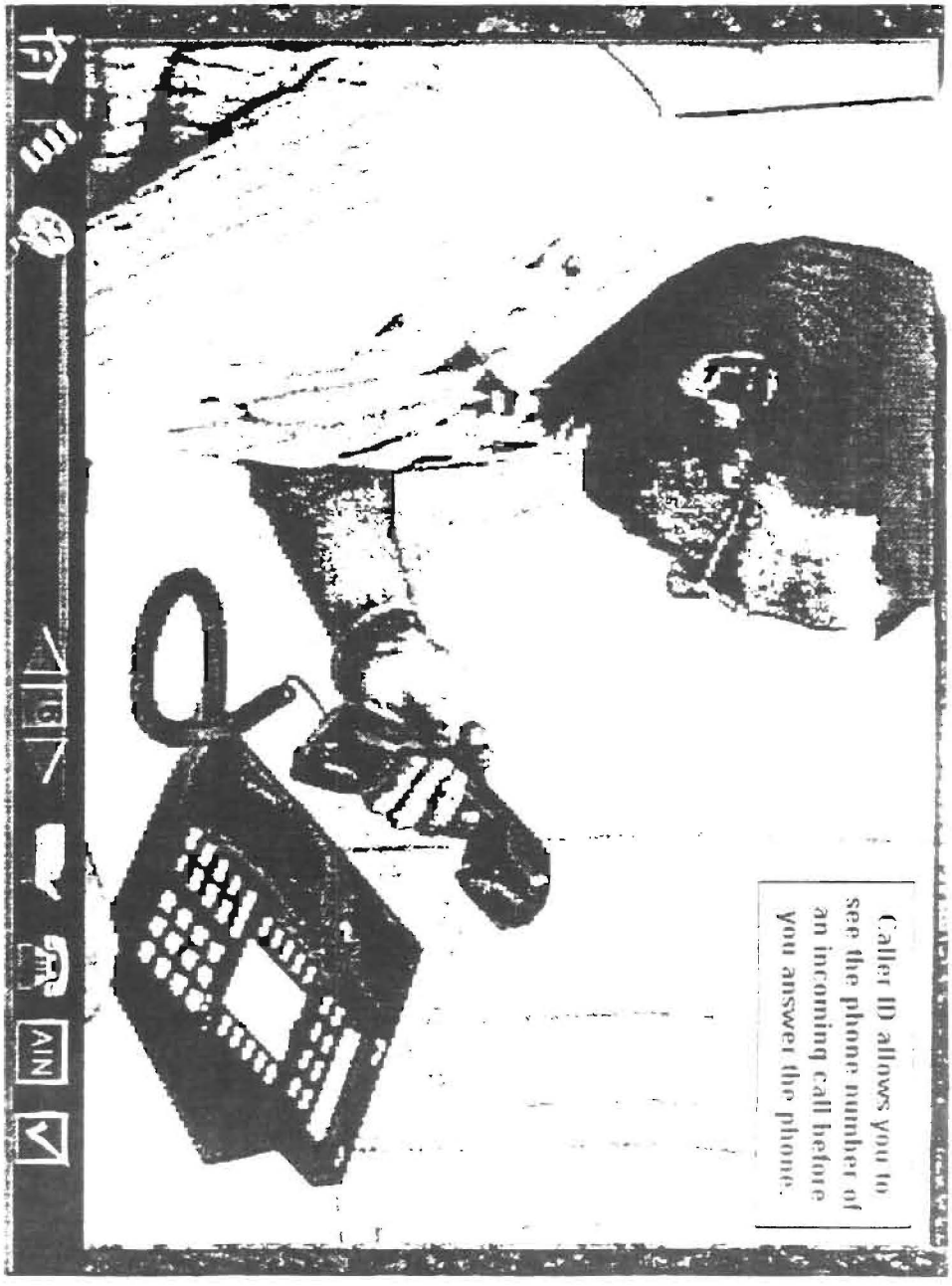
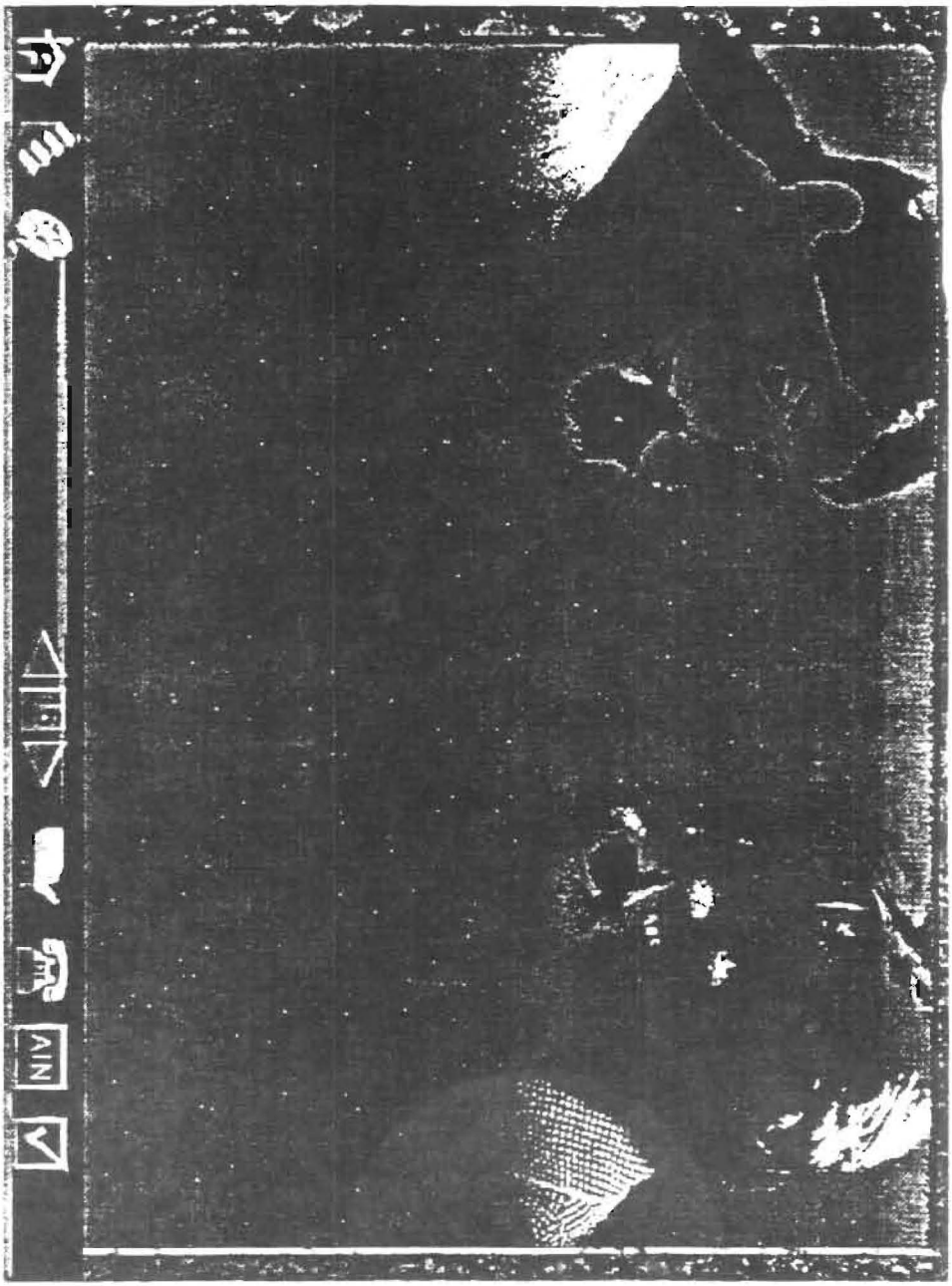
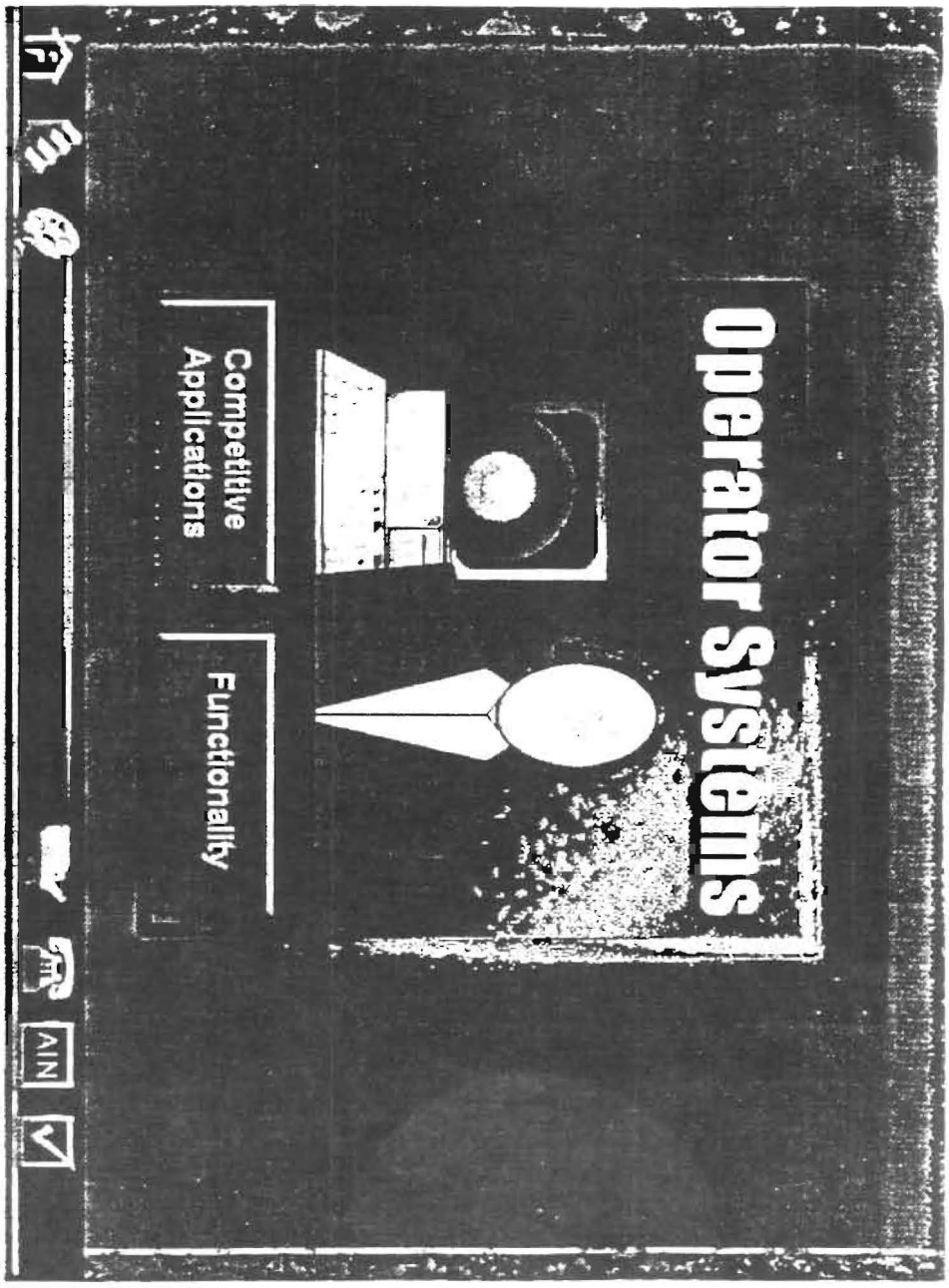

Caller ID allows you to see the phone number of an incoming call before you answer the phone.




Dialing *69 allows you to call back the last number that called you, whether you answered that call or not.


Operator Systems
Competitive Applications
Functionality
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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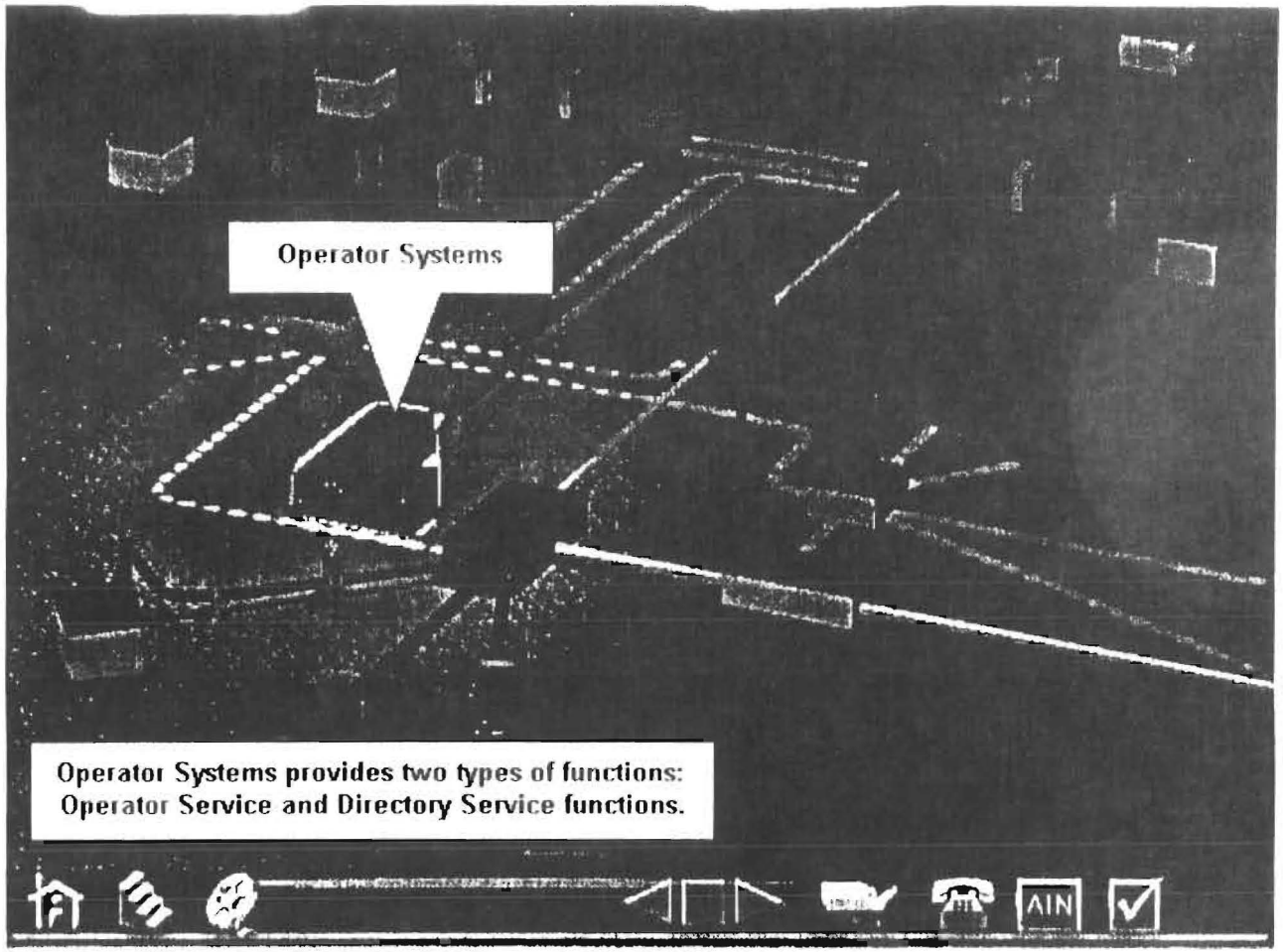
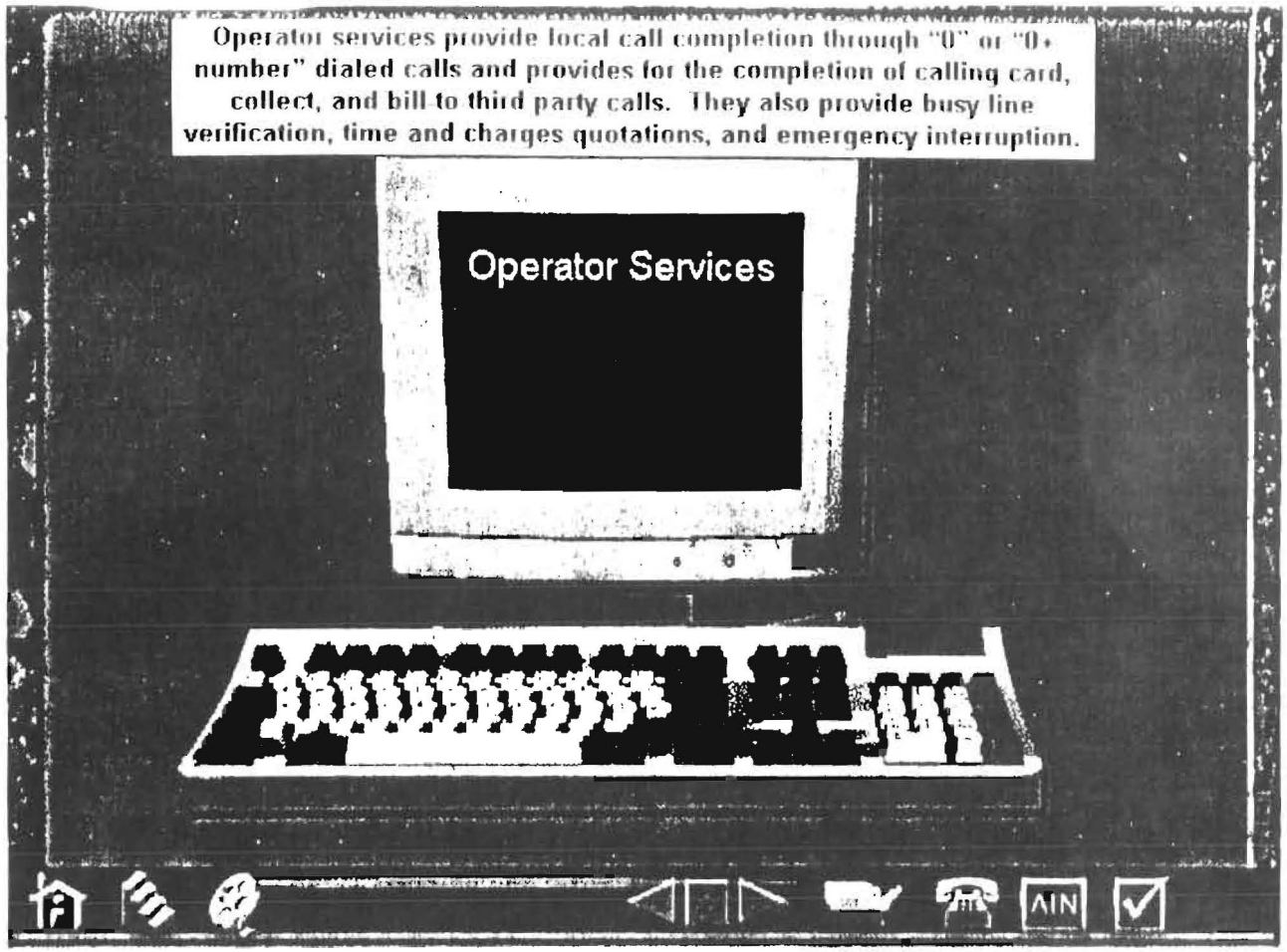
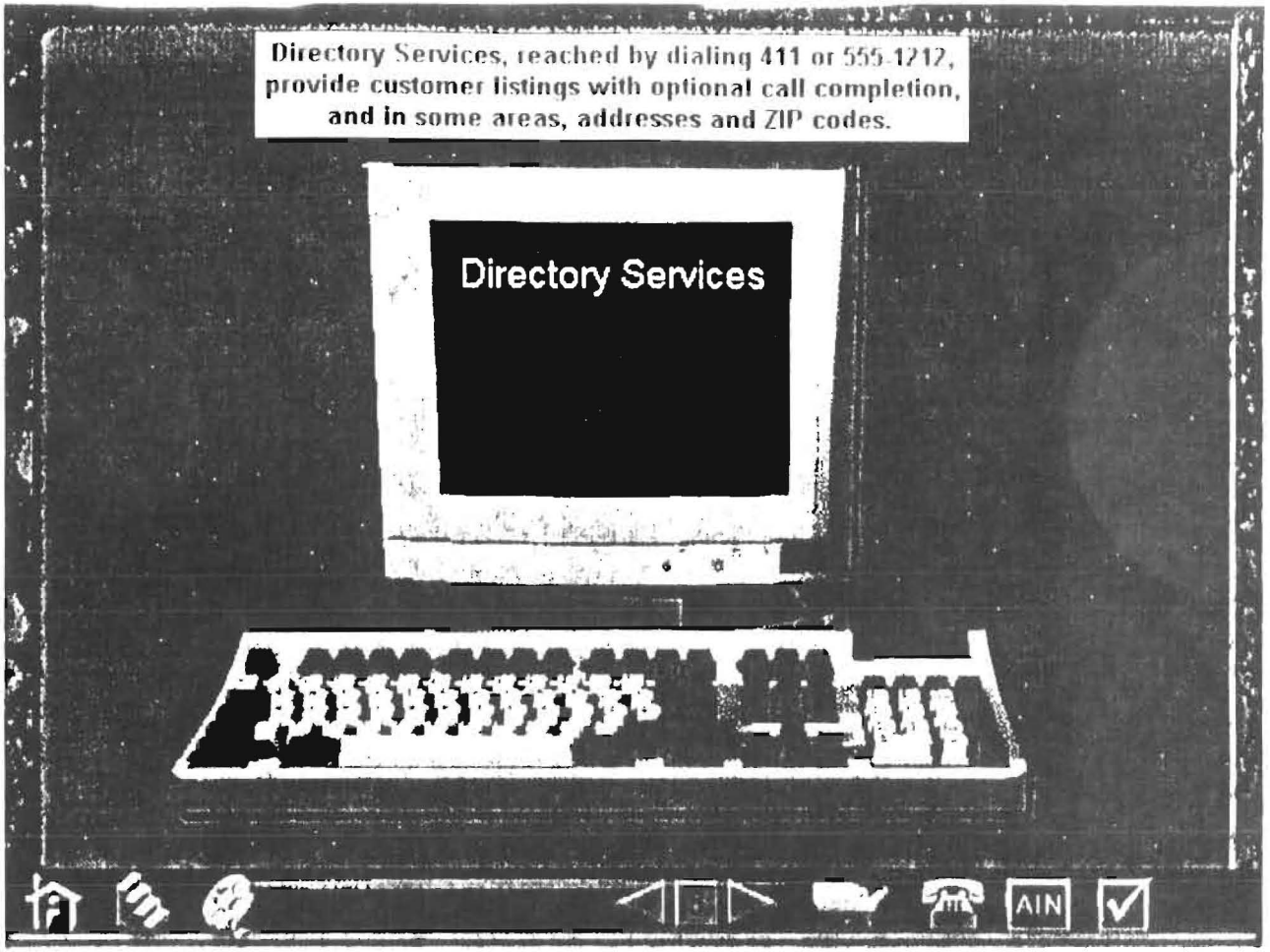
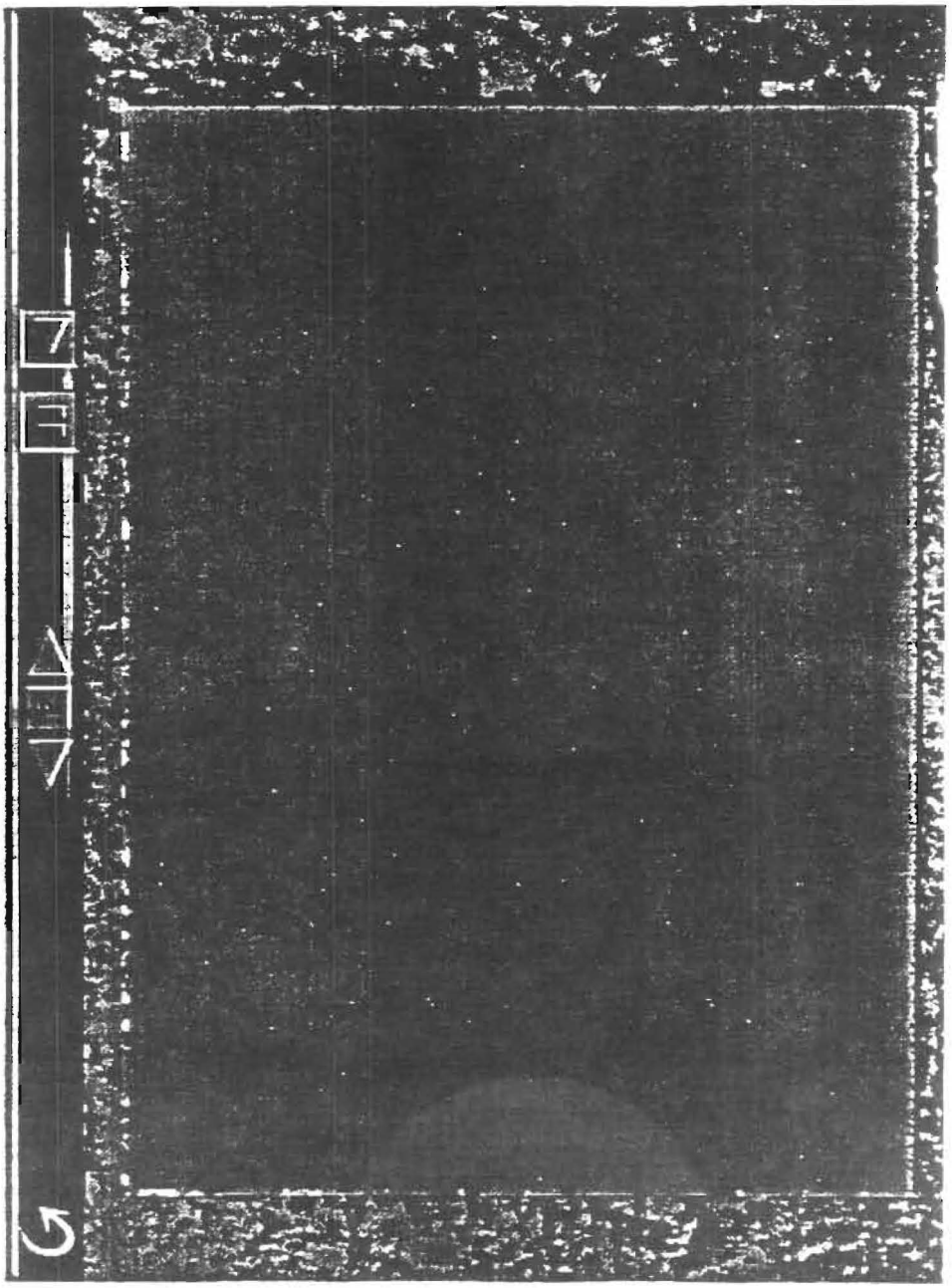
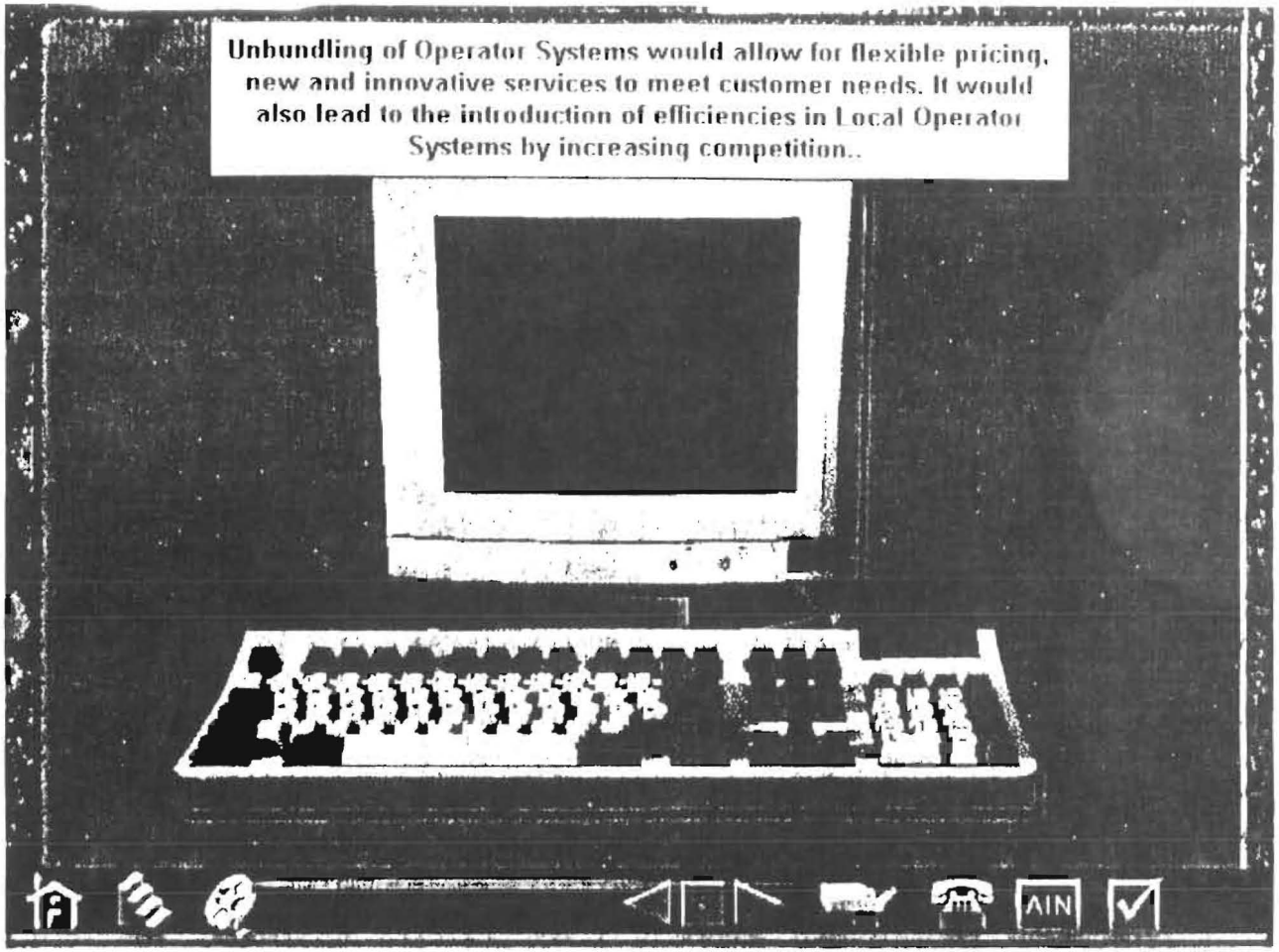


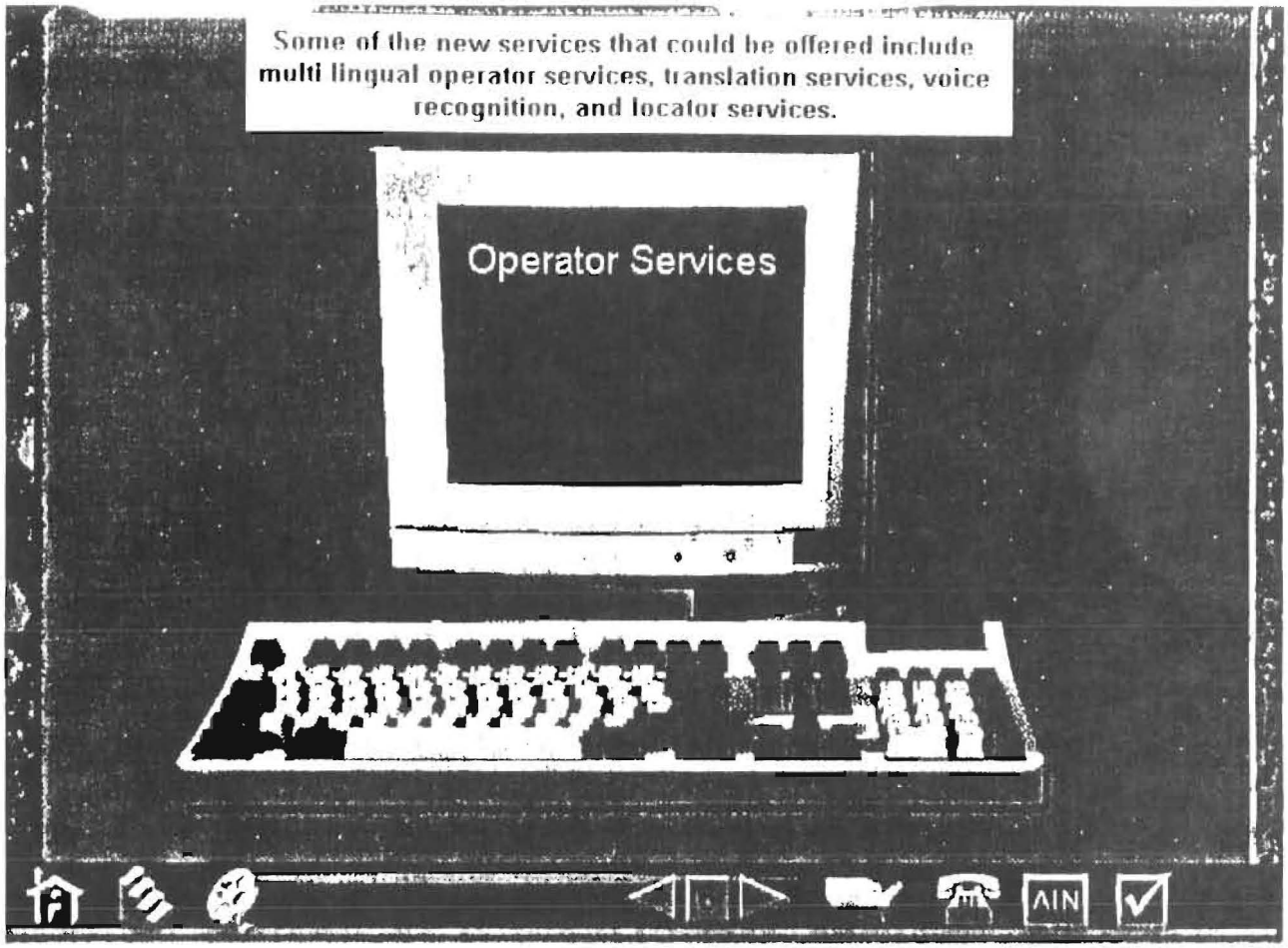

Operator services provide local call completion through "0" or "0+ number" dialed calls and provides for the completion of calling card, collect, and bill to third party calls. They also provide busy line verification, time and charges quotations, and emergency interruption.
Operator Services
AIN


Directory Services, reached by dialing 411 or 555-1212, provide customer listings with optional call completion, and in some areas, addresses and ZIP codes.
Directory Services
AIN

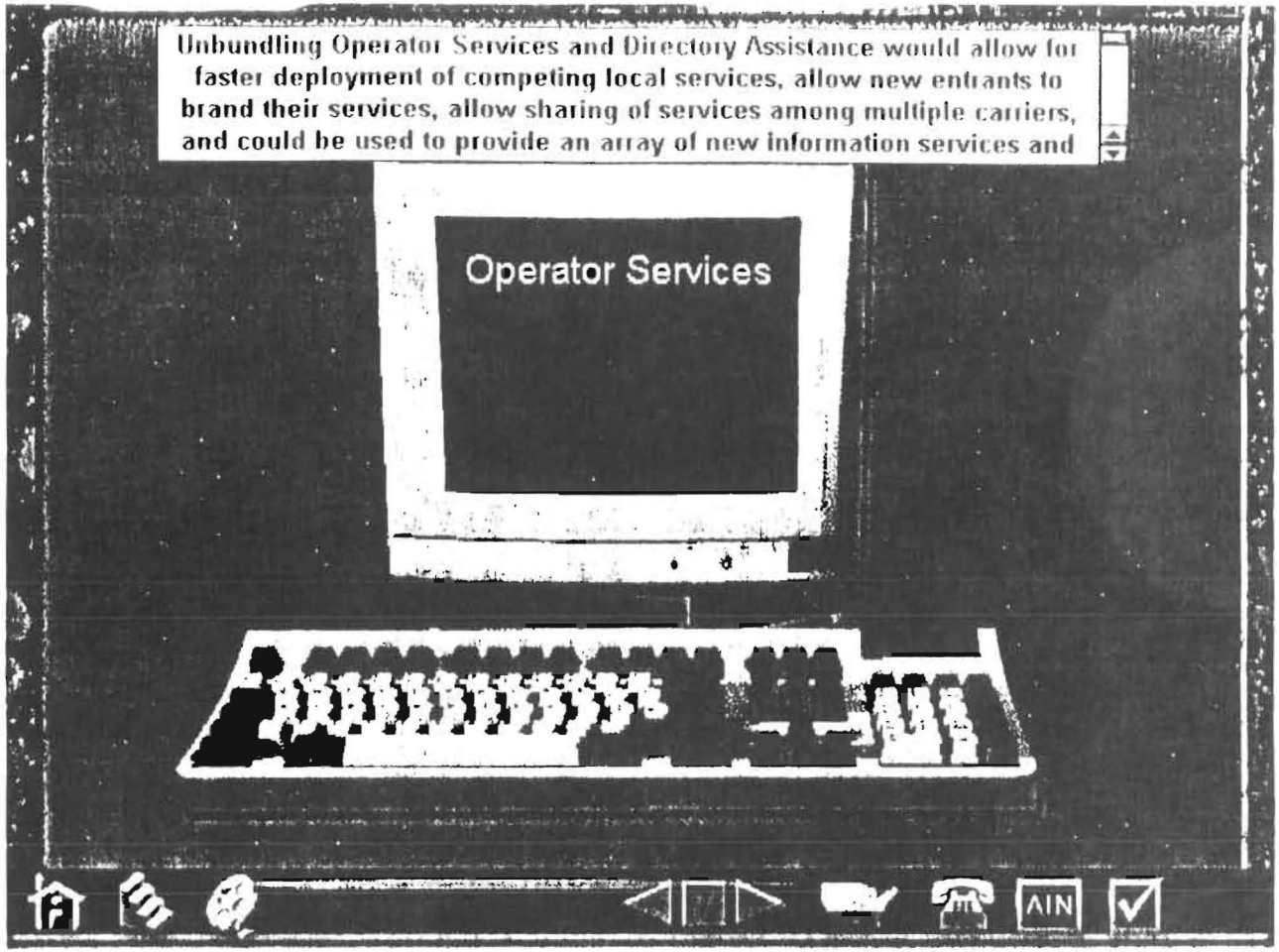


FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 165 OF 238

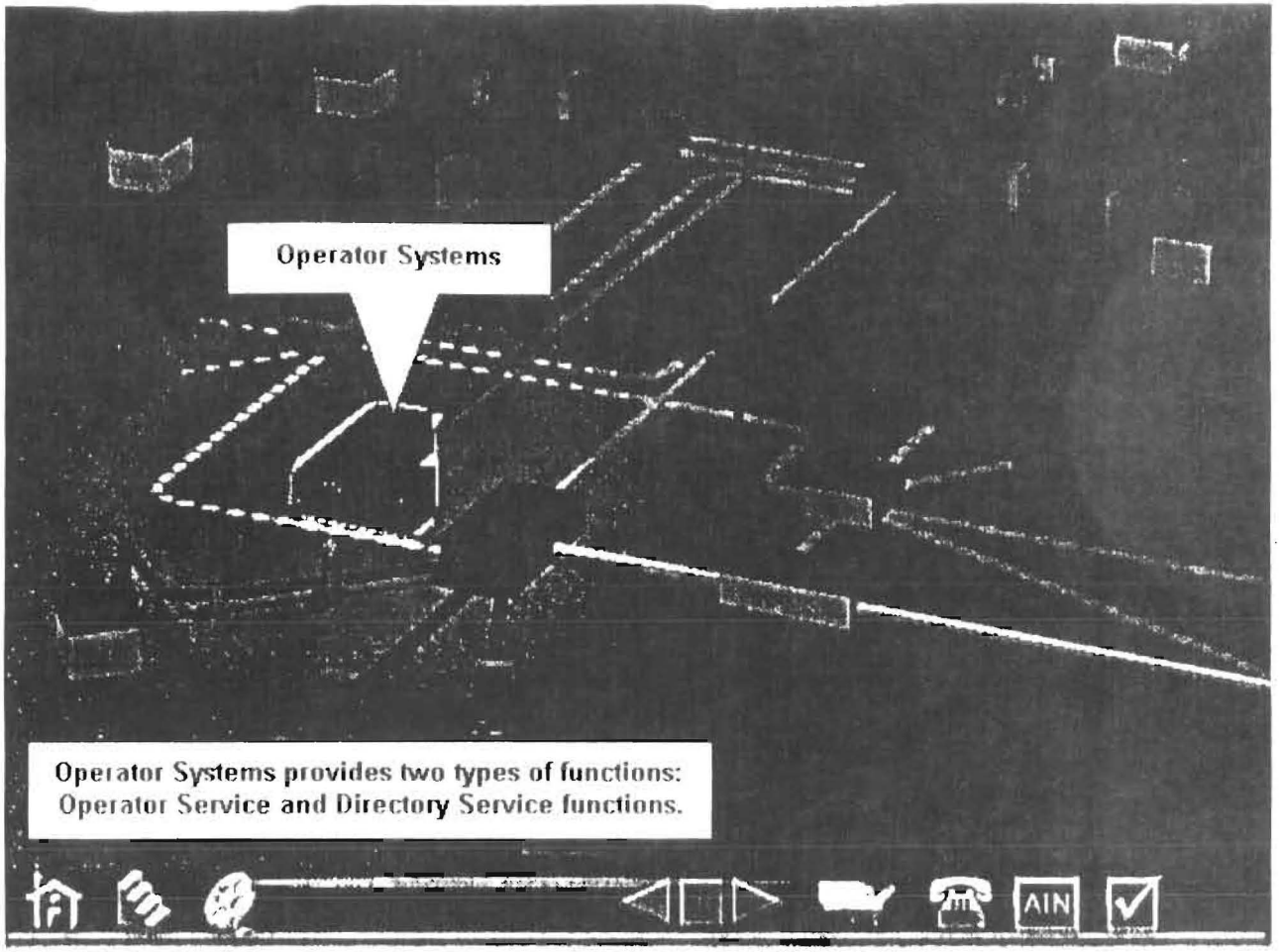



Some of the new services that could be offered include multi lingual operator services, translation services, voice recognition, and locator services.
Operator Services
AIN

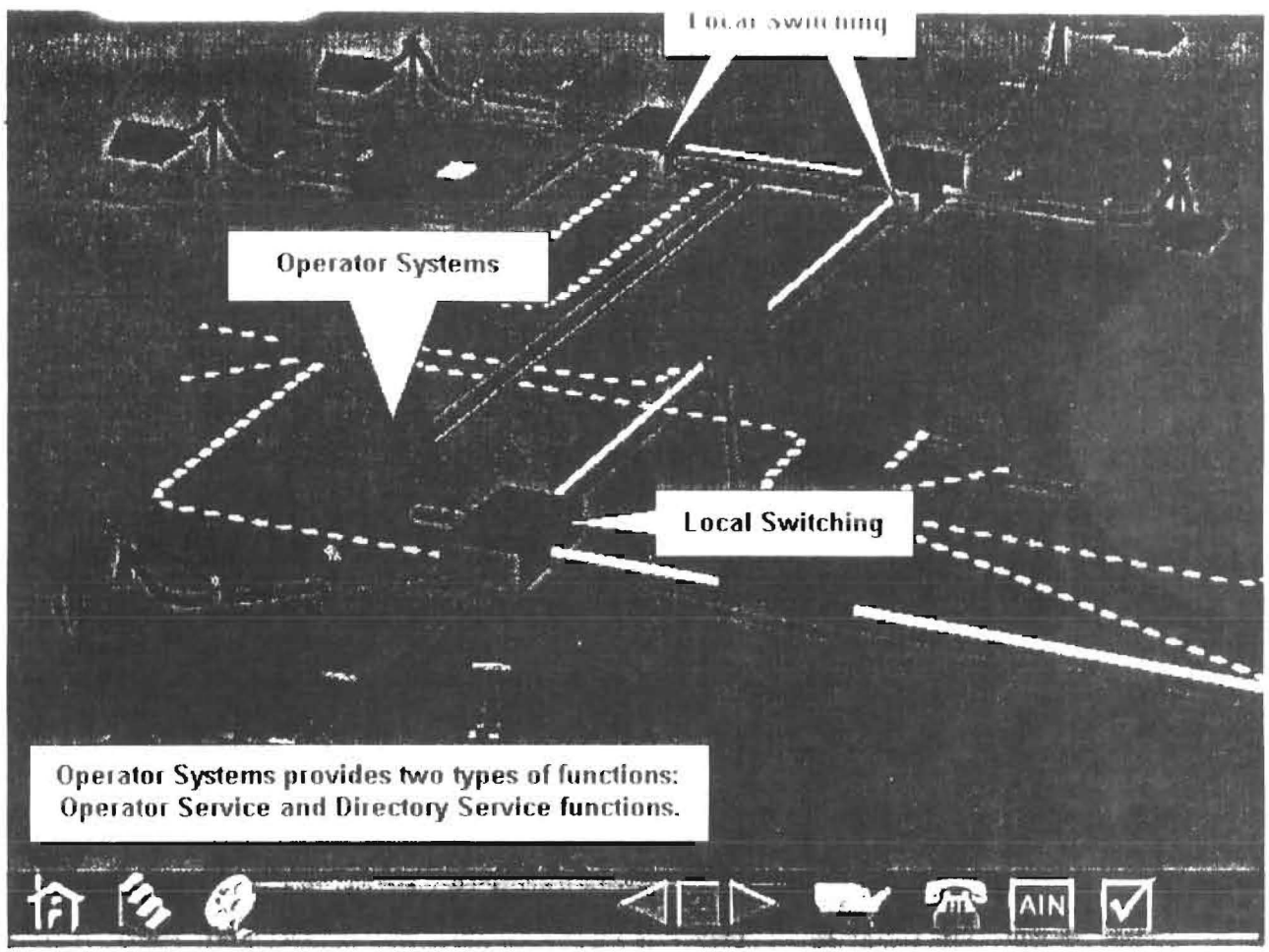
FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 147 OF 238

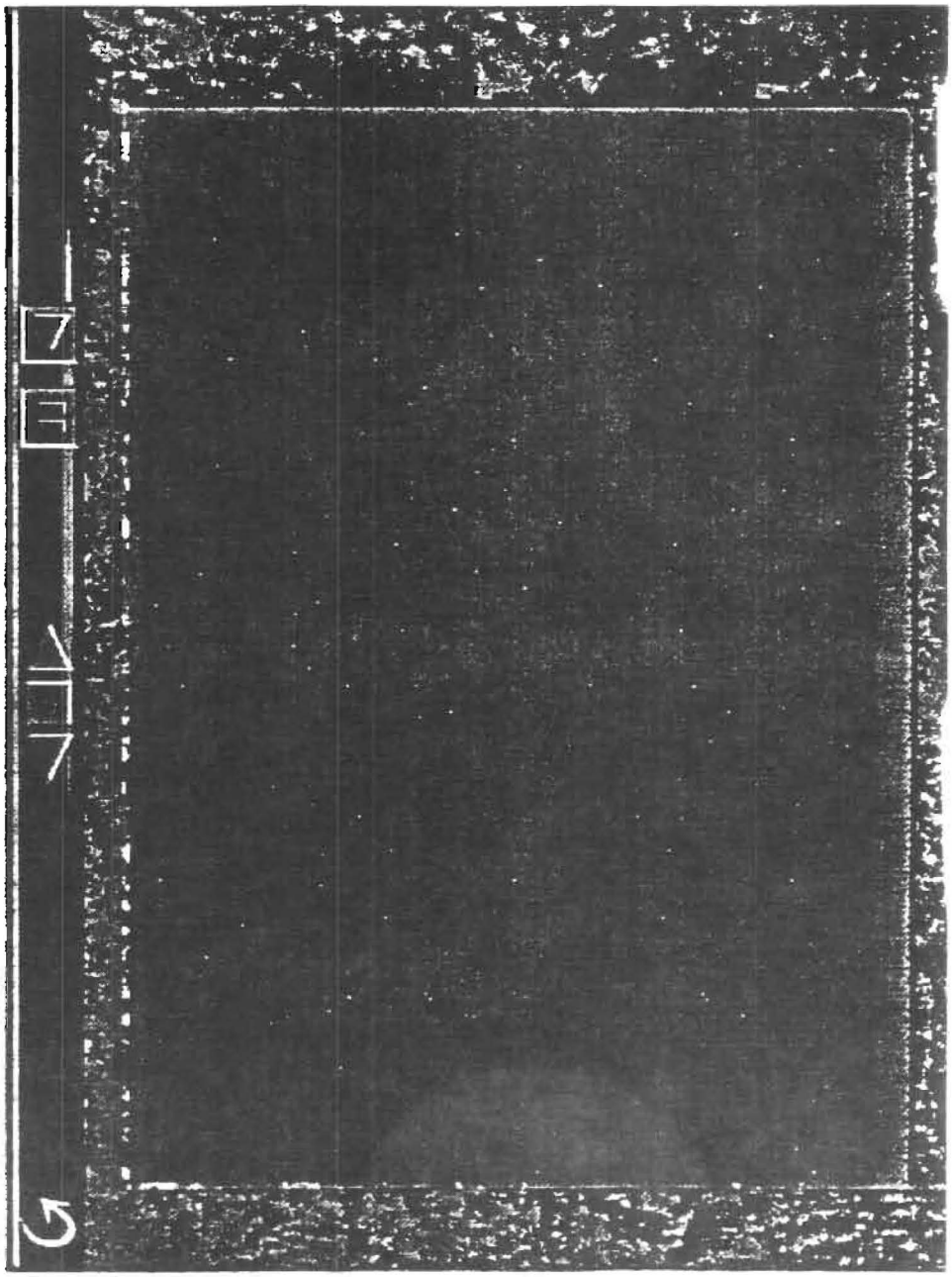


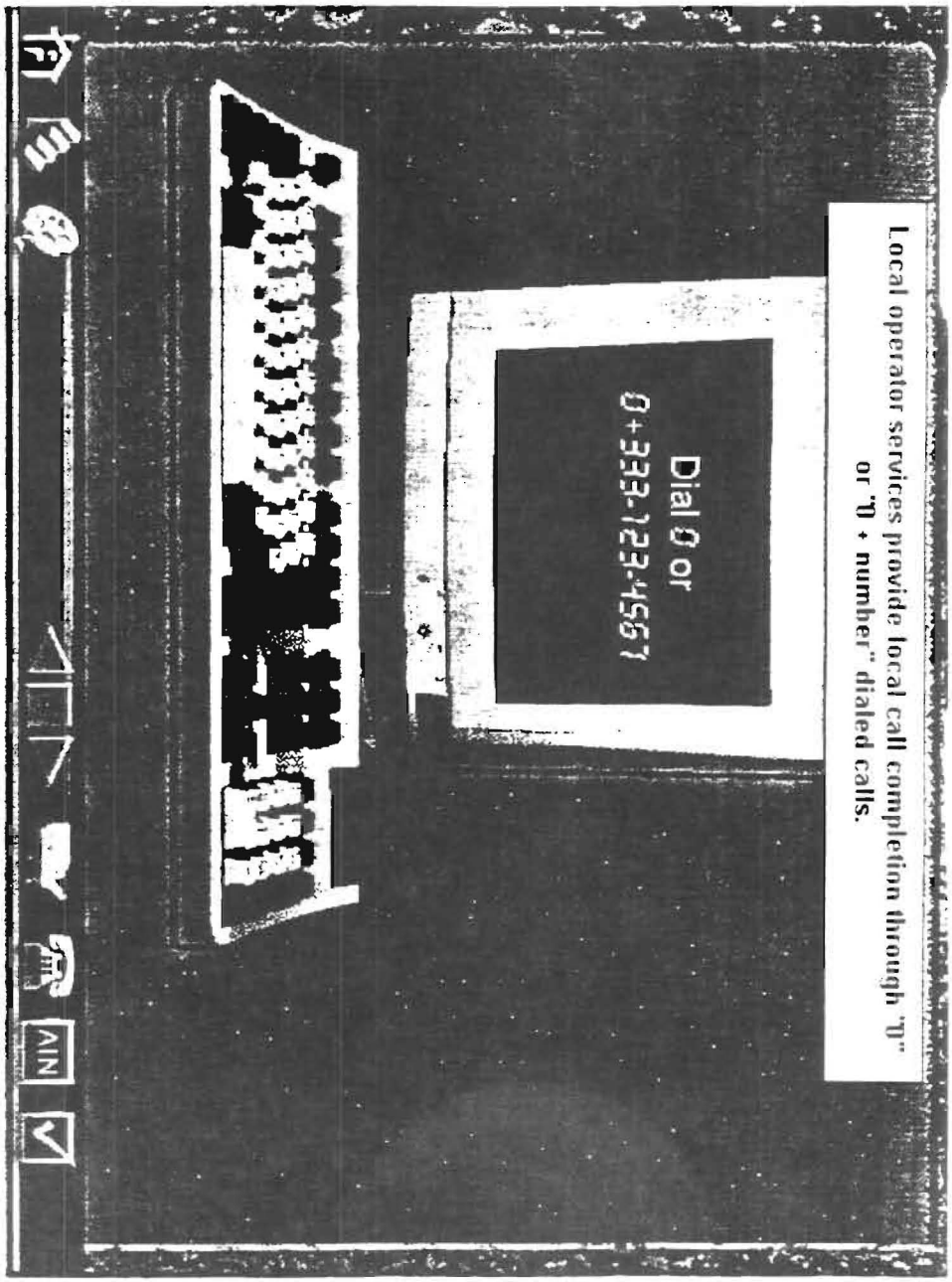
FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 168 OF 238

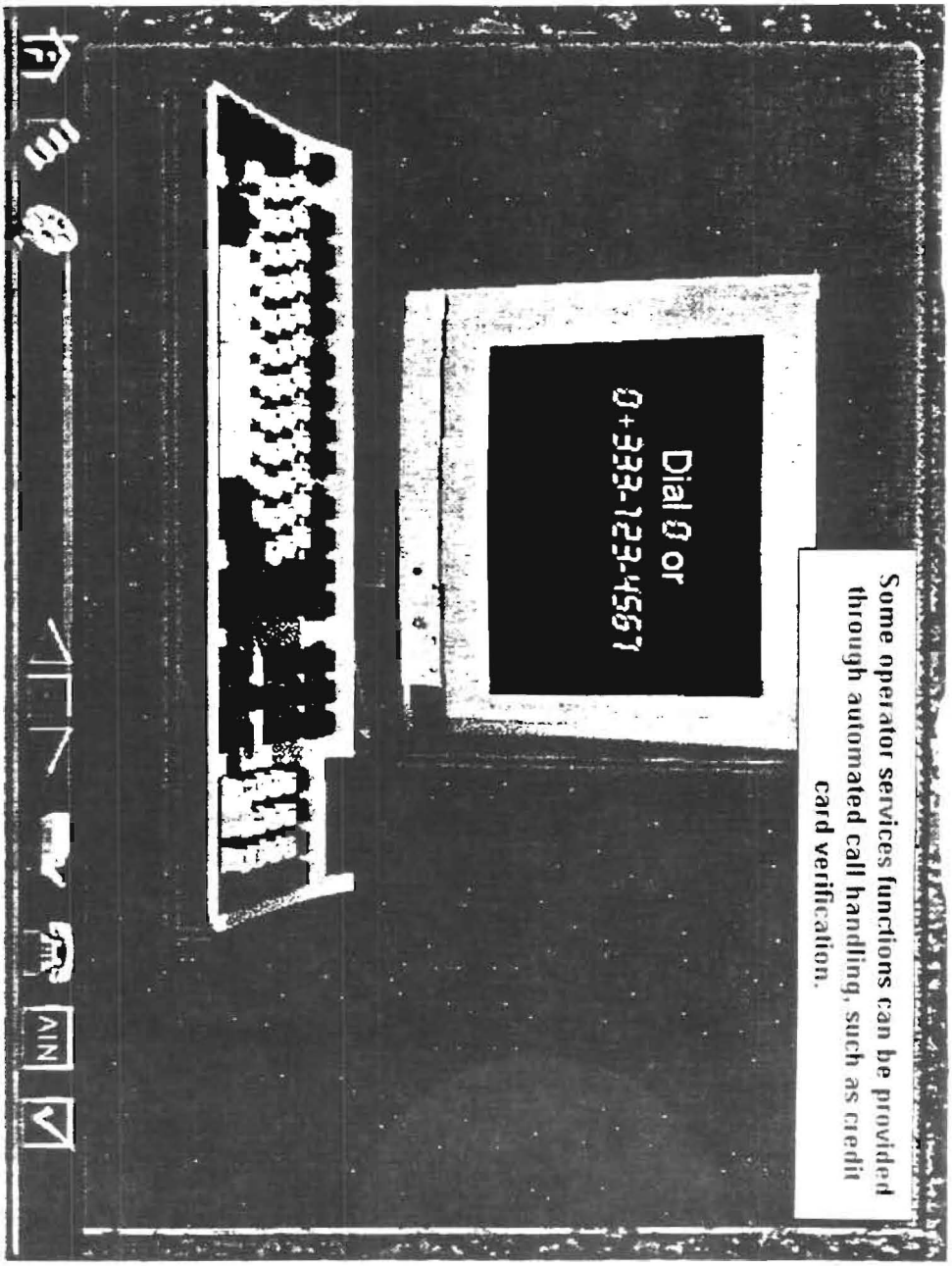


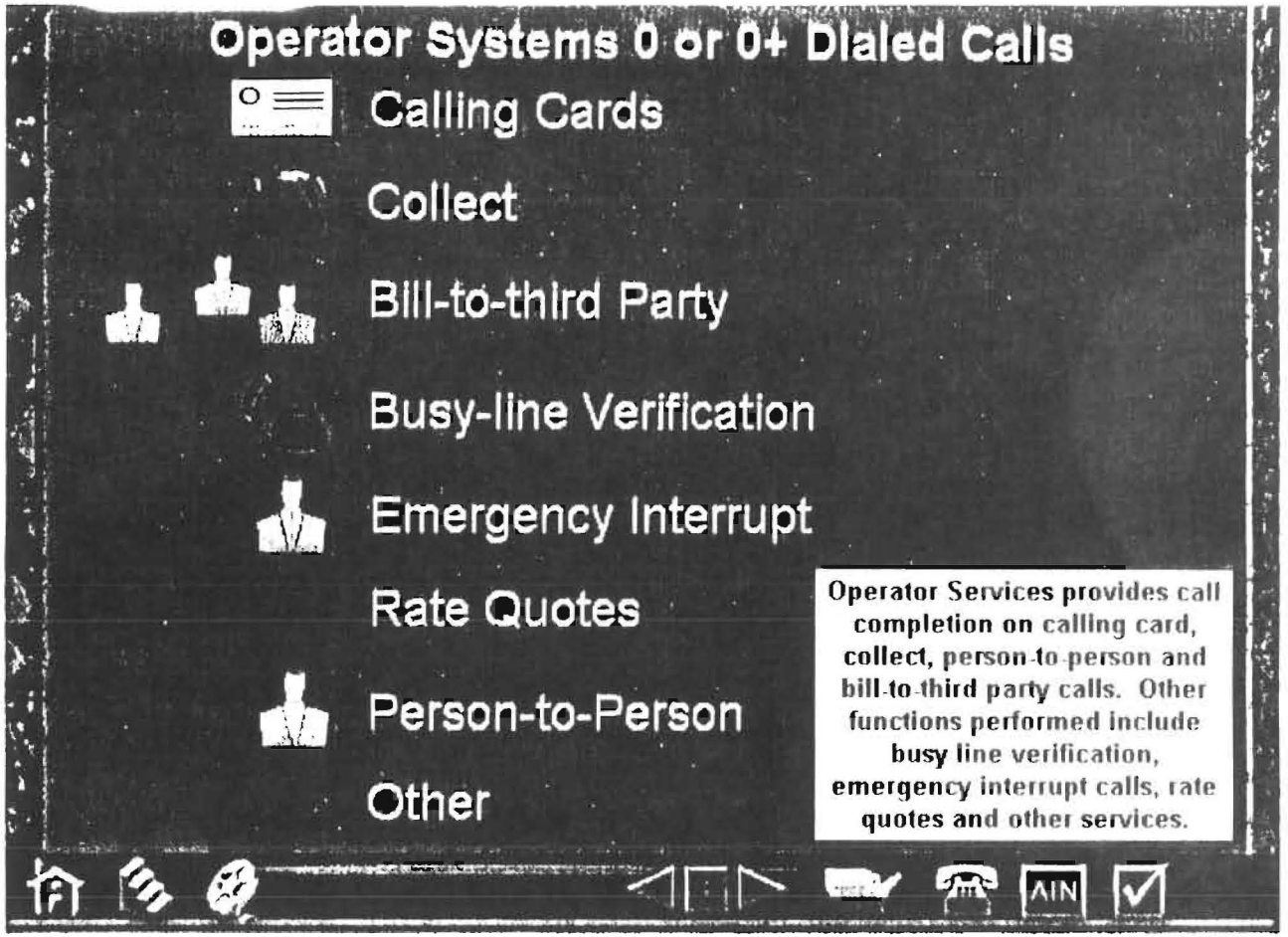
FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
PAGE 169 OF 238

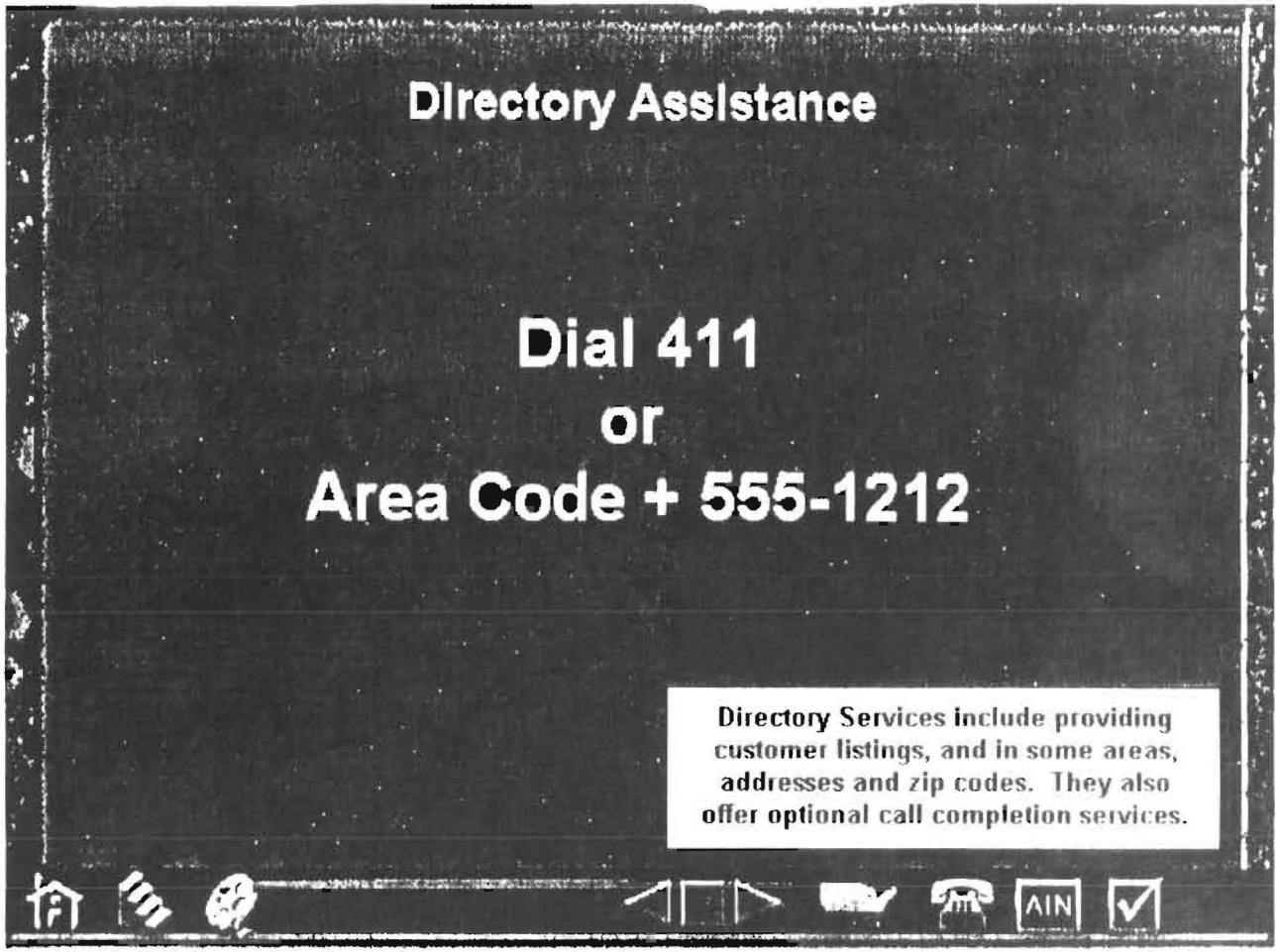


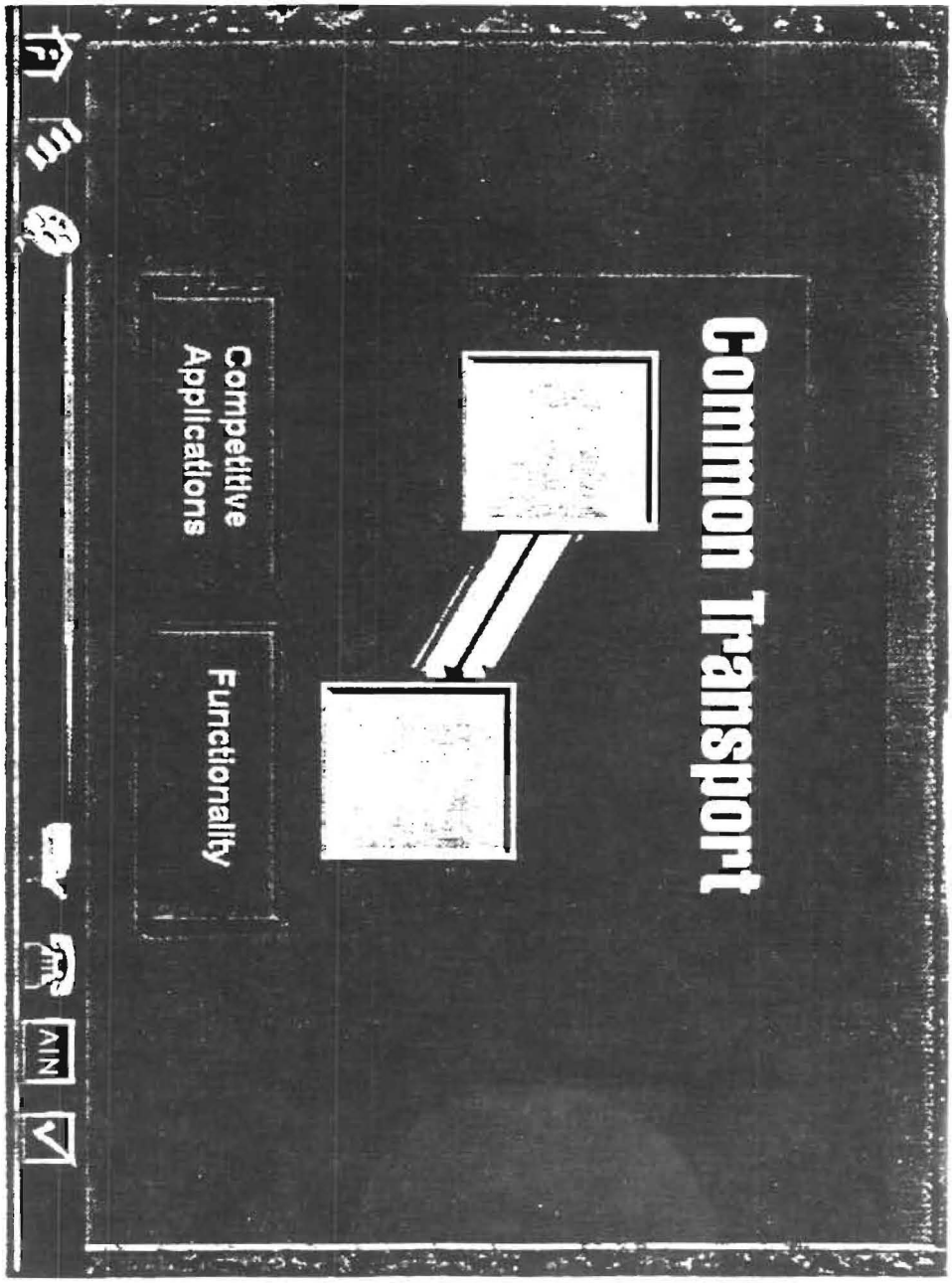


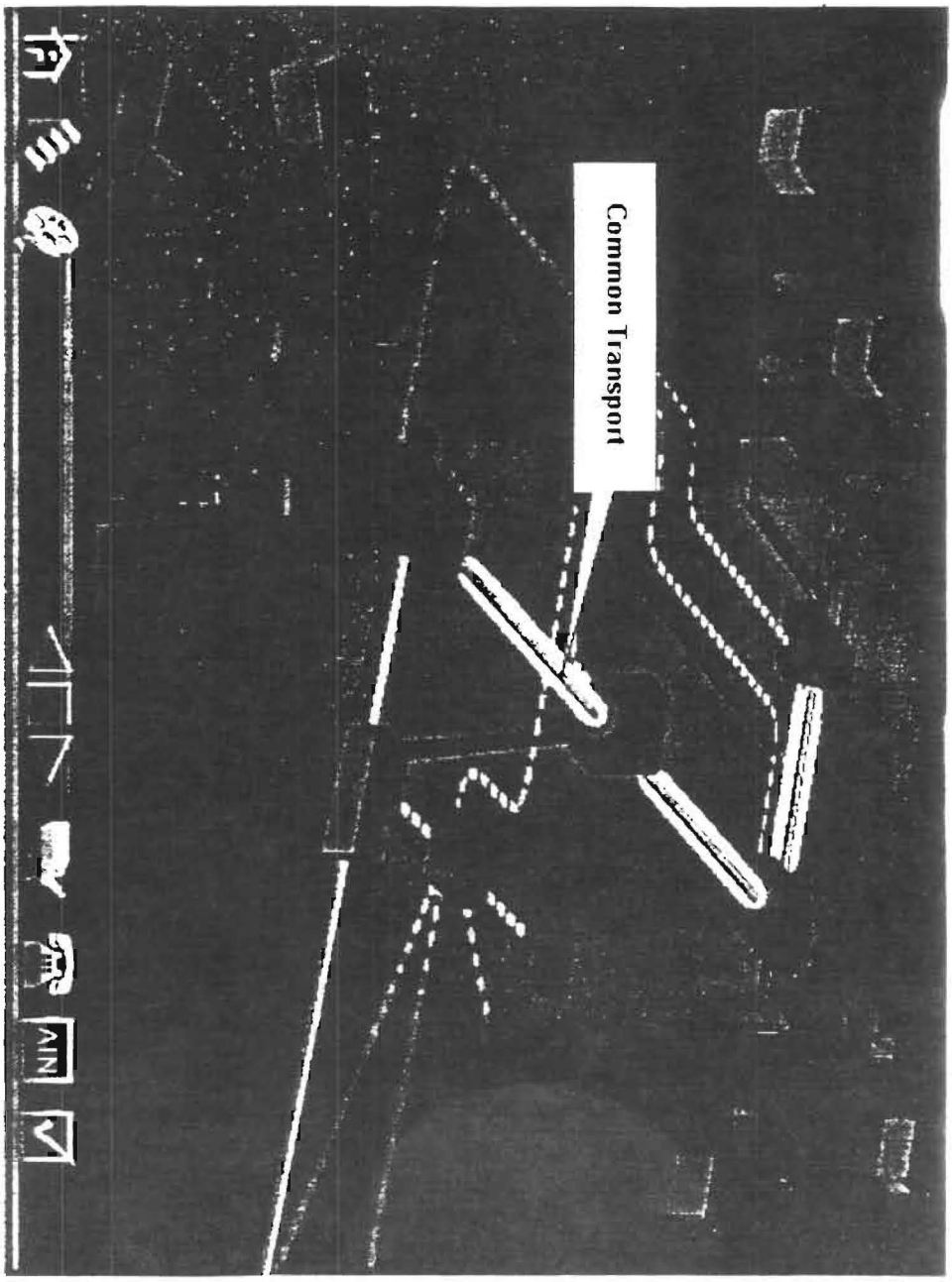

Local operator services provide local call completion through "0" or "0 + number" dialed calls.
Dial 0 or
0+333-123-4567
AIN


Some operator services functions can be provided through automated call handling, such as credit card verification.
Dial 0 or
0+333-123-4567
AIN


Operator Systems 0 or 0+ Dialed Calls
Calling Cards
Collect
Bill-to-third Party
Busy-line Verification
Emergency Interrupt
Rate Quotes
Person-to-Person
Other
Operator Services provides call completion on calling card, collect, person-to-person and bill-to-third party calls. Other functions performed include busy line verification, emergency interrupt calls, rate quotes and other services.
AIN


Directory Assistance
Dial 411
or
Area Code + 555-1212
Directory Services include providing customer listings, and in some areas, addresses and zip codes. They also offer optional call completion services.
AIN


Common Transport
Competitive Applications
Functionality
AIN


Common Transport

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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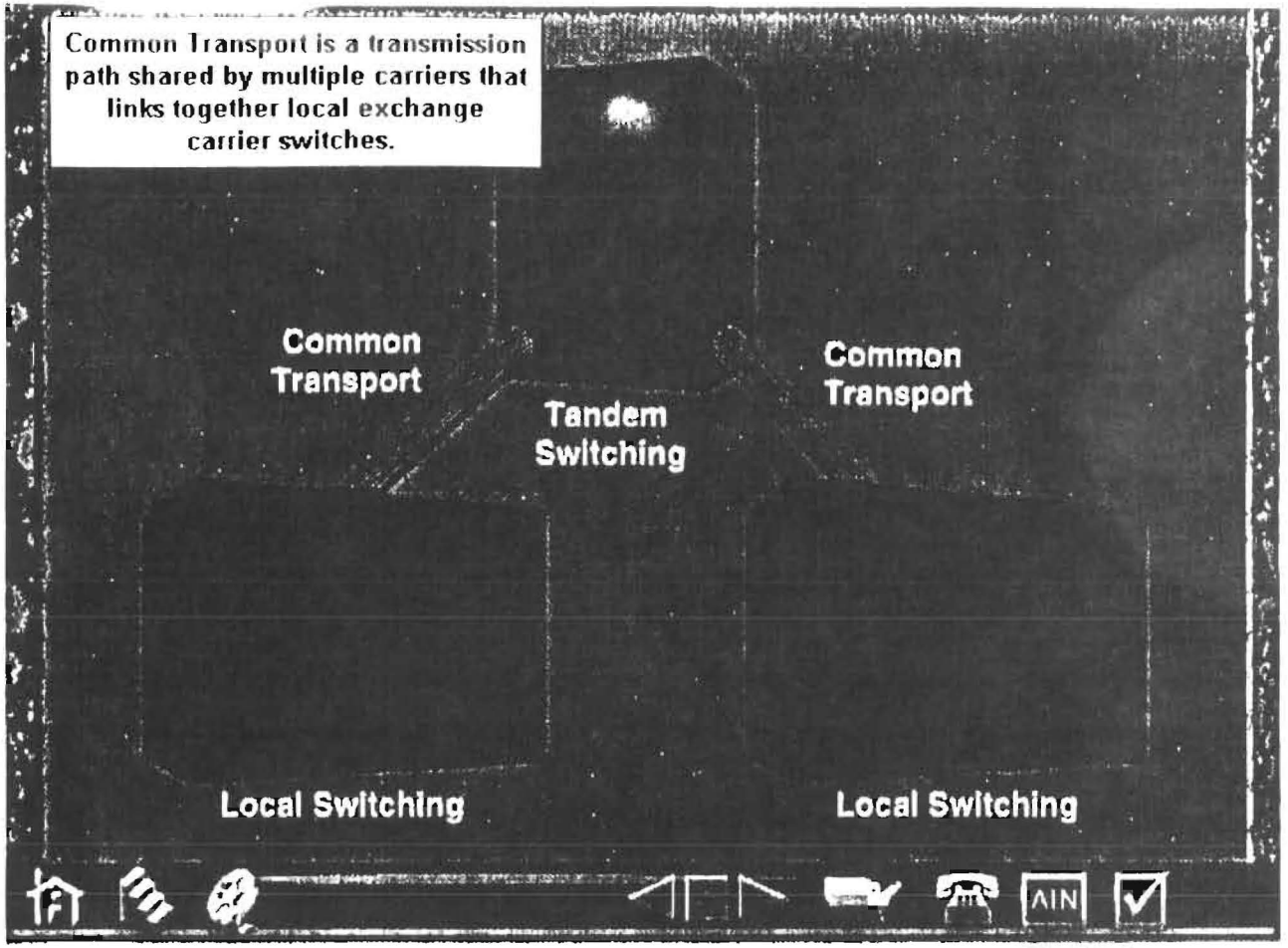
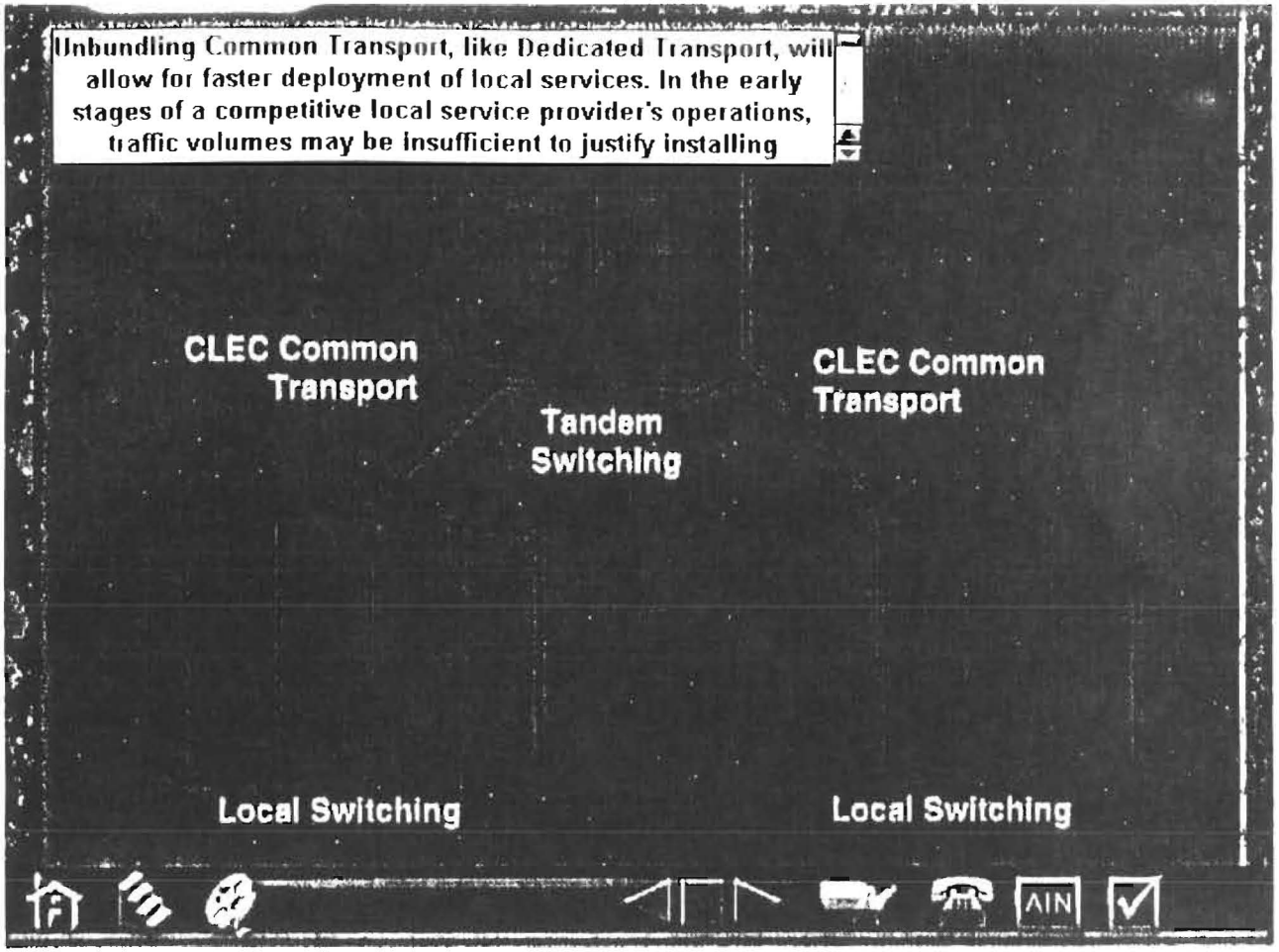
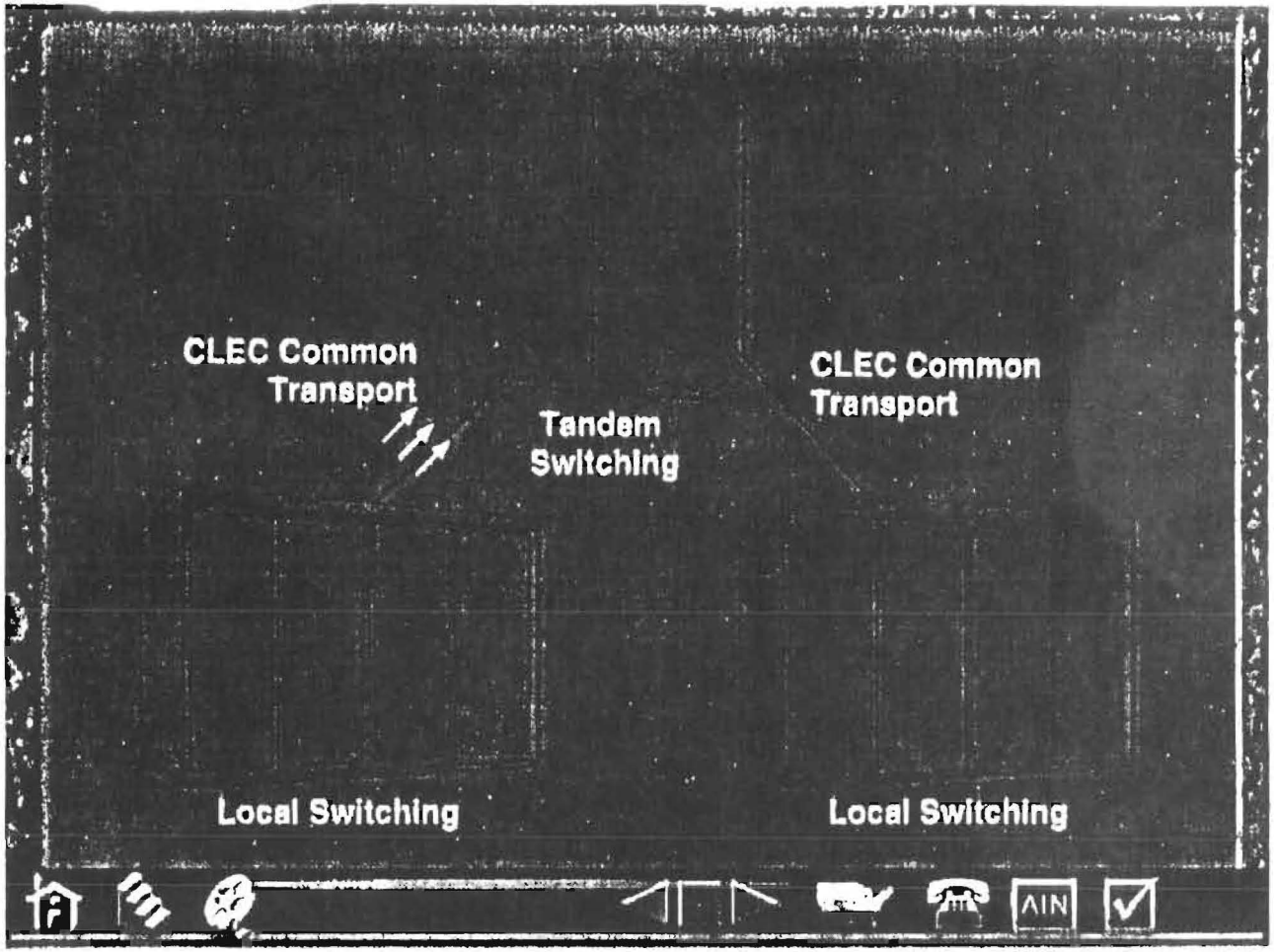



Unbundling Common Transport, like Dedicated Transport, will allow for faster deployment of local services. In the early stages of a competitive local service provider's operations, traffic volumes may be insufficient to justify installing
CLEC Common Transport
Tandem Switching
CLEC Common Transport
Local Switching
Local Switching
AIN


CLEC Common Transport
Tandem Switching
CLEC Common Transport
Local Switching
Local Switching
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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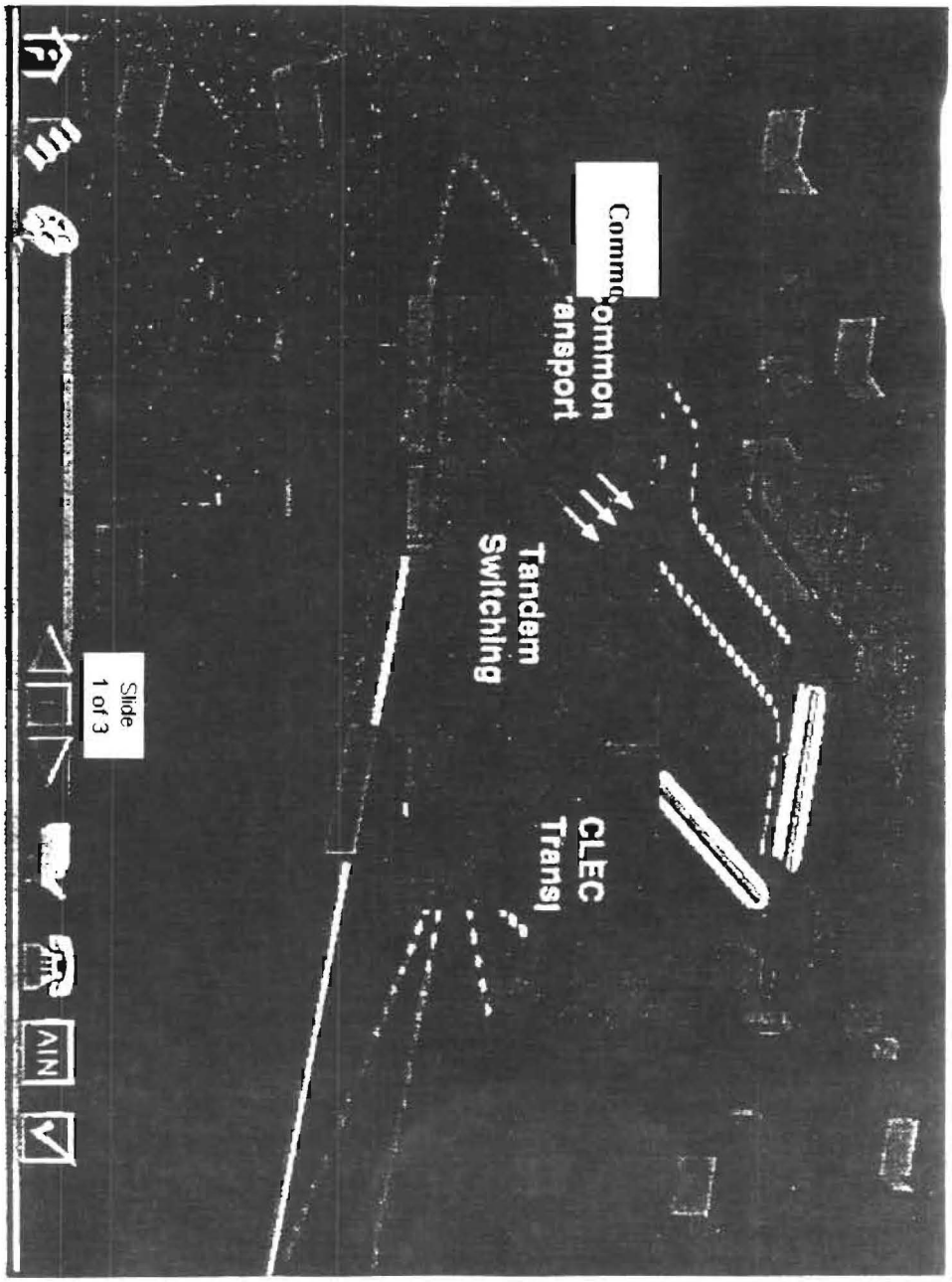

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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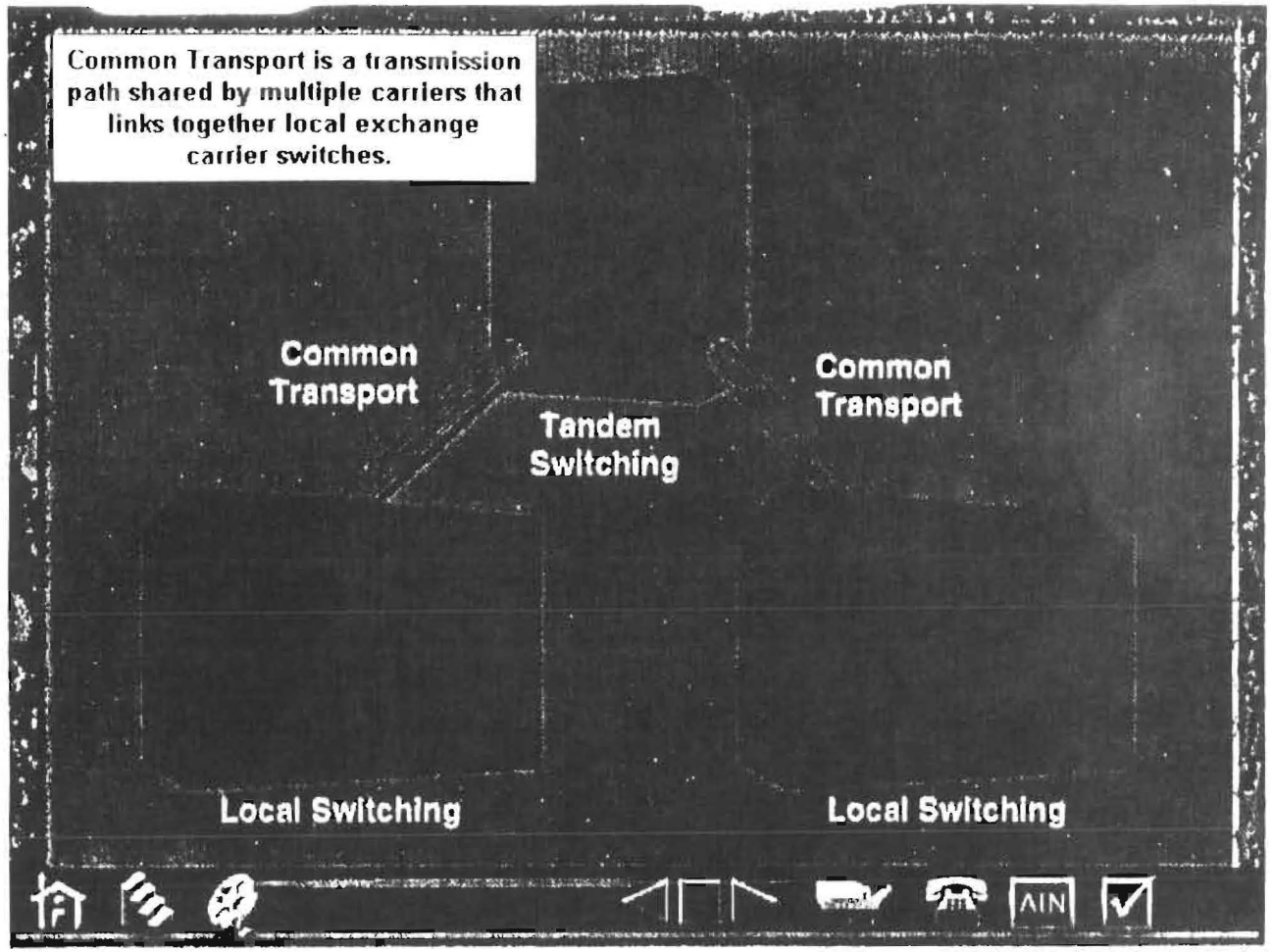
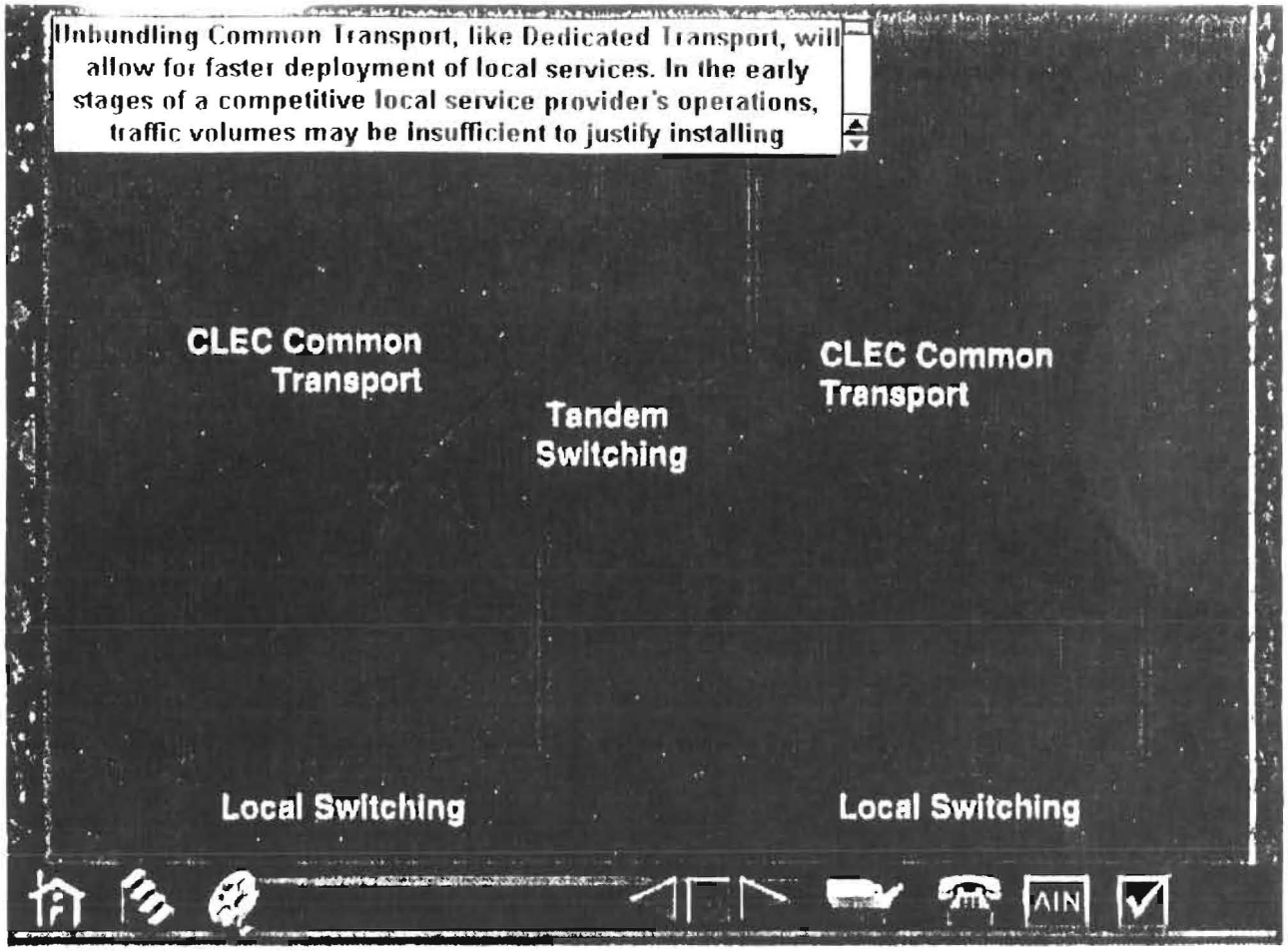
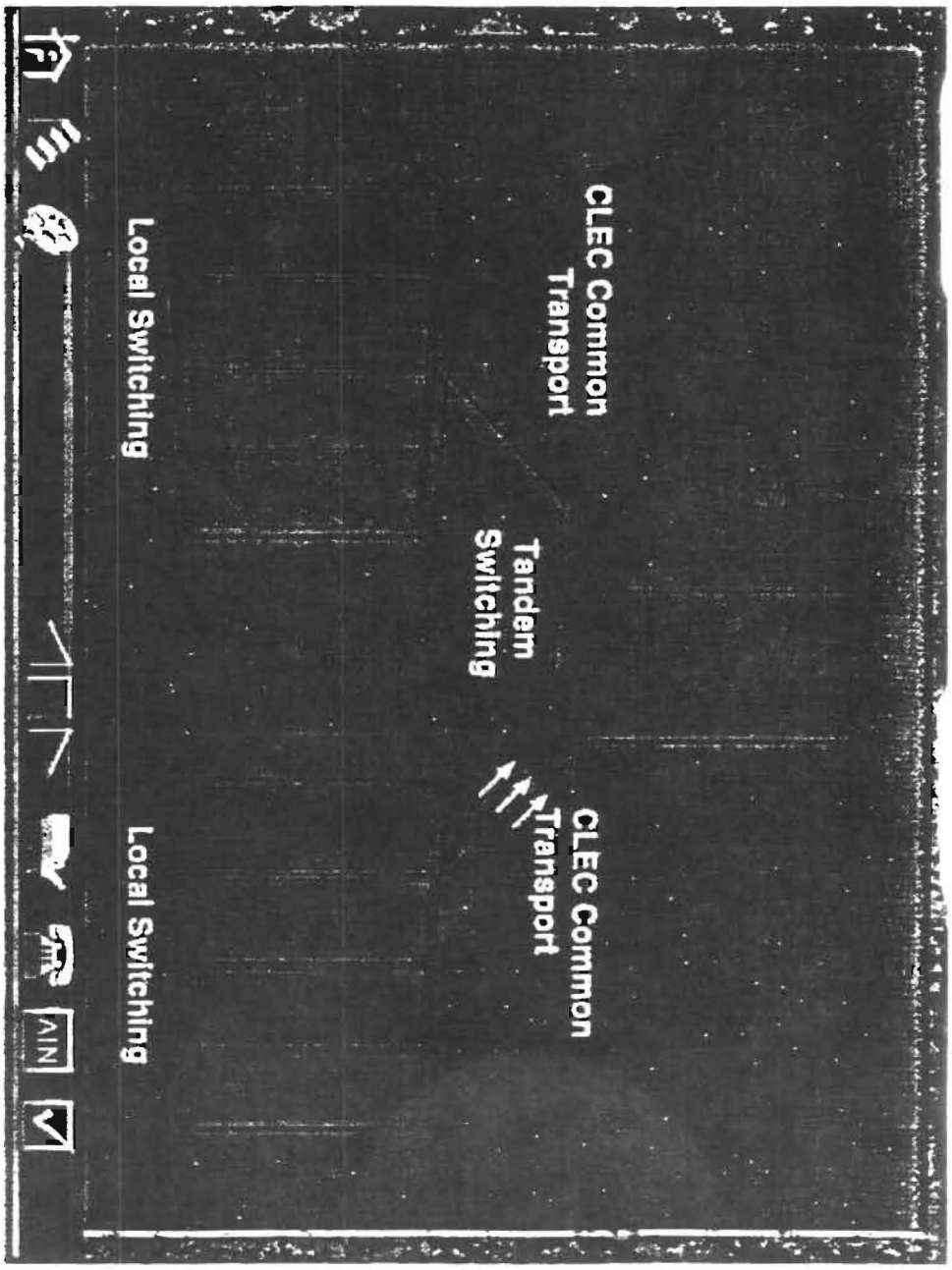
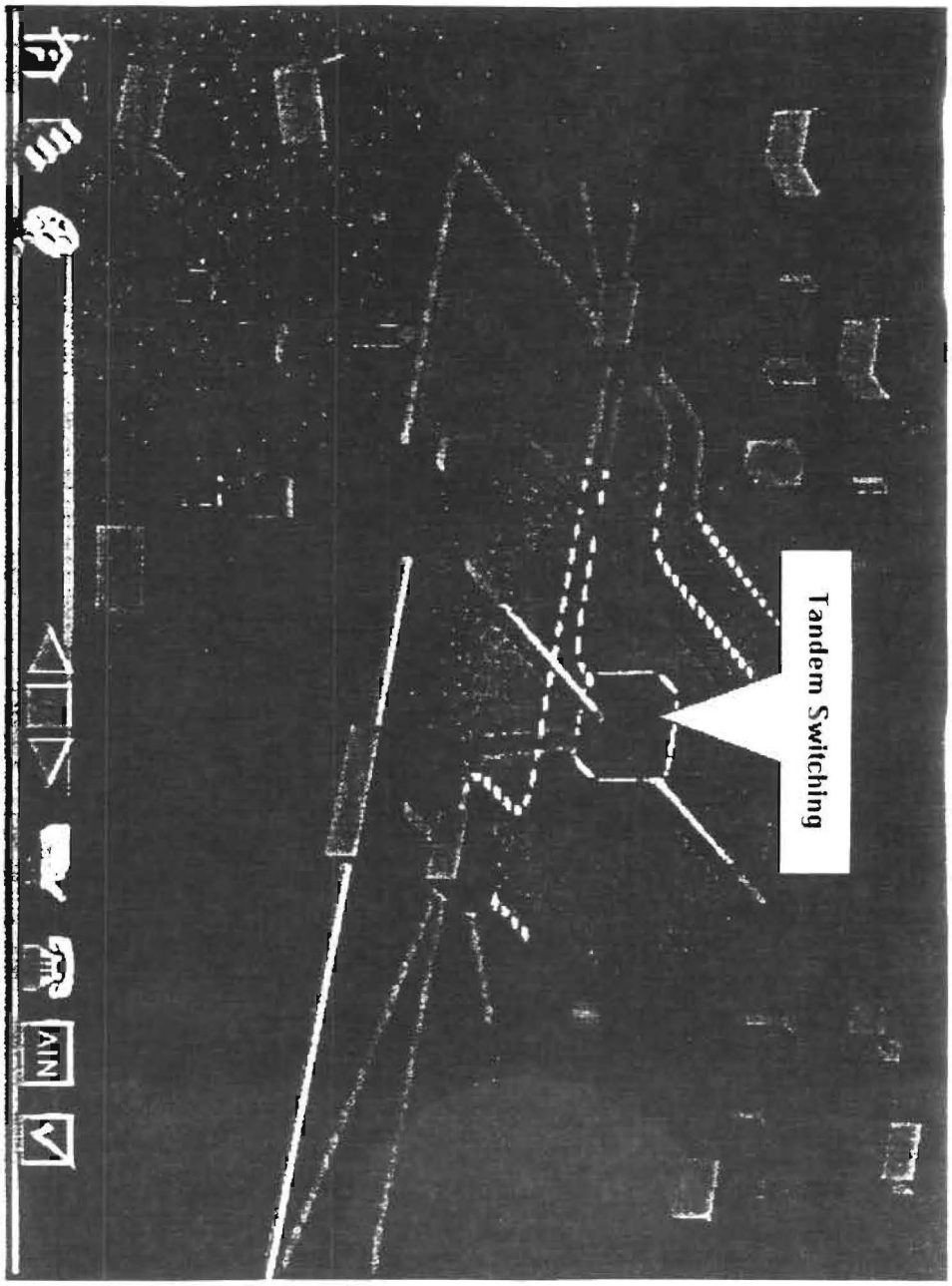
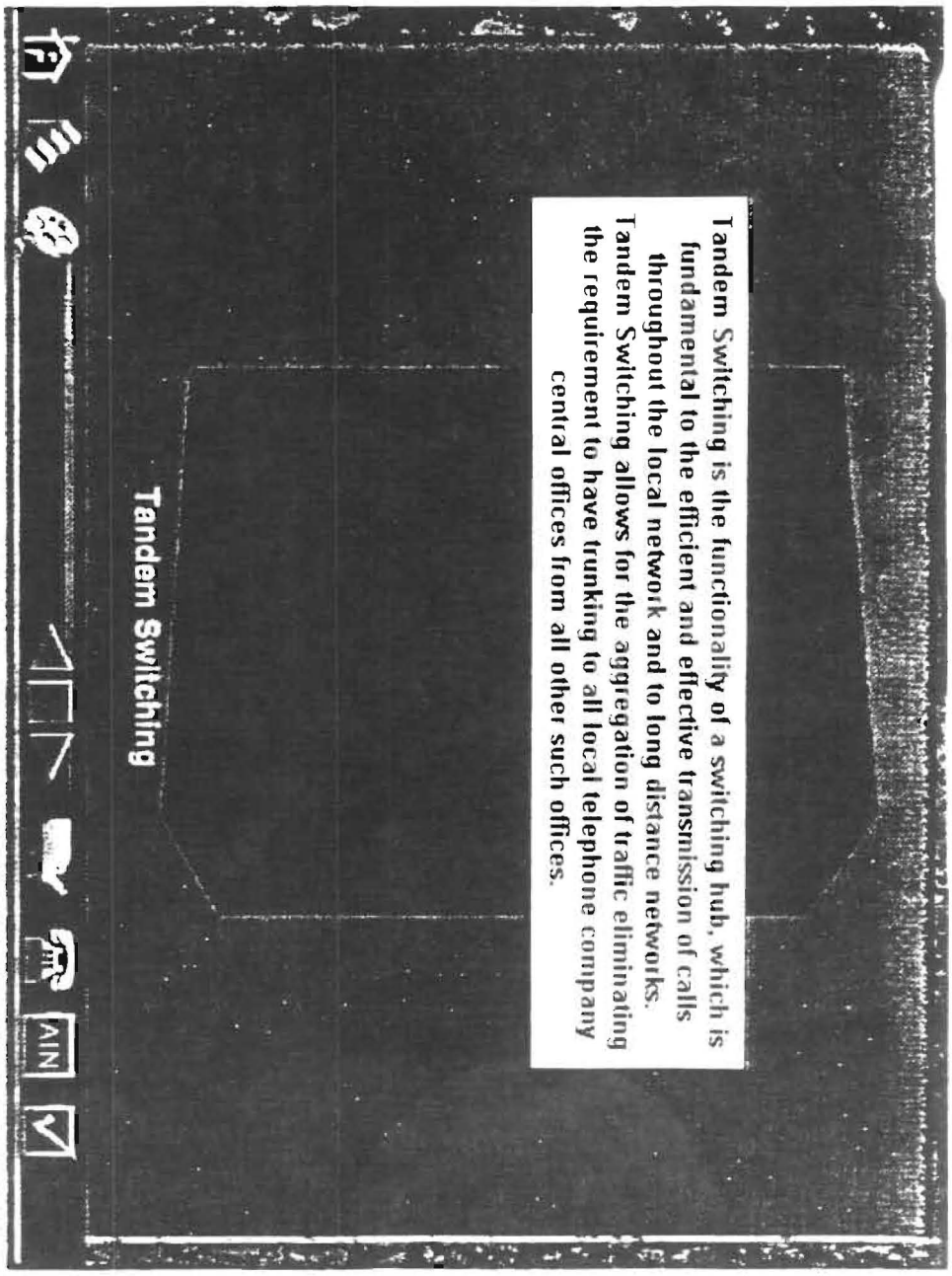


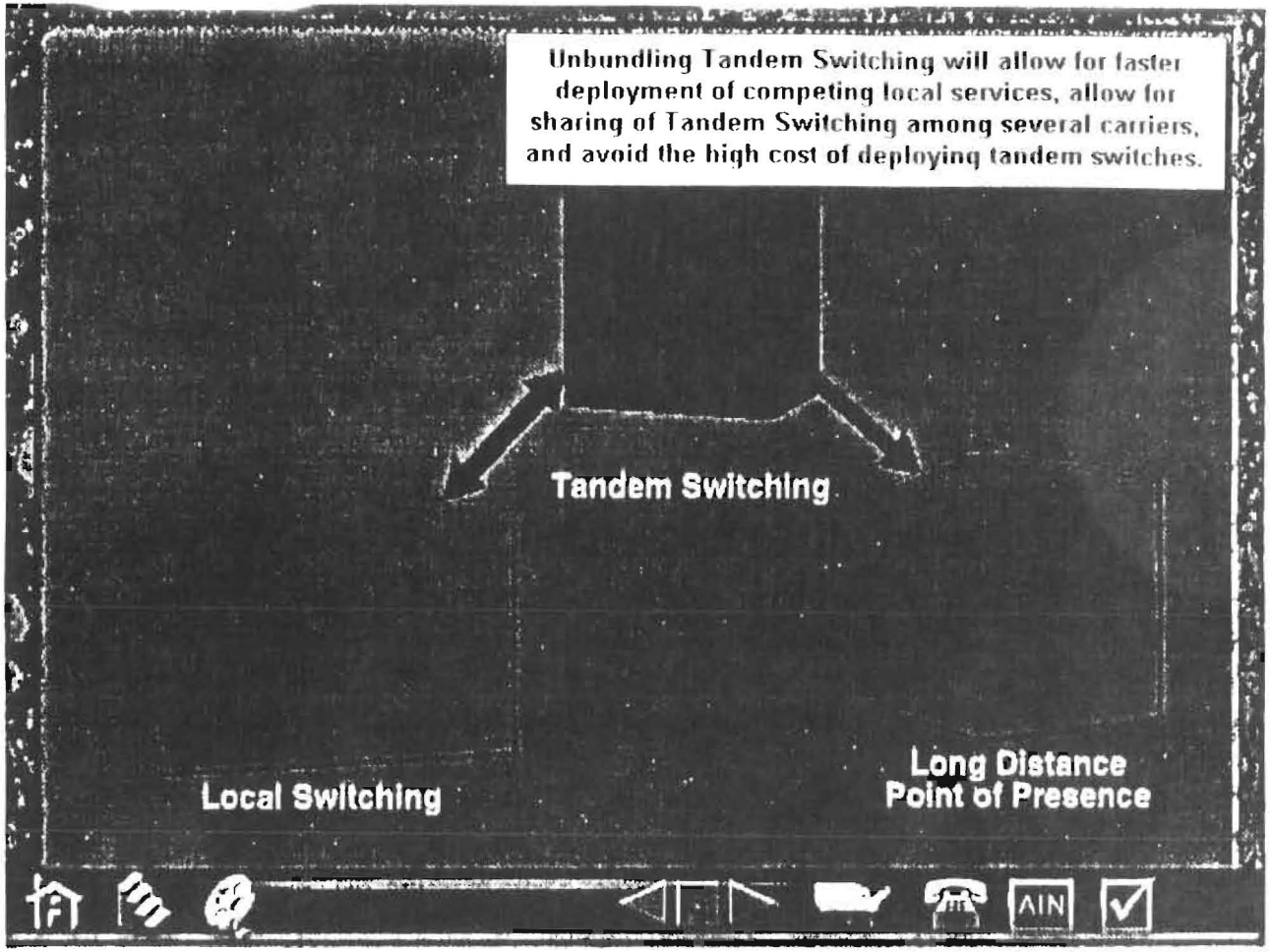

Unbundling Common Transport, like Dedicated Transport, will allow for faster deployment of local services. In the early stages of a competitive local service provider's operations, traffic volumes may be insufficient to justify installing
CLEC Common Transport
Tandem Switching
CLEC Common Transport
Local Switching
Local Switching
AIN

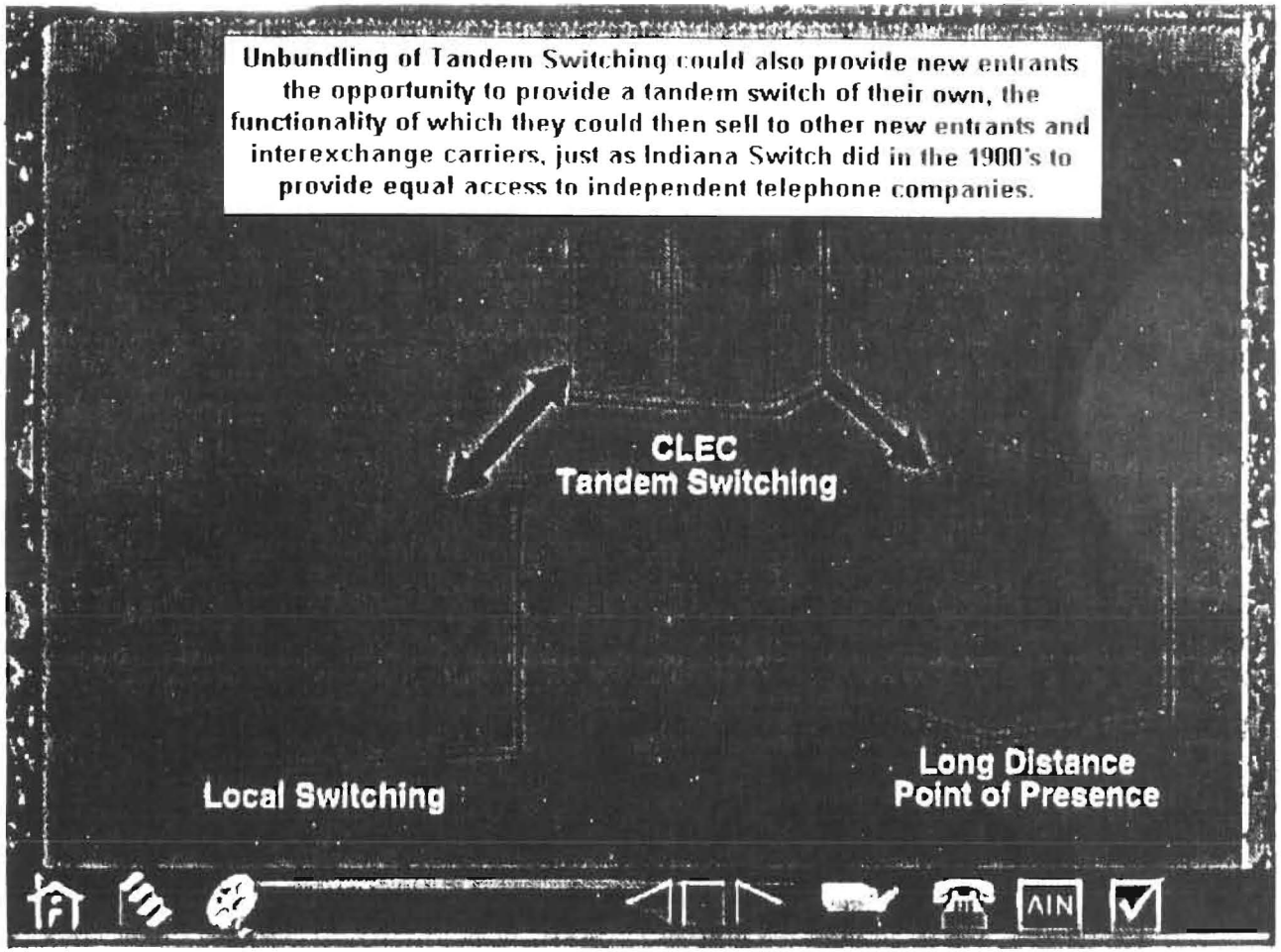

CLEC Common Transport
Tandem Switching
CLEC Common Transport
Local Switching
Local Switching
AIN

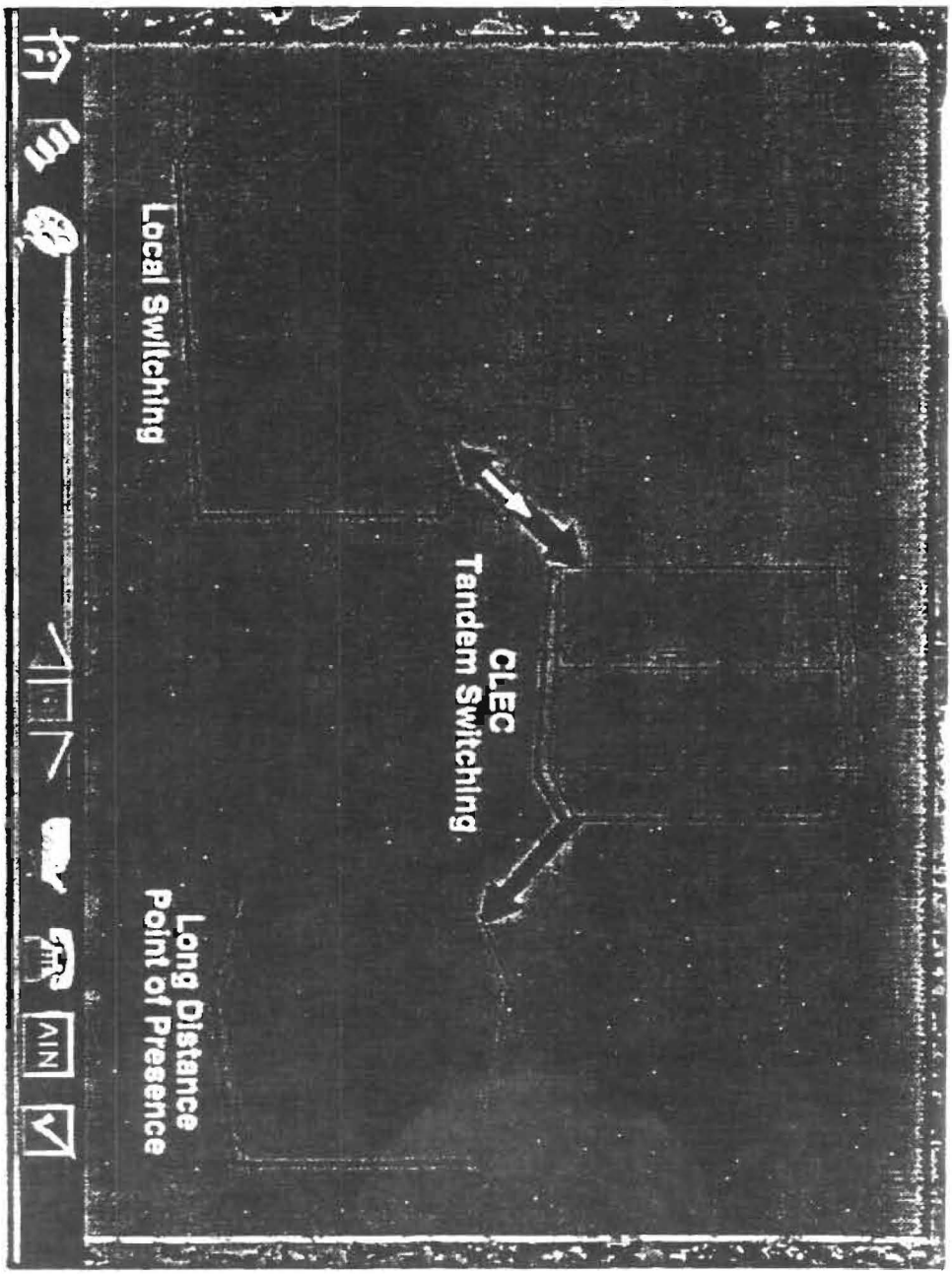

Tandem Switching
Competitive Applications
Functionality
AIN

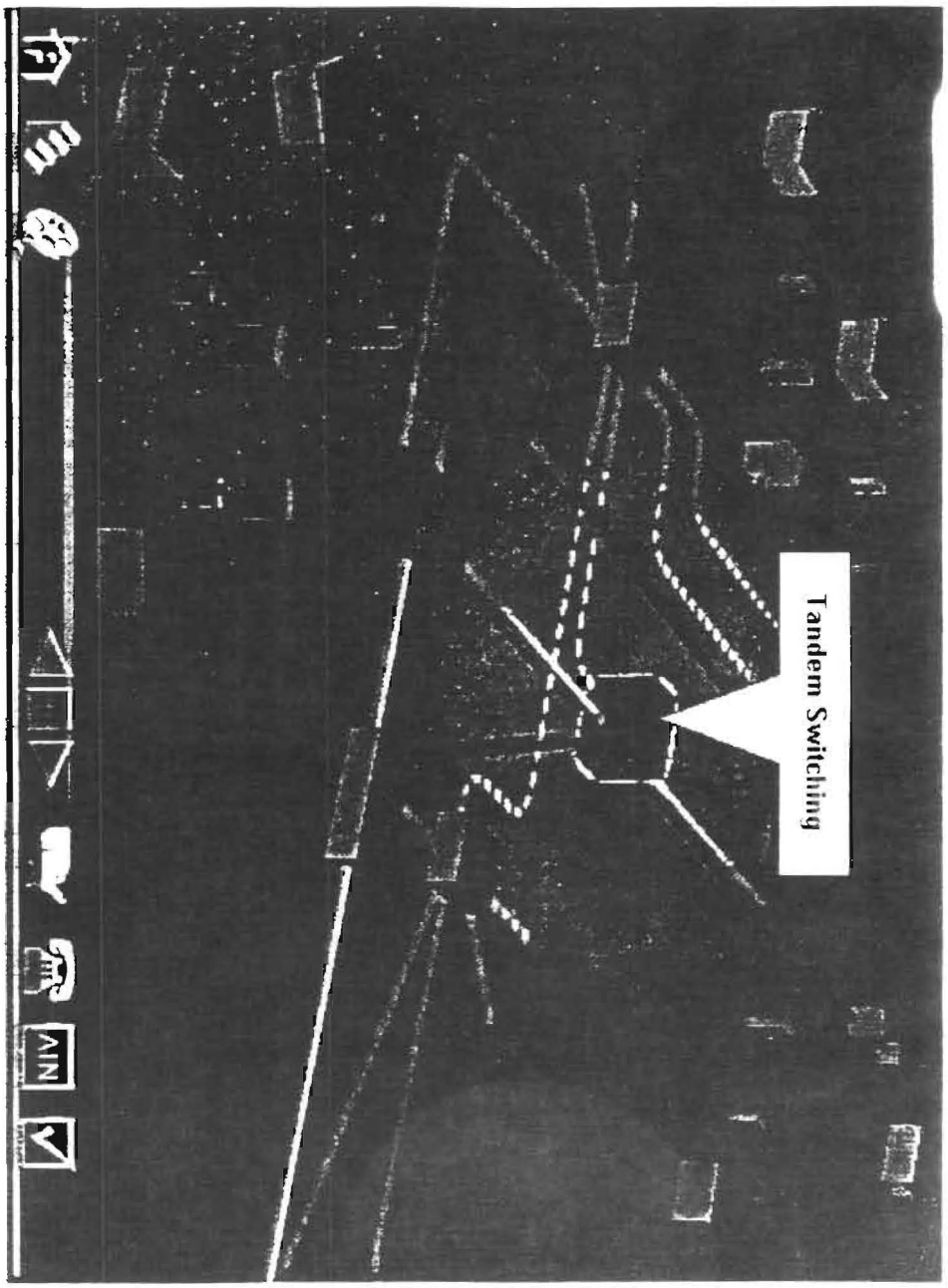

Tandem Switching
AIN


Tandem Switching is the functionality of a switching hub, which is fundamental to the efficient and effective transmission of calls throughout the local network and to long distance networks. Tandem Switching allows for the aggregation of traffic eliminating the requirement to have trunking to all local telephone company central offices from all other such offices.
Tandem Switching
AIN


Unbundling Tandem Switching will allow for faster deployment of competing local services, allow for sharing of Tandem Switching among several carriers, and avoid the high cost of deploying tandem switches.
Tandem Switching
Local Switching
Long Distance Point of Presence
AIN


Unbundling of Tandem Switching could also provide new entrants the opportunity to provide a tandem switch of their own, the functionality of which they could then sell to other new entrants and interexchange carriers, just as Indiana Switch did in the 1900's to provide equal access to independent telephone companies.
CLEC
Tandem Switching
Local Switching
Long Distance
Point of Presence
AIN


Local Switching
CLEC
Tandem Switching
Long Distance
Point of Presence
AIN


Tandem Switching

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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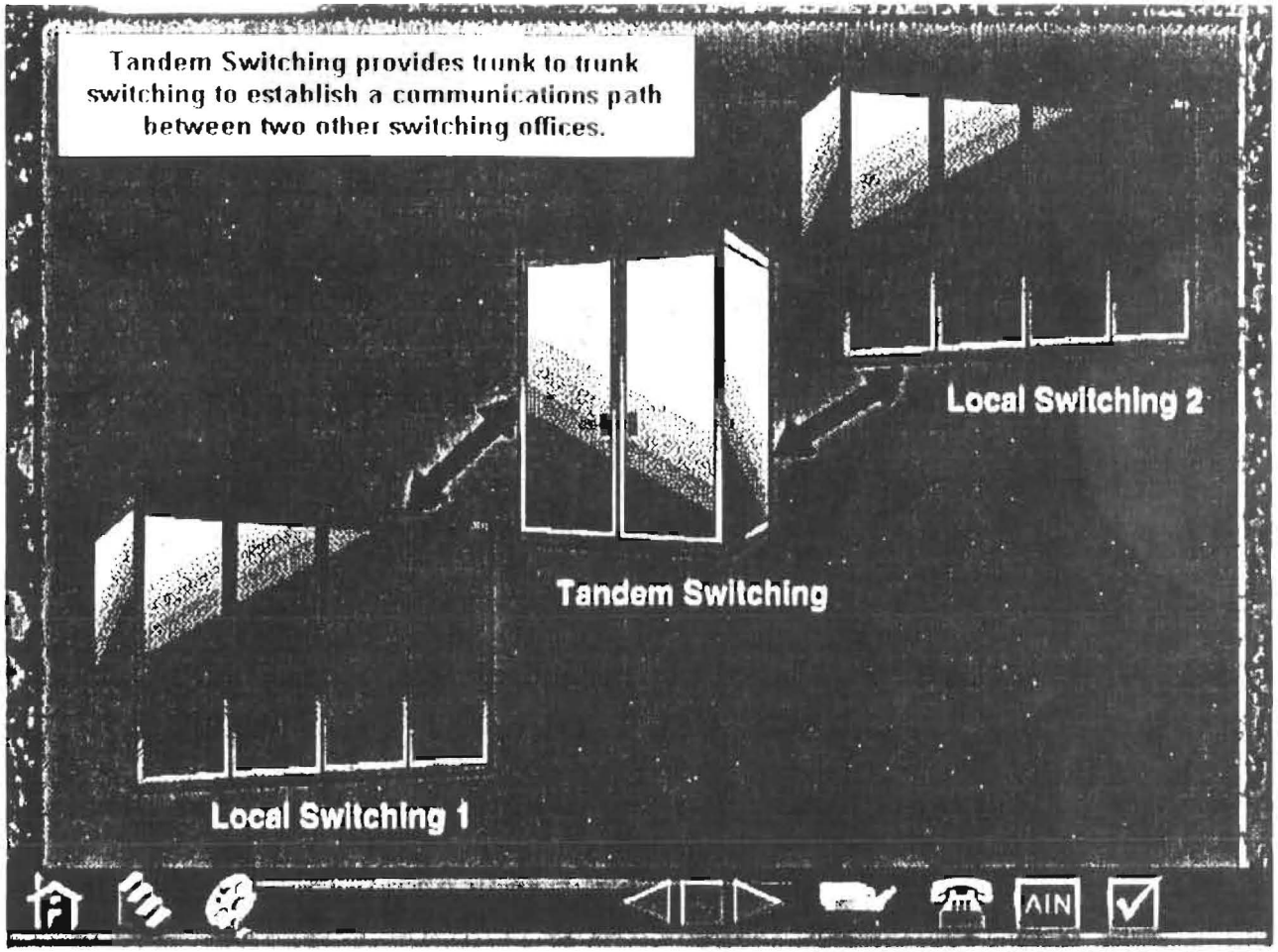
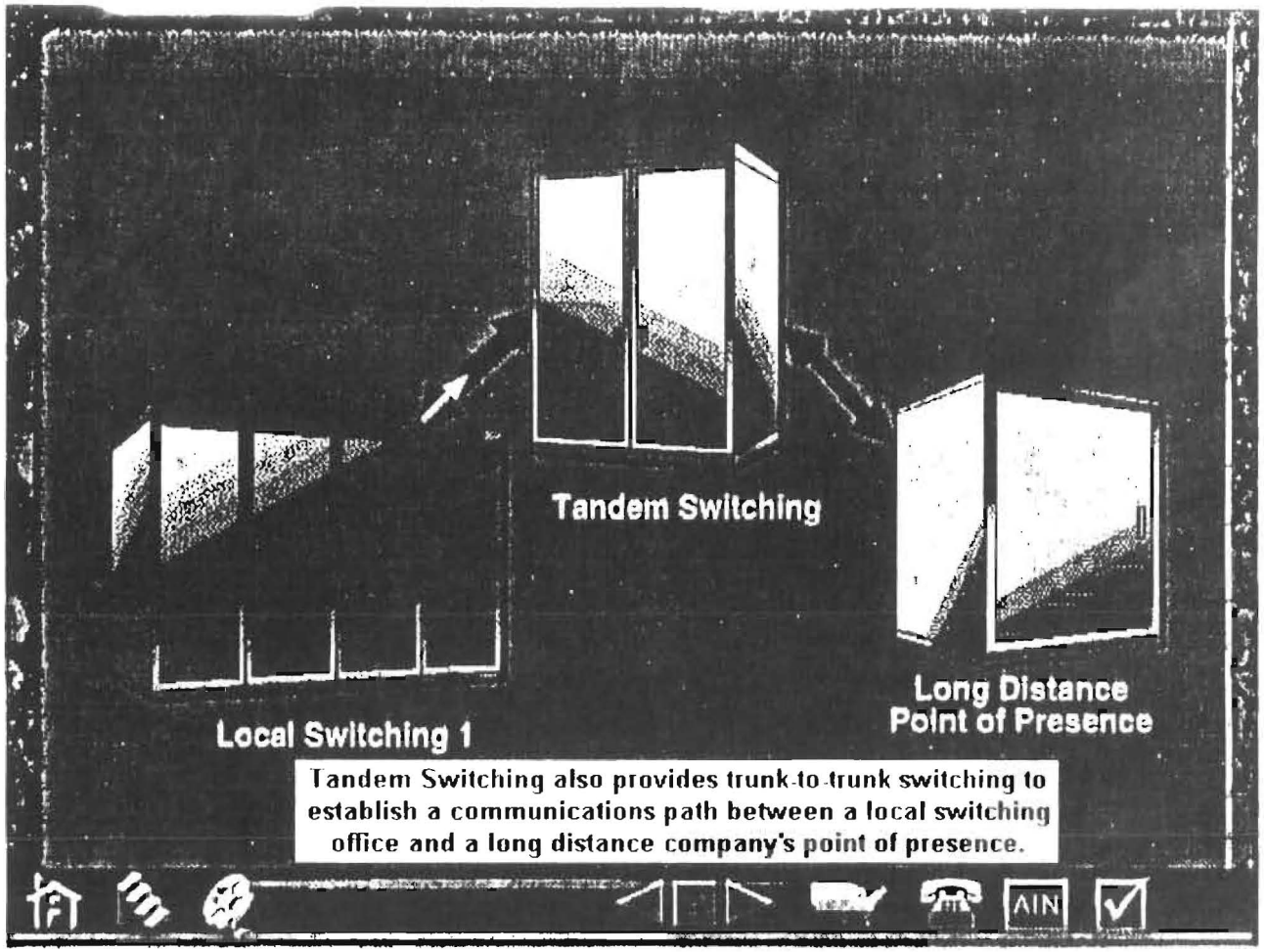

Tandem Switching provides trunk to trunk switching to establish a communications path between two other switching offices.
Local Switching 2
Tandem Switching
Local Switching 1
AIN


Tandem Switching
Local Switching 1
Long Distance
Point of Presence
Tandem Switching also provides trunk-to-trunk switching to establish a communications path between a local switching office and a long distance company's point of presence.
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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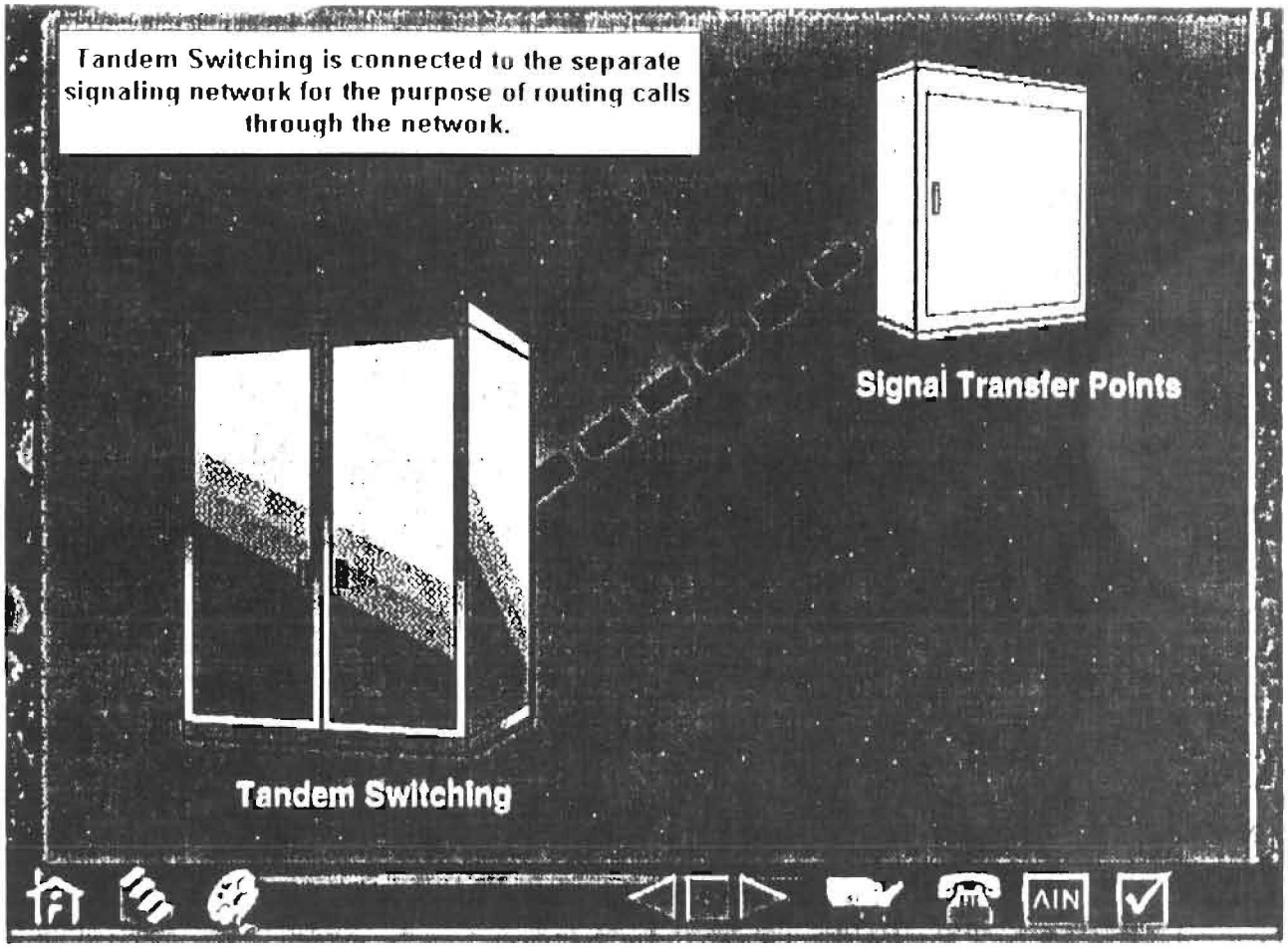
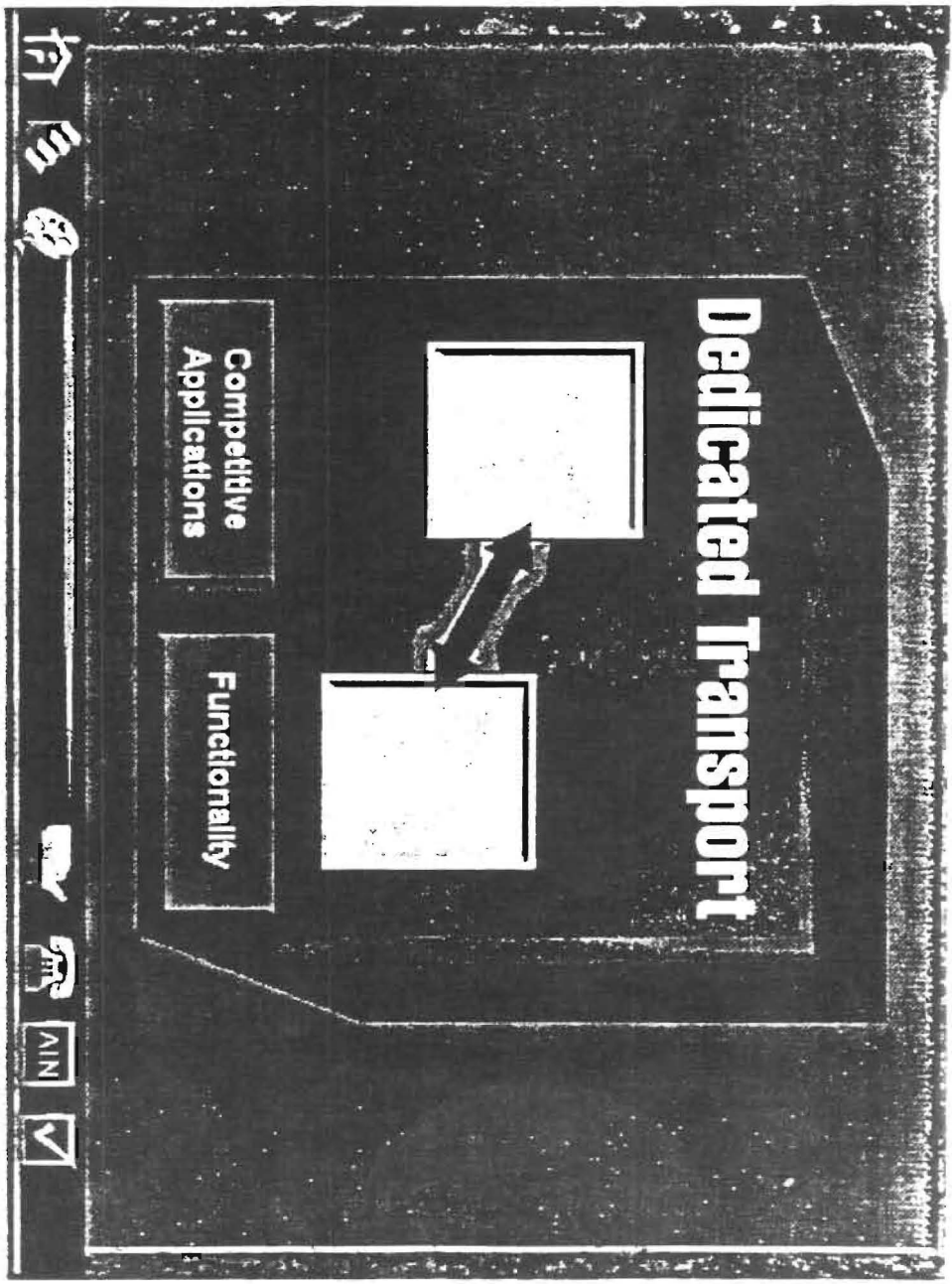
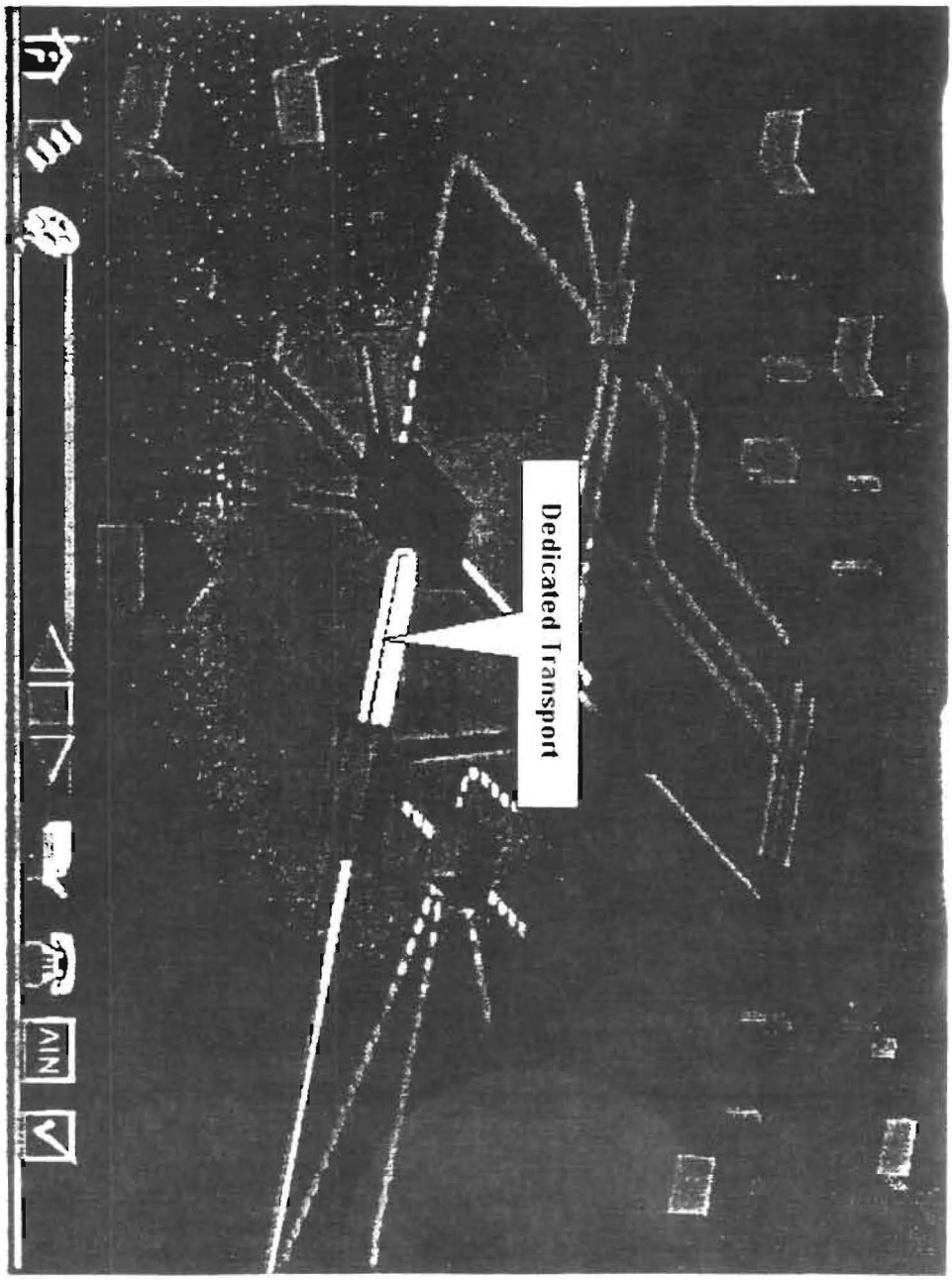
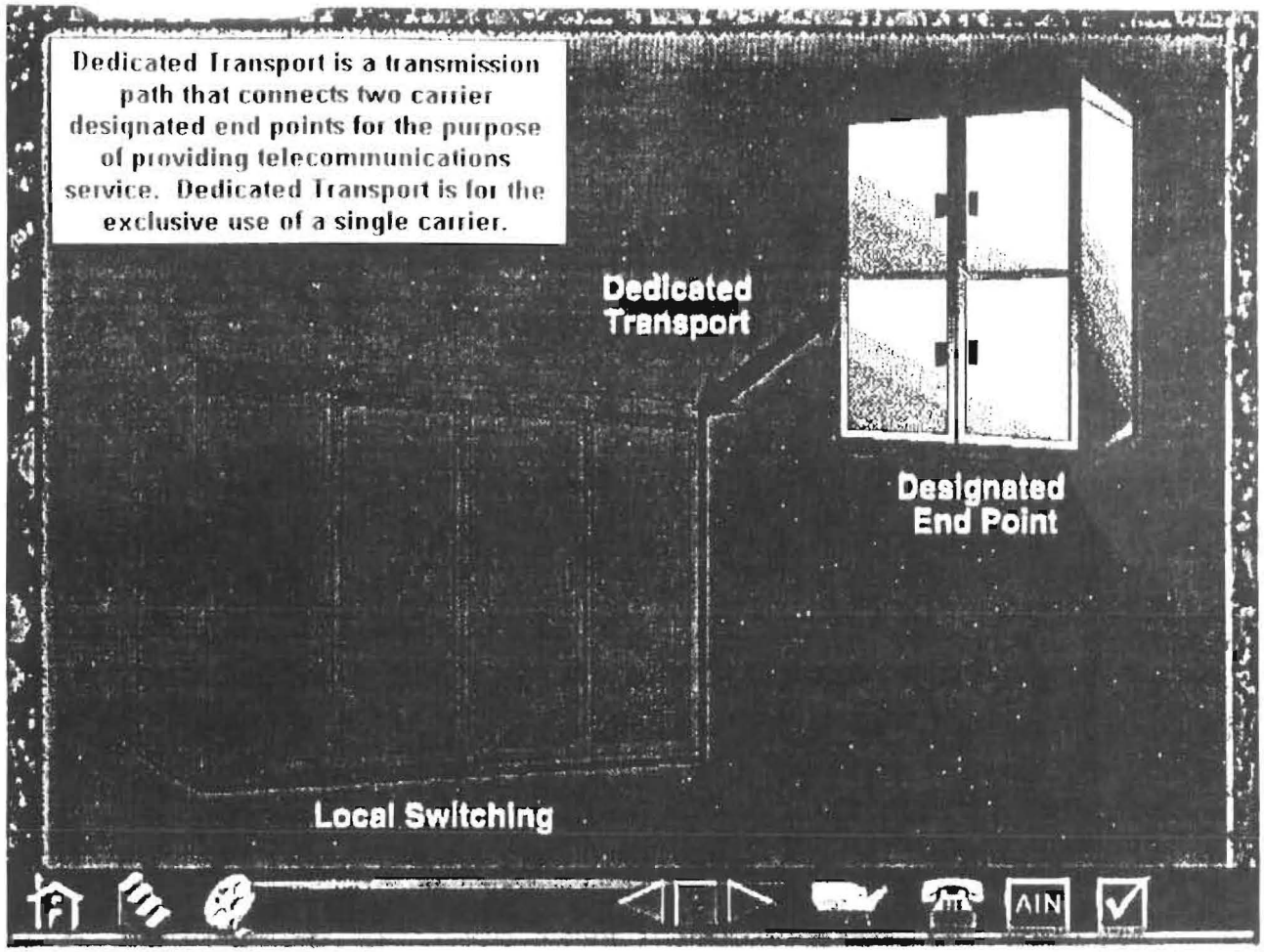



Dedicated Transport
Competitive Applications
Functionality
AIN


Dedicated Transport


Dedicated Transport is a transmission path that connects two carrier designated end points for the purpose of providing telecommunications service. Dedicated Transport is for the exclusive use of a single carrier.
Dedicated Transport
Designated End Point
Local Switching
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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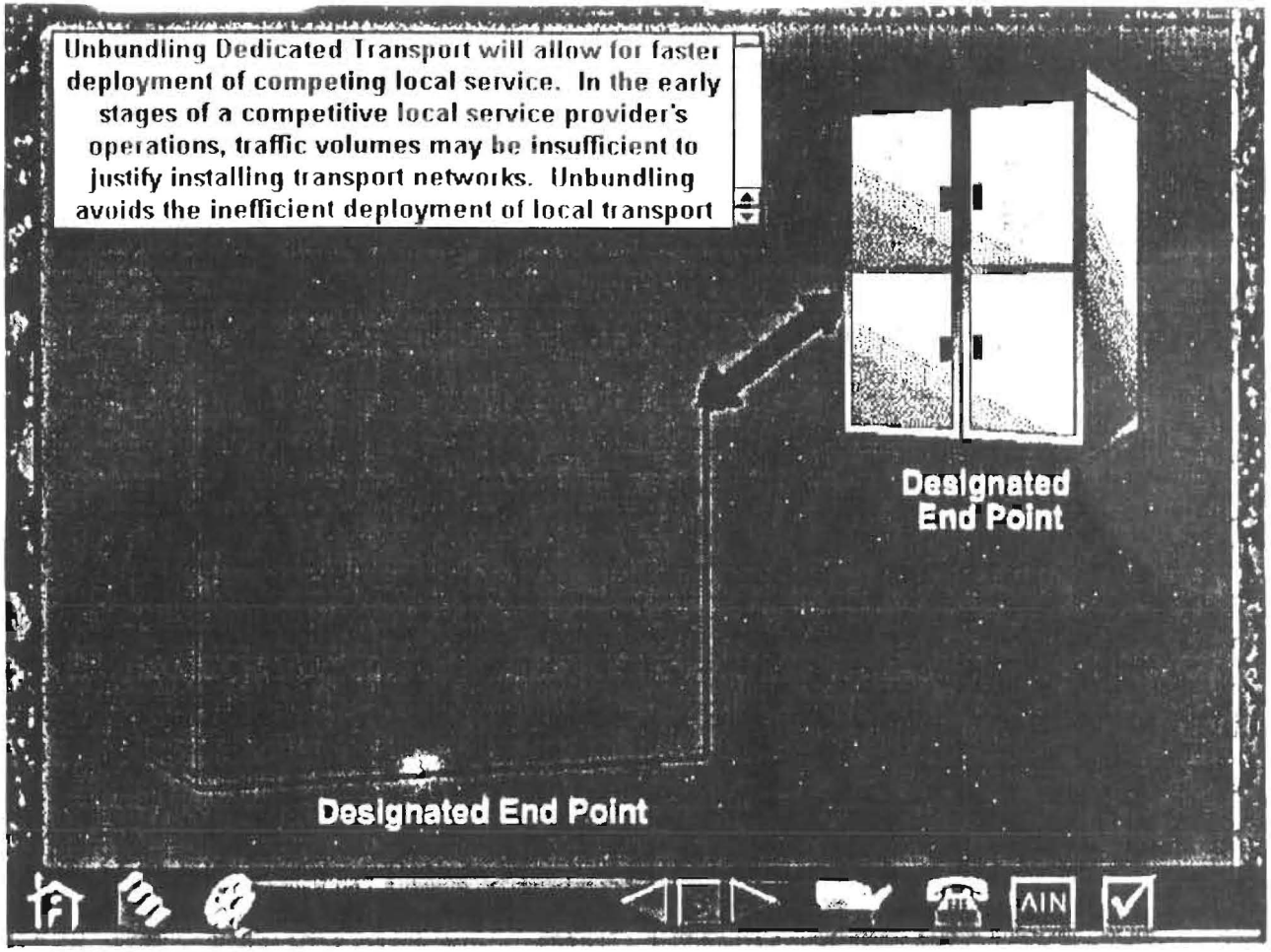
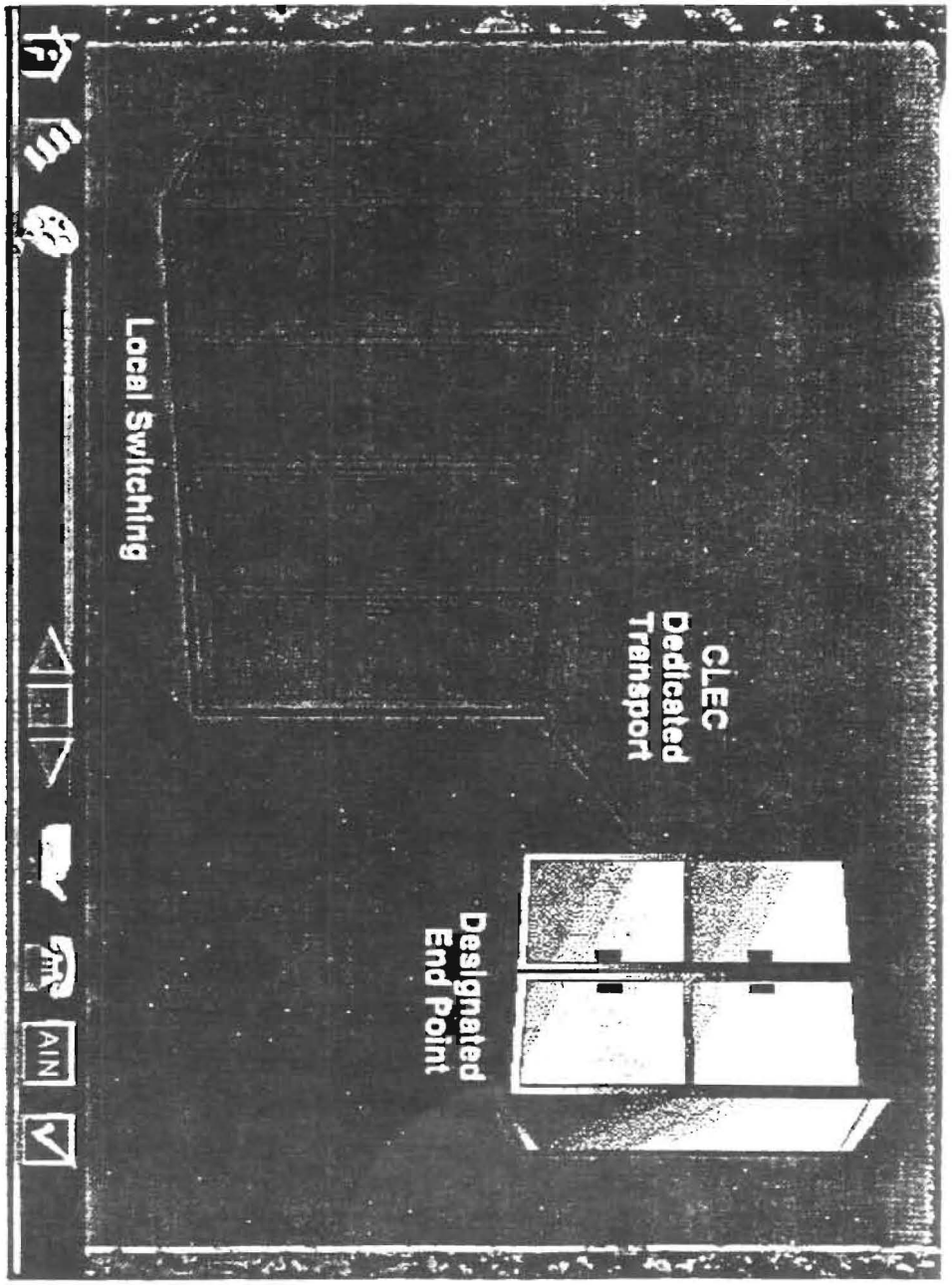
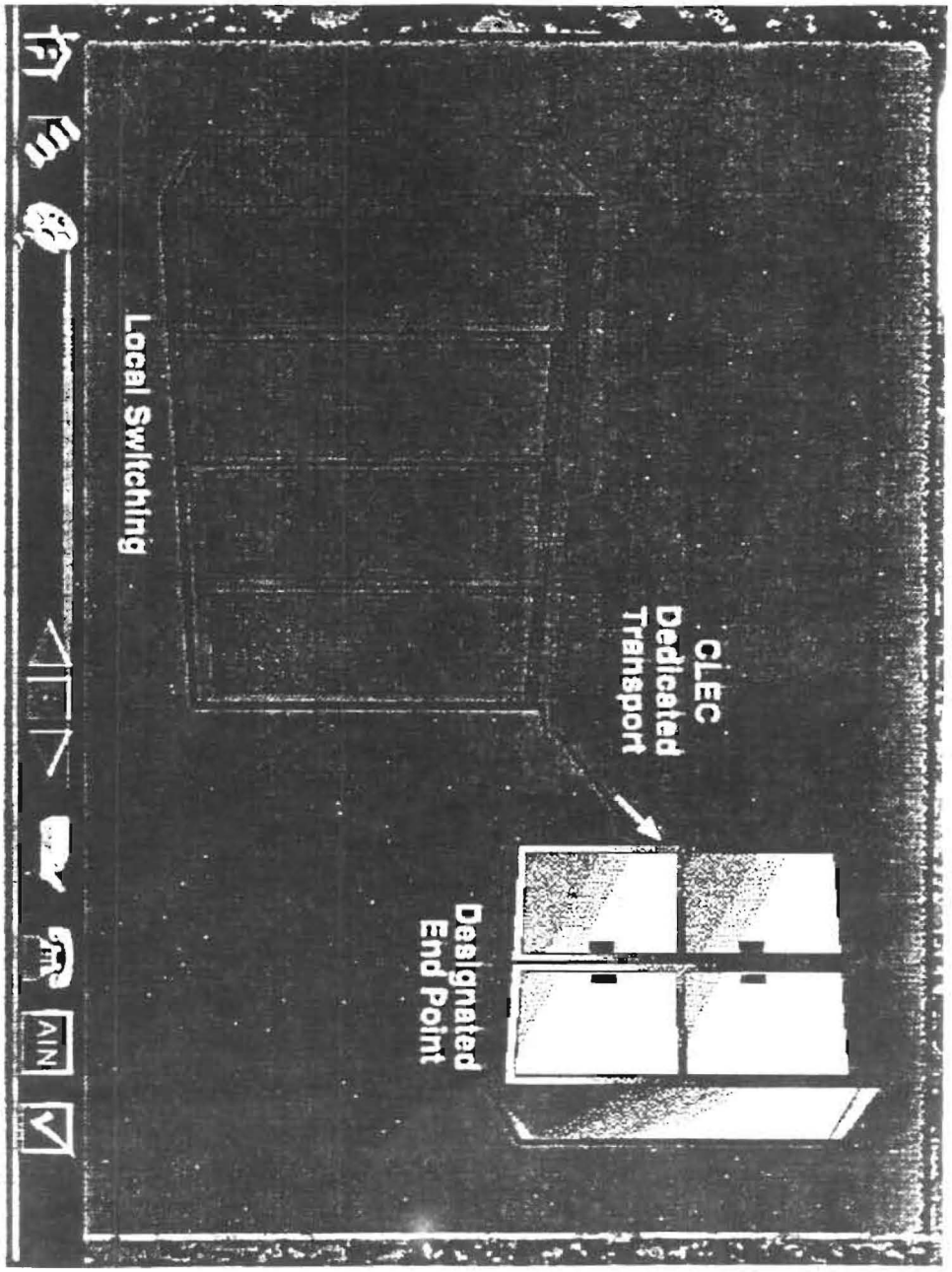
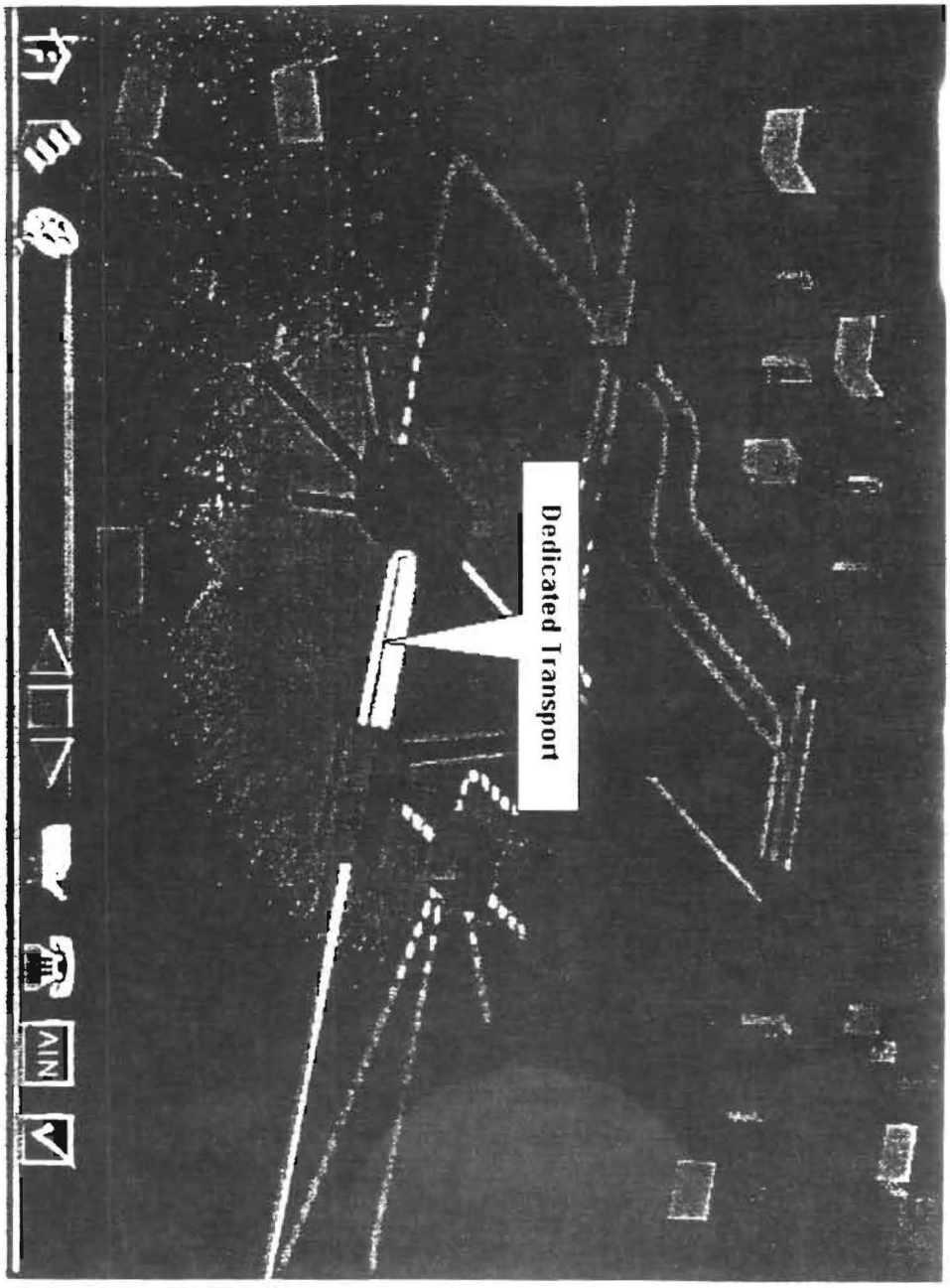



CLEC
Dedicated
Transport
Designated
End Point
Local Switching
AIN


Local Switching
CLEC
Dedicated
Transport
Designated
End Point
AIN


Dedicated Transport

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
UNBUNDLED NETWORK ELEMENTS
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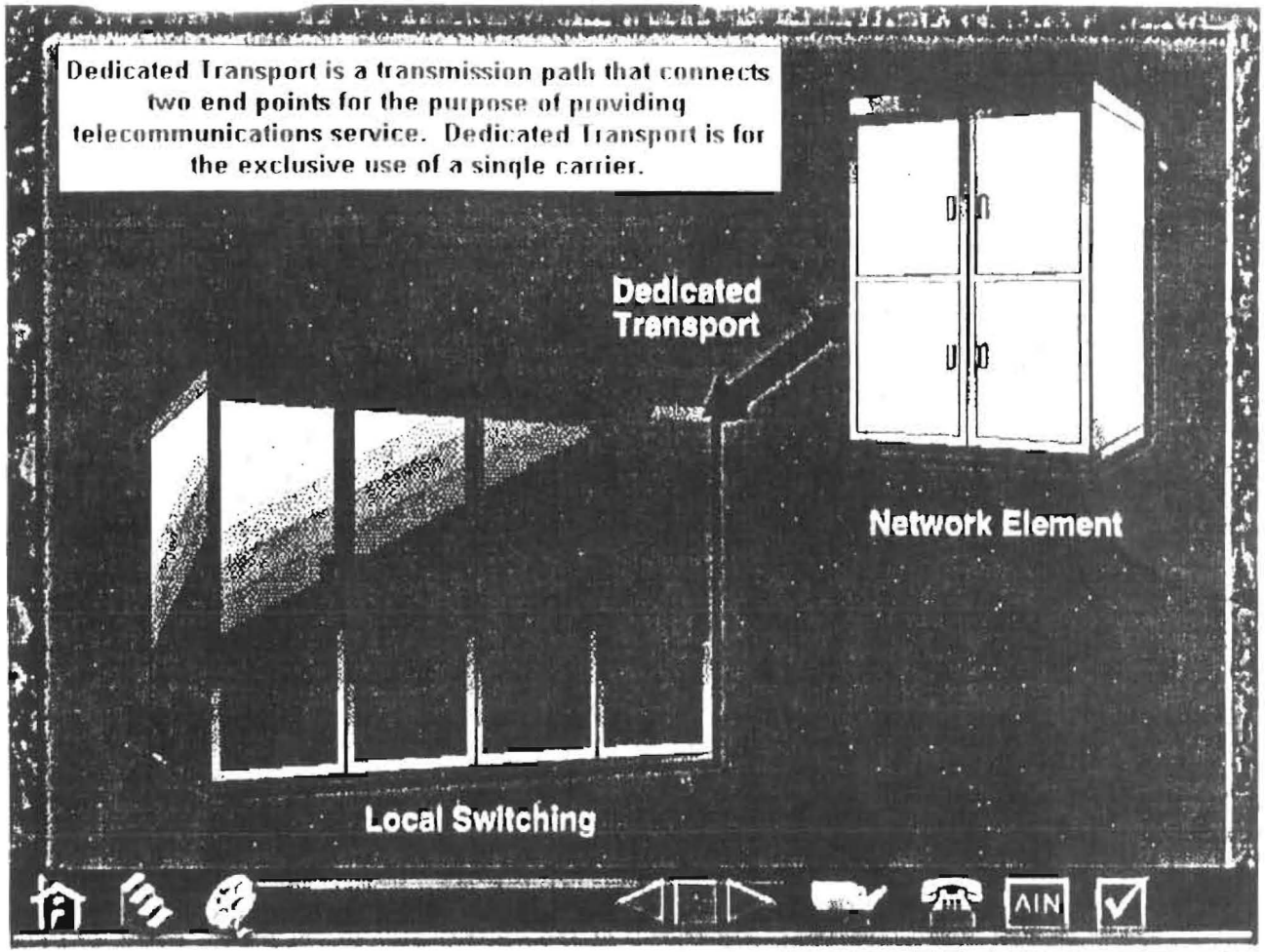
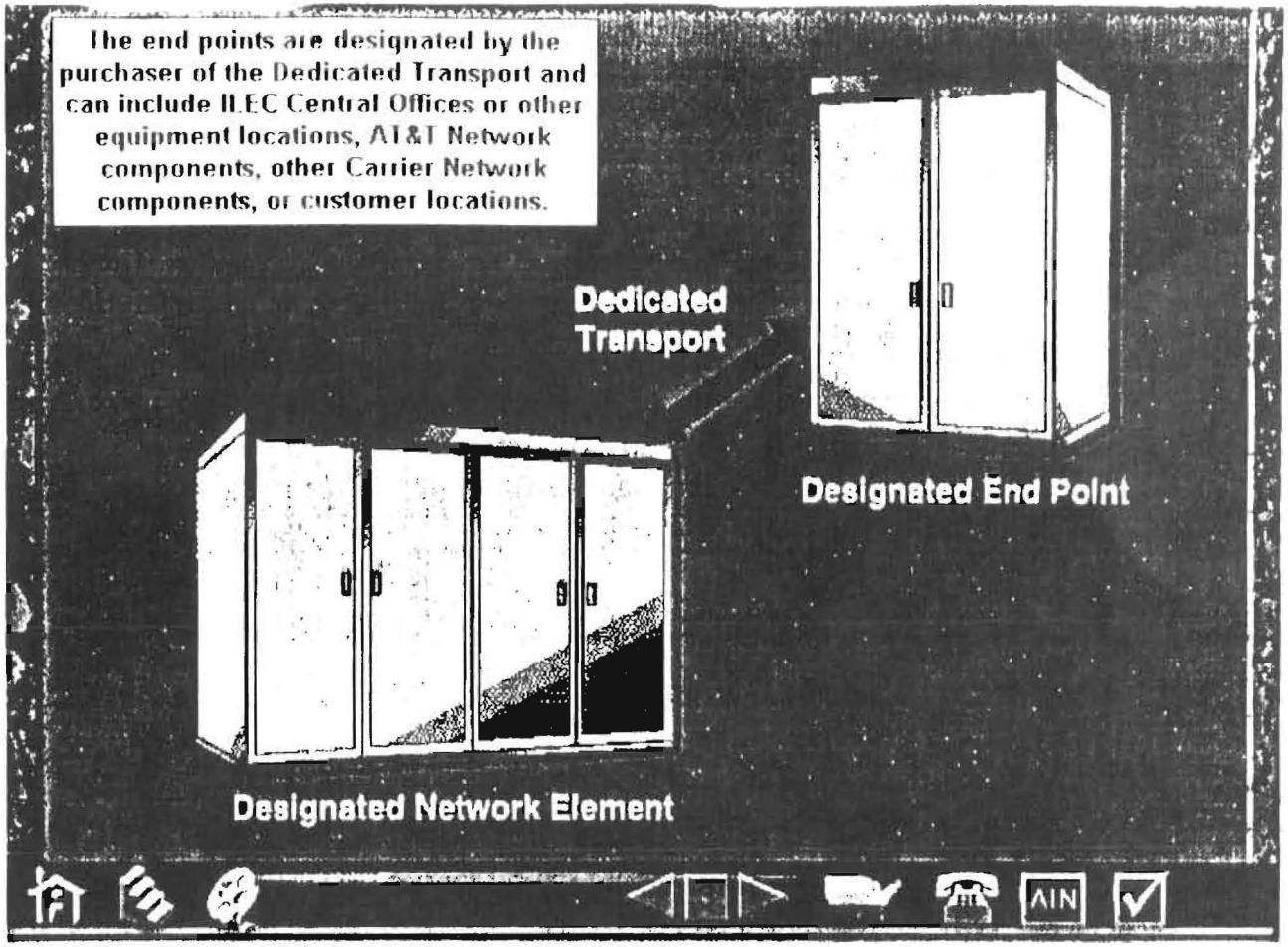
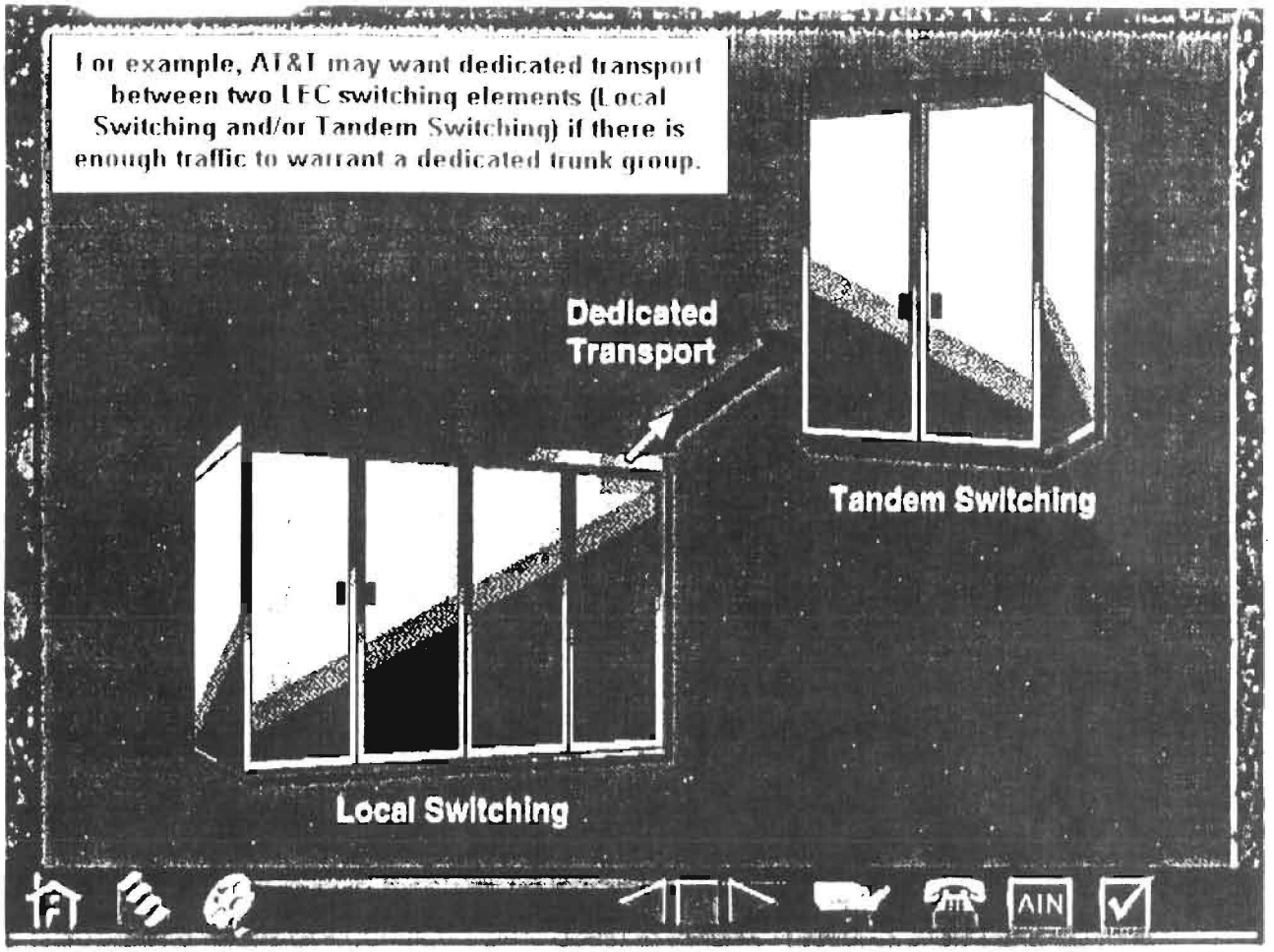



The end points are designated by the purchaser of the Dedicated Transport and can include ILEC Central Offices or other equipment locations, AT&T Network components, other Carrier Network components, or customer locations.
Dedicated Transport
Designated End Point
Designated Network Element
AIN


For example, AT&T may want dedicated transport between two LEC switching elements (Local Switching and/or Tandem Switching) if there is enough traffic to warrant a dedicated trunk group.
Dedicated Transport
Tandem Switching
Local Switching
AIN

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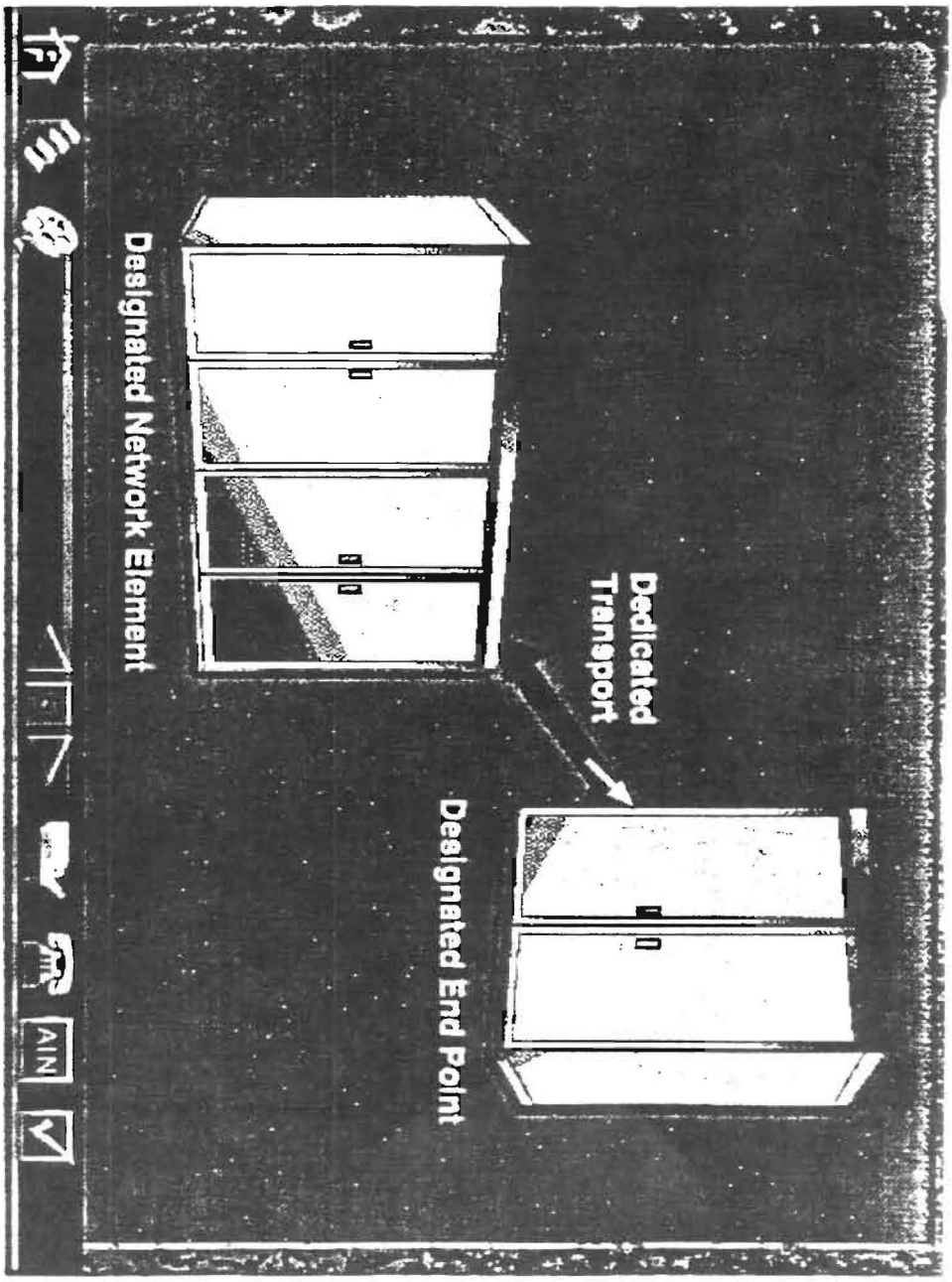

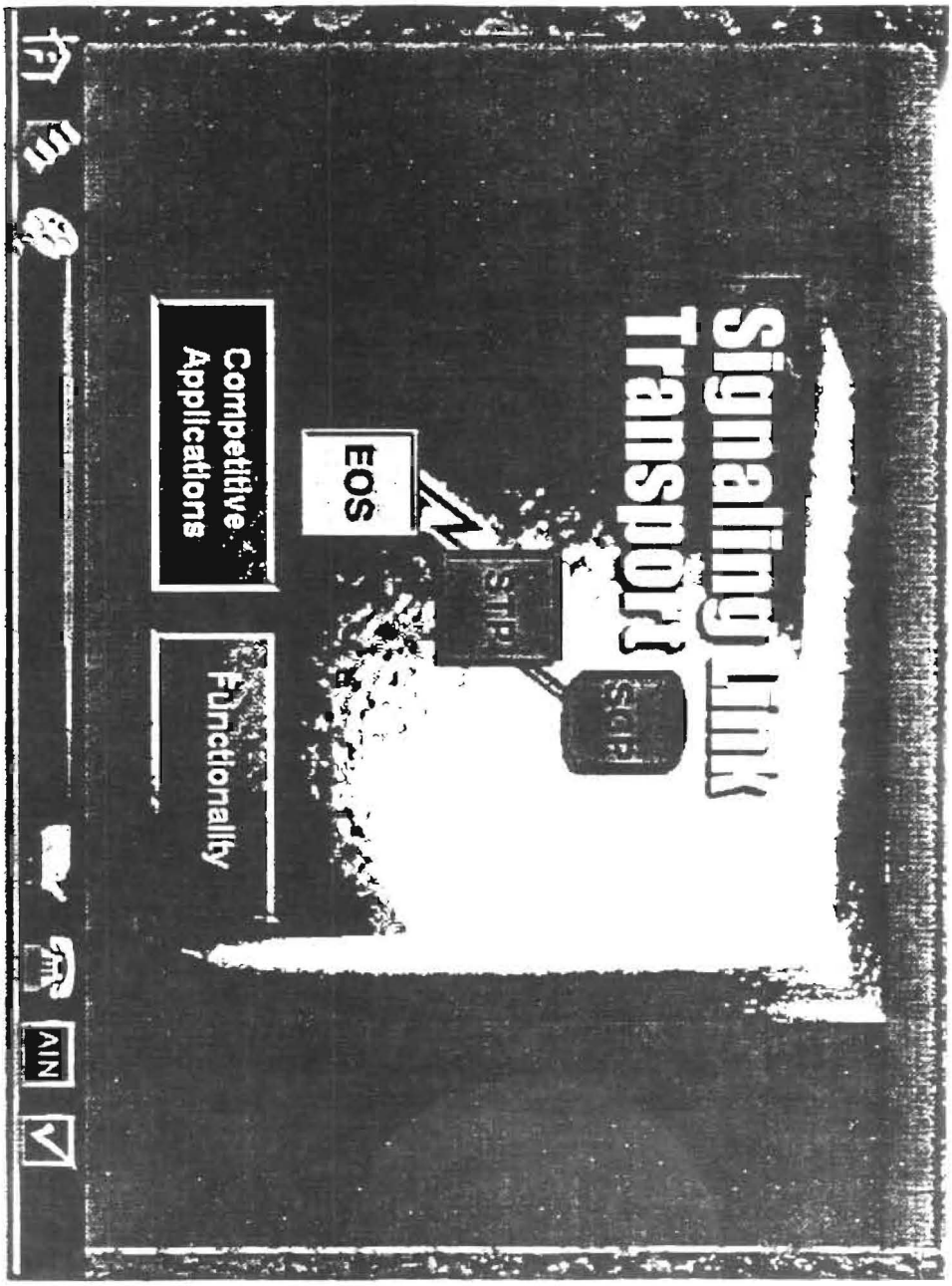
Signaling Link Transport
STP
EOS
Competitive Applications
Functionality
AIN

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UNBUNDLED NETWORK ELEMENTS
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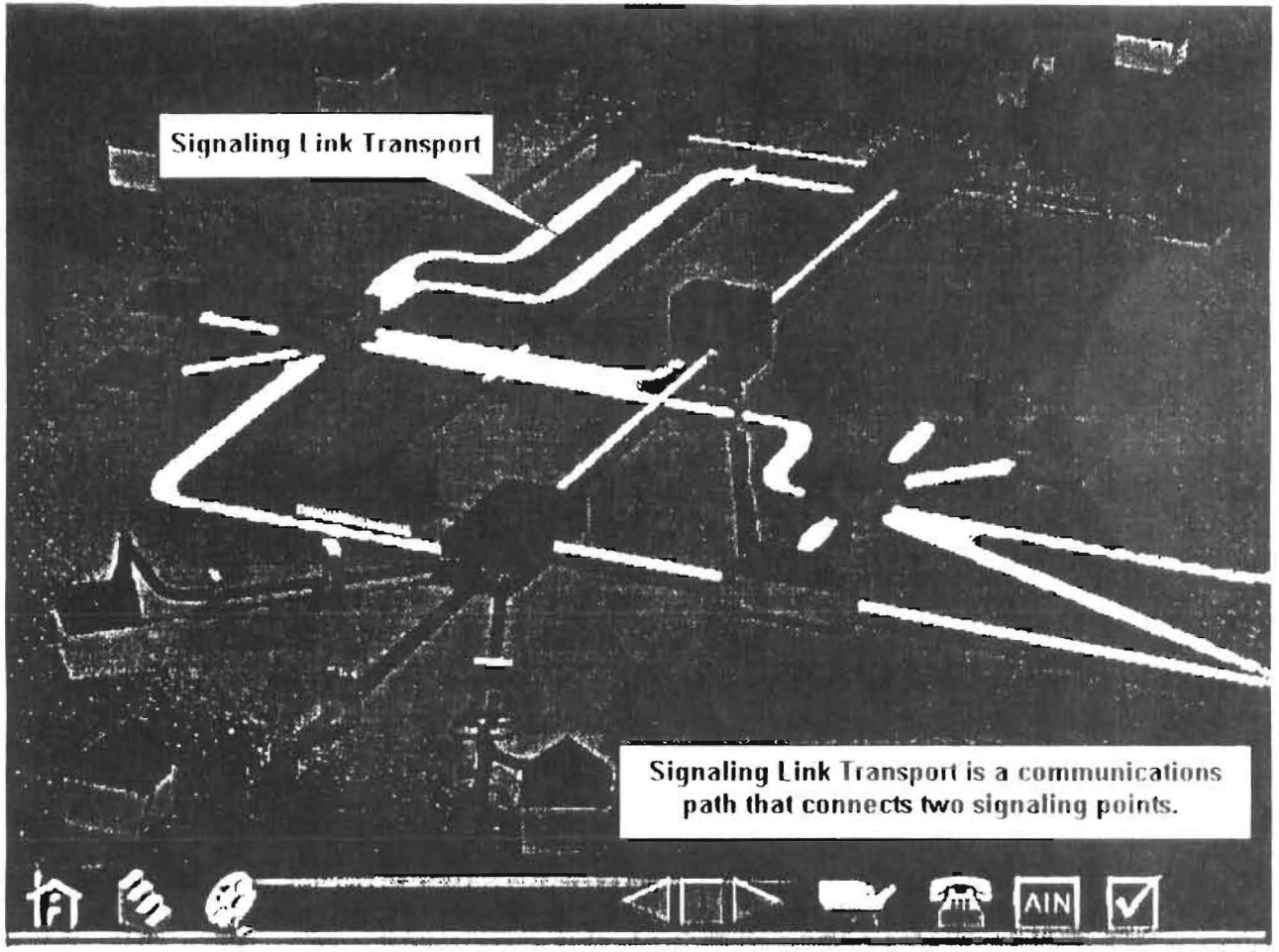

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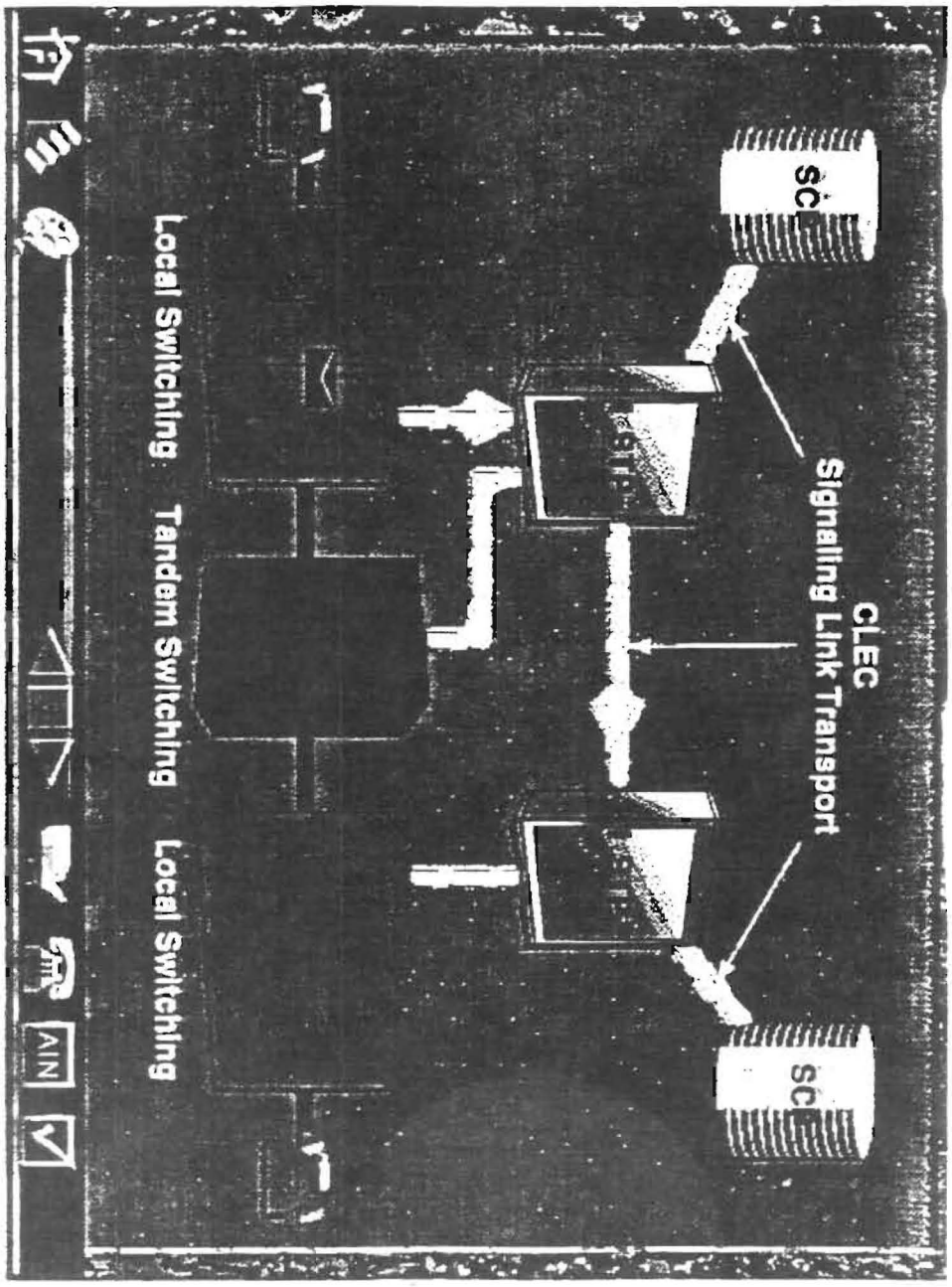

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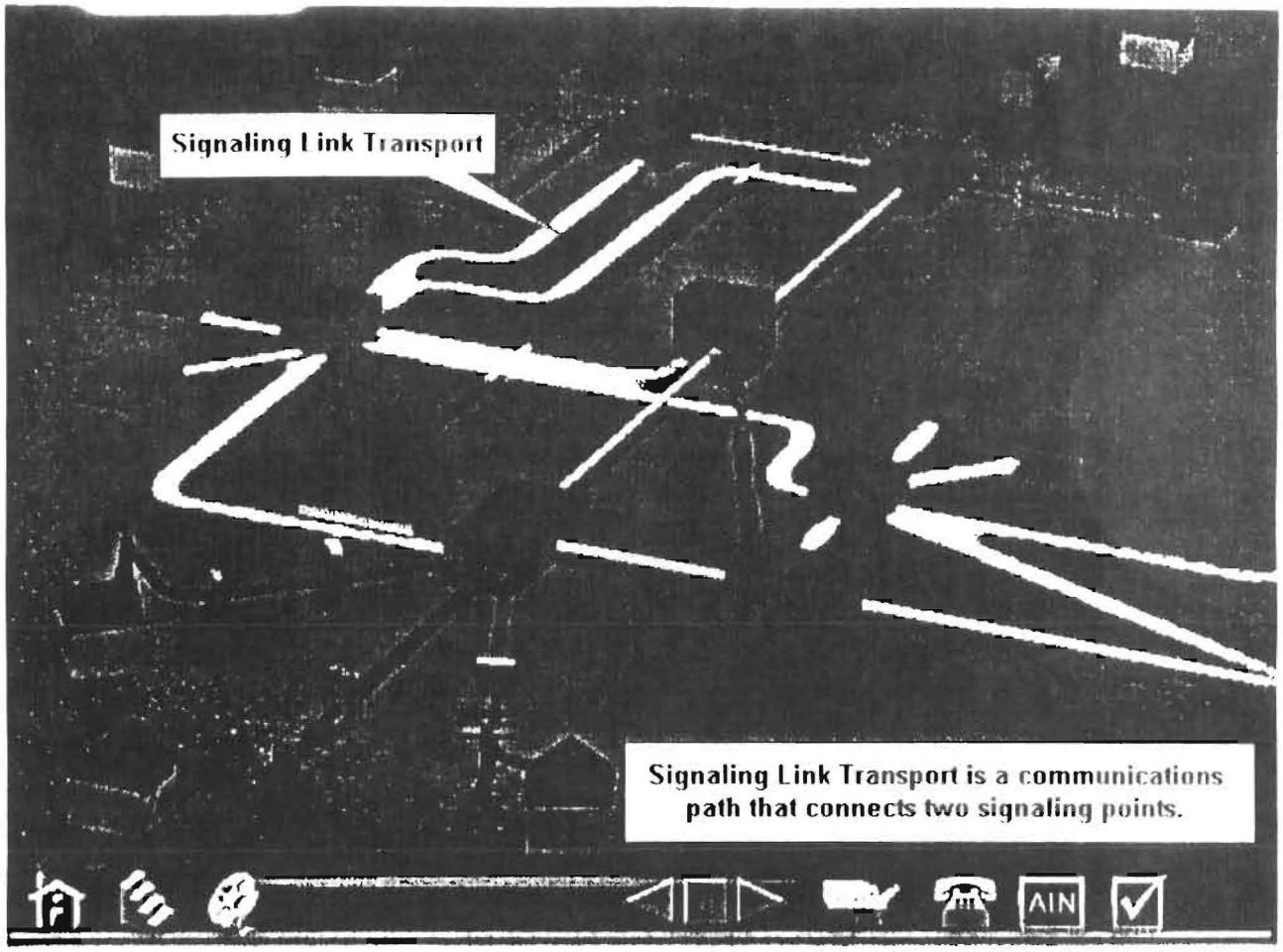

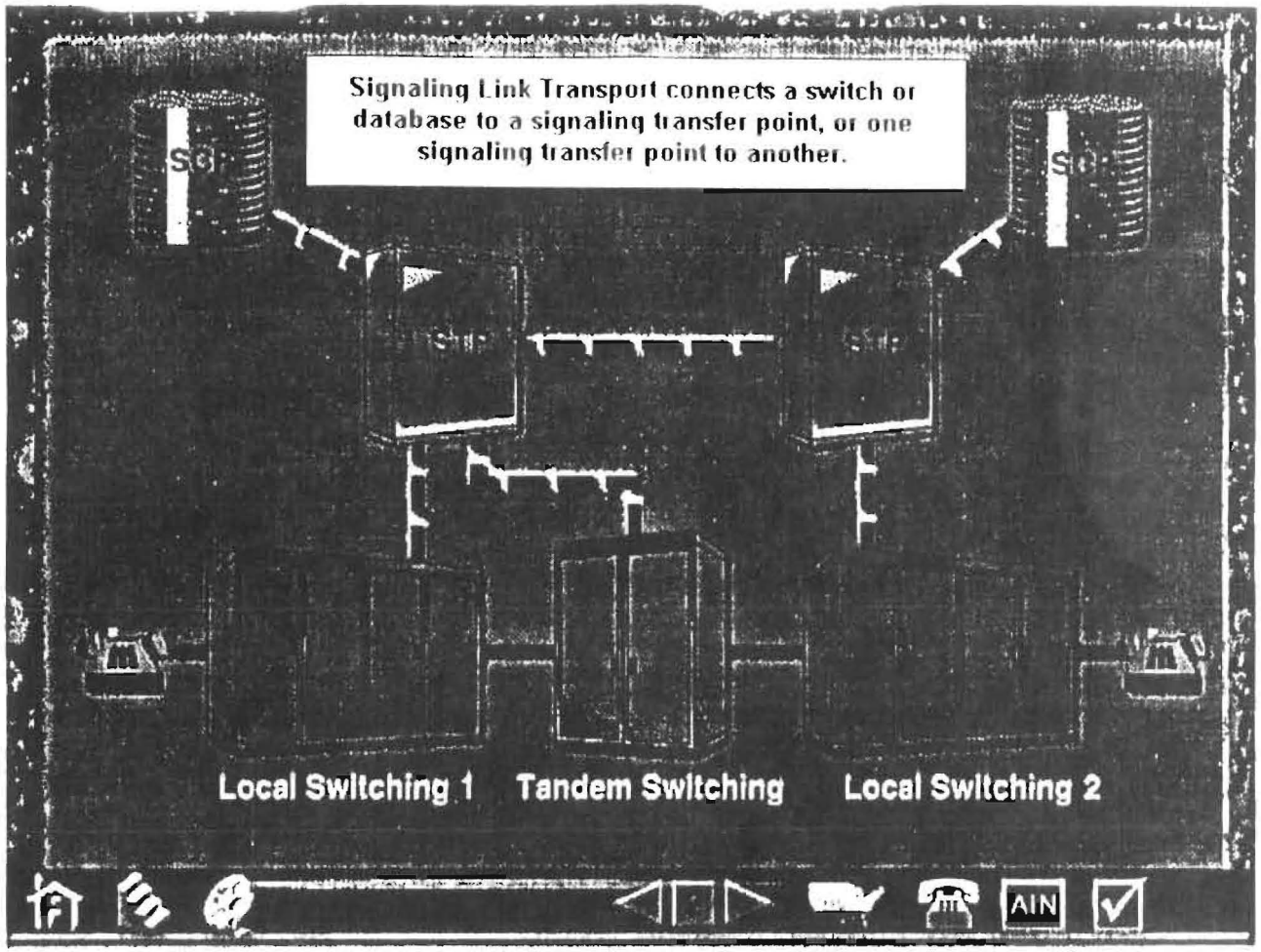
Signaling Link Transport connects a switch or database to a signaling transfer point, or one signaling transfer point to another.
Local Switching 1
Tandem Switching
Local Switching 2
AIN

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FPSC DOCKET _____
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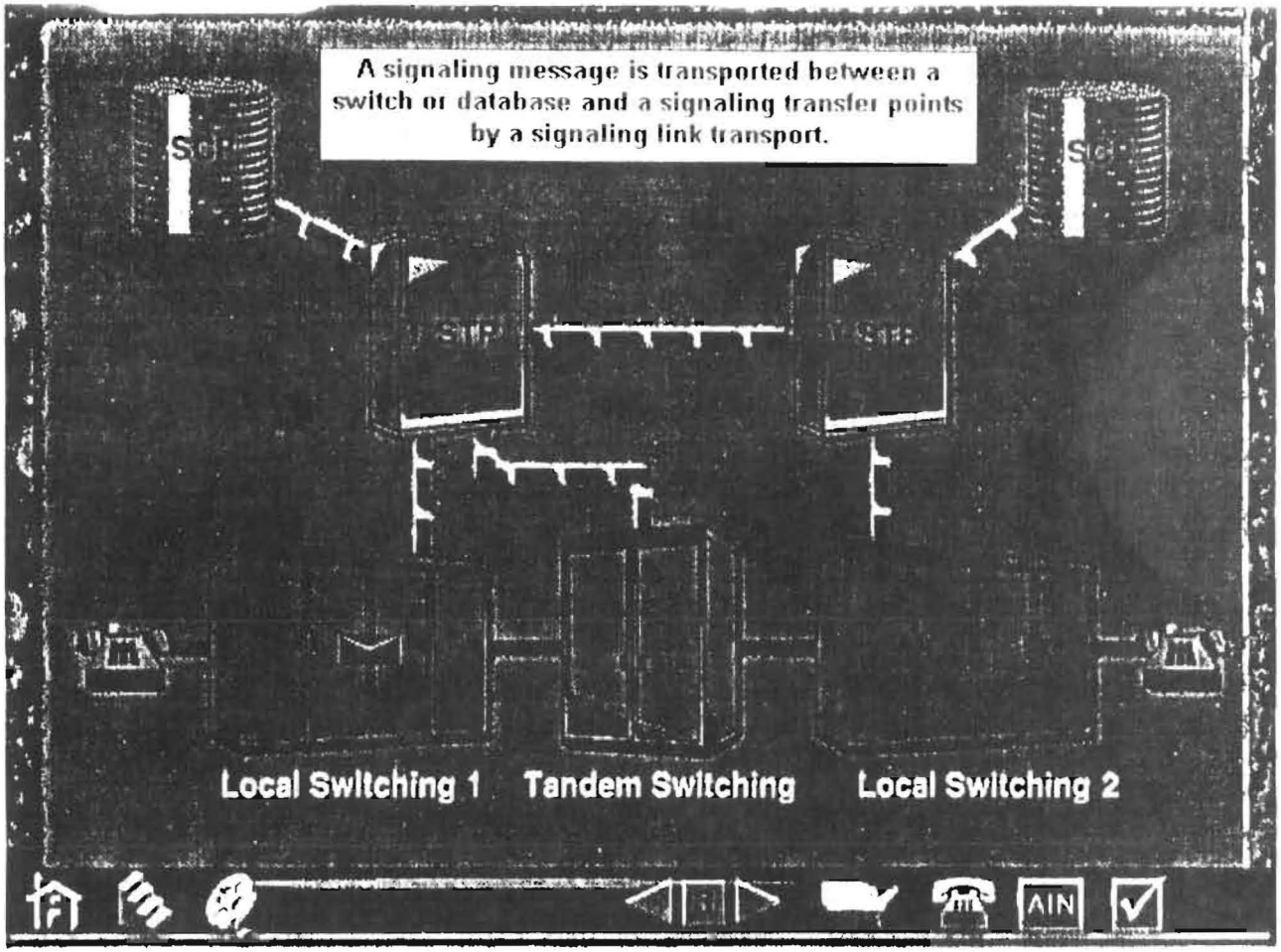

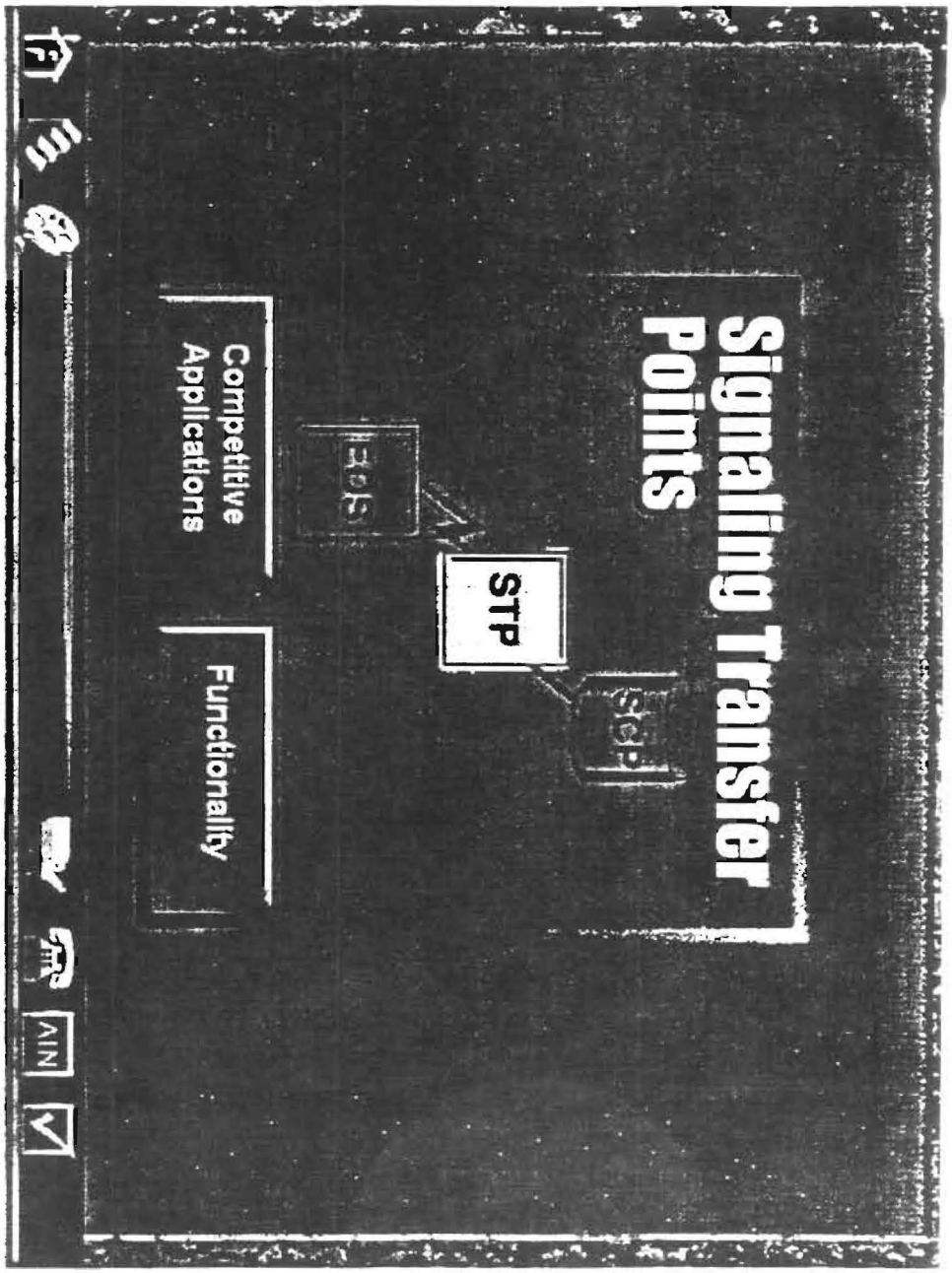
Signaling Transfer Points
STP
STP
Competitive Applications
Functionality
AIN

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FPSC DOCKET _____
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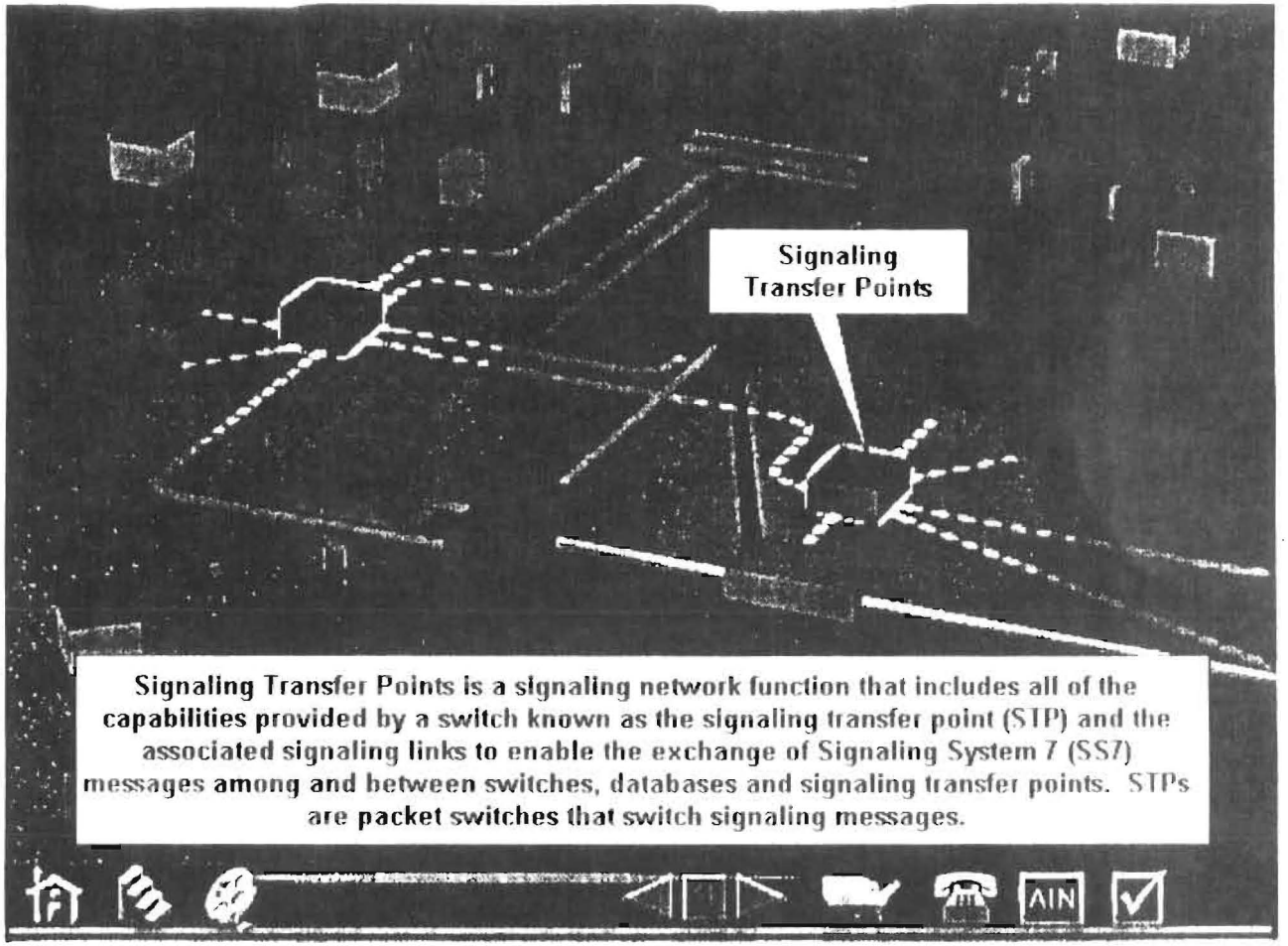

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FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
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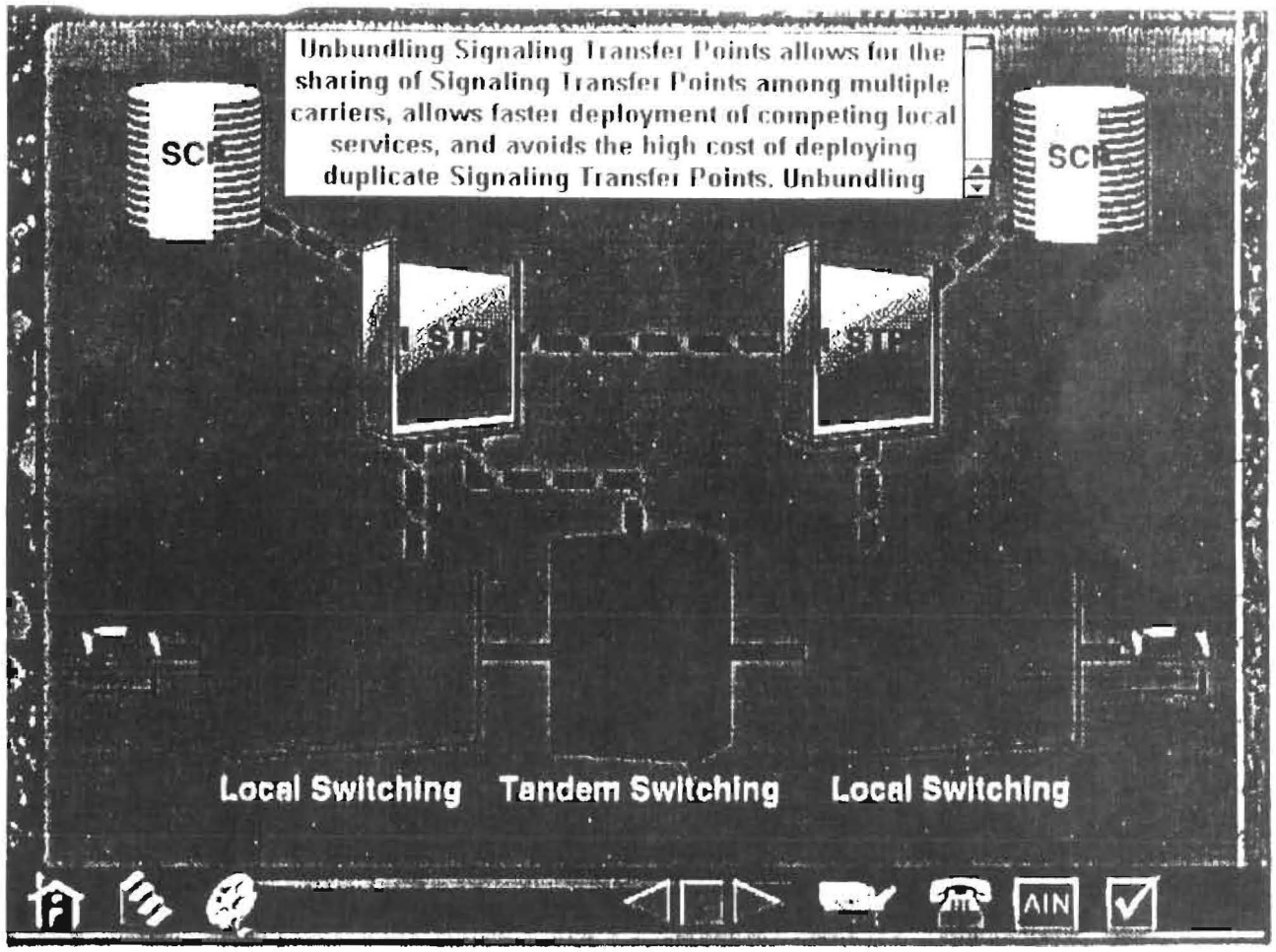

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FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
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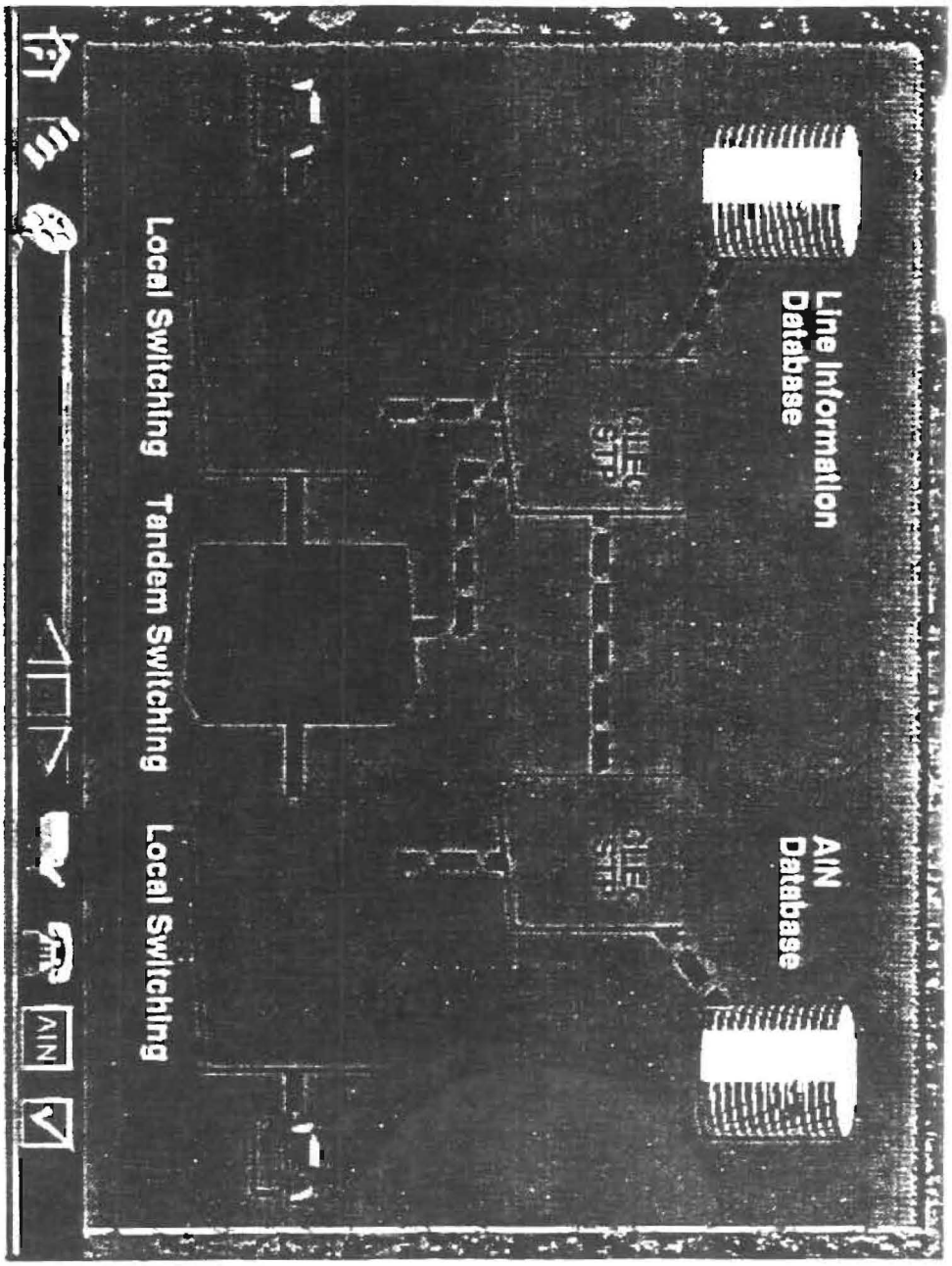
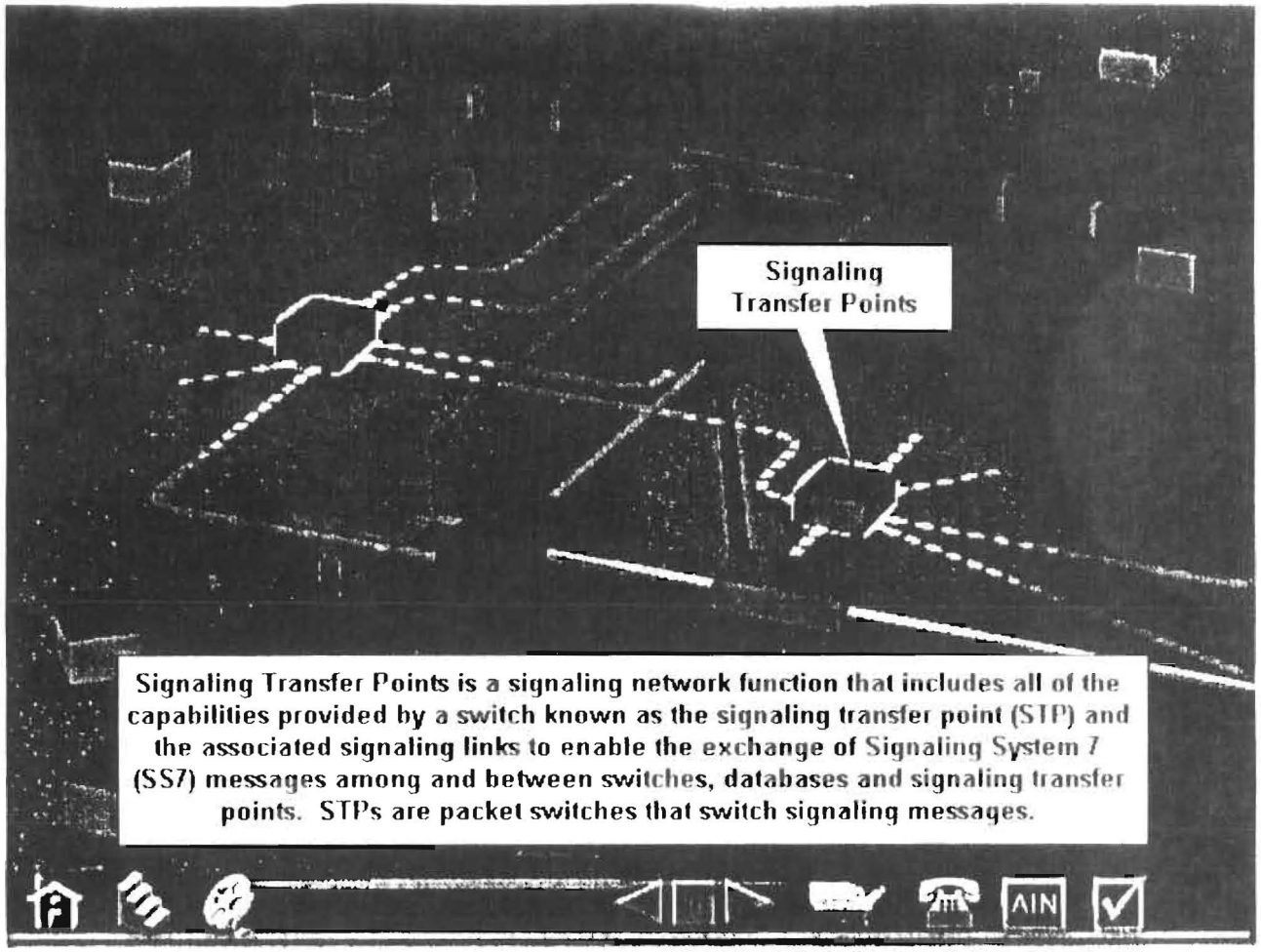
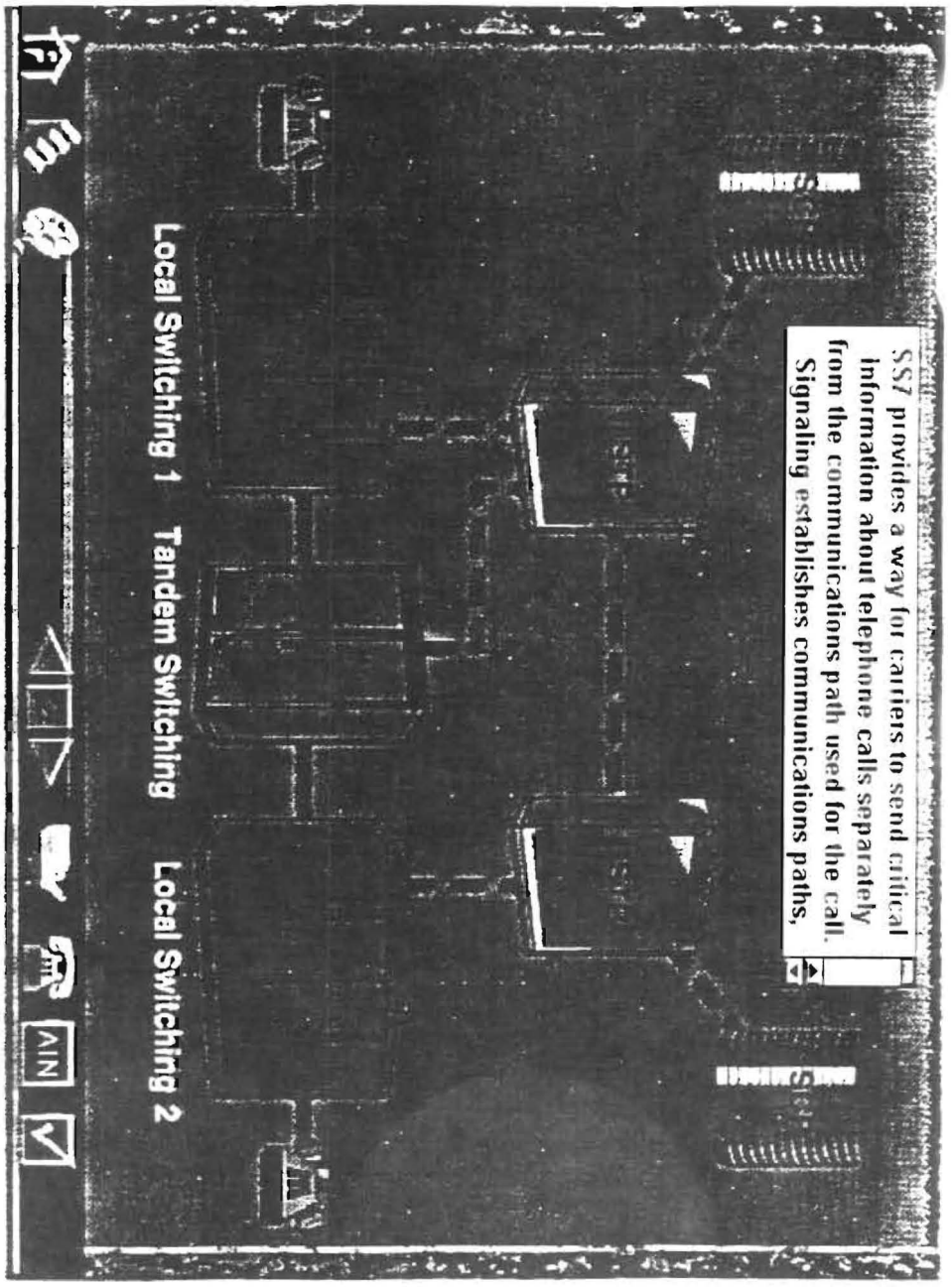
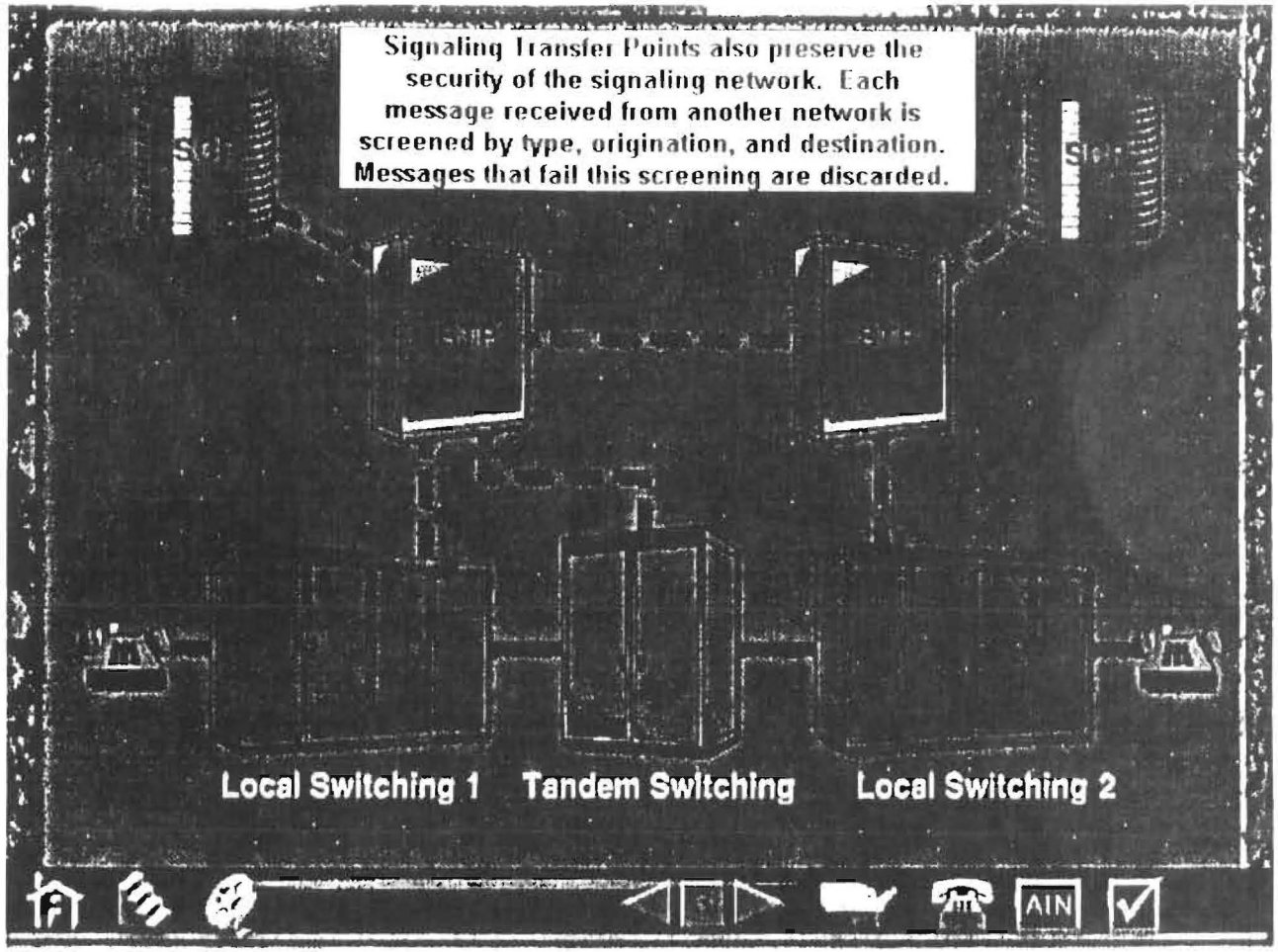
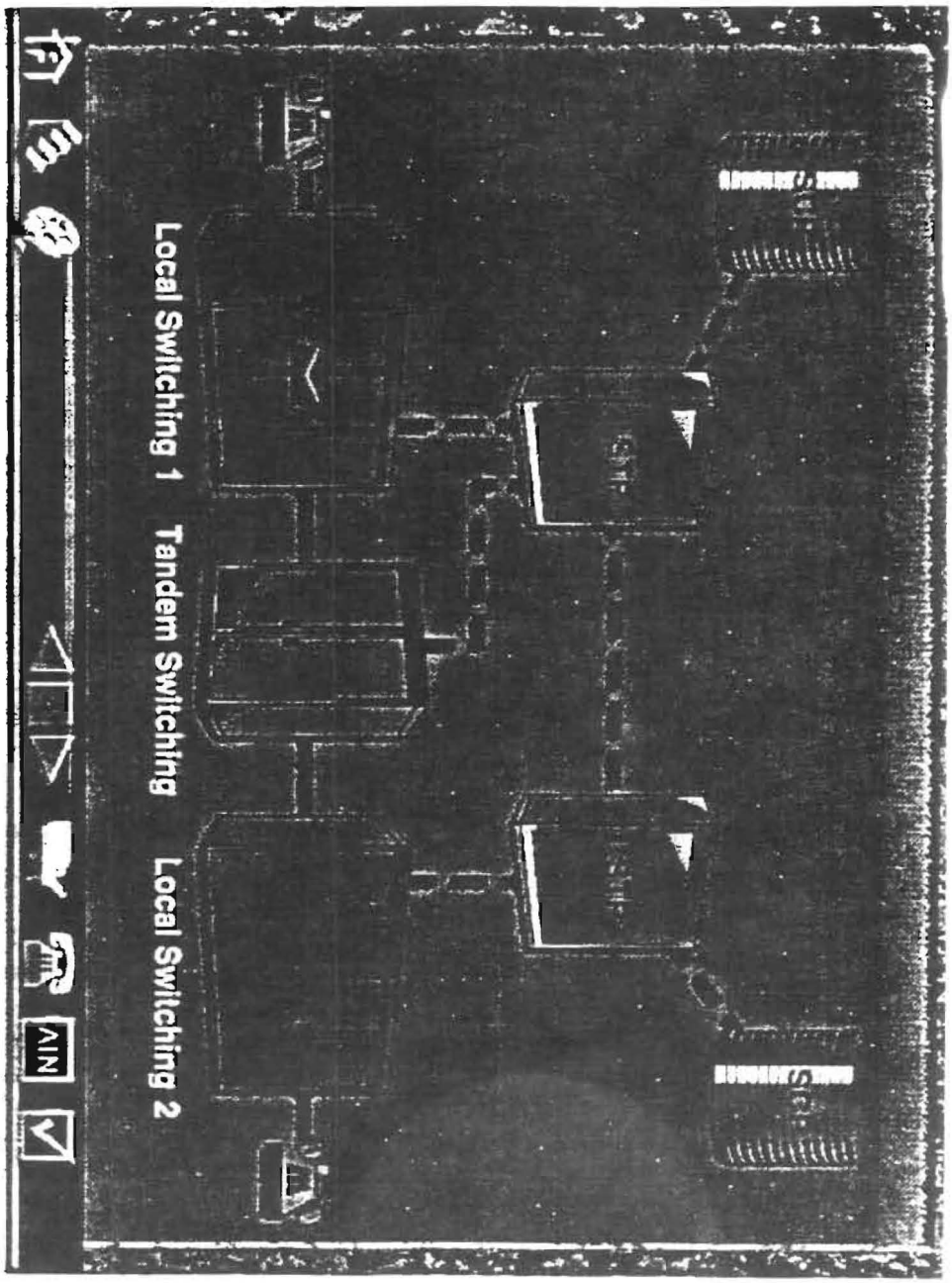

Line Information Database
AIN Database
Local Switching
Tandem Switching
Local Switching
AIN


Signaling
Transfer Points
Signaling Transfer Points is a signaling network function that includes all of the capabilities provided by a switch known as the signaling transfer point (STP) and the associated signaling links to enable the exchange of Signaling System 7 (SS7) messages among and between switches, databases and signaling transfer points. STPs are packet switches that switch signaling messages.
AIN


SS7 provides a way for carriers to send critical information about telephone calls separately from the communications path used for the call. Signaling establishes communications paths,
Local Switching 1
Tandem Switching
Local Switching 2
AIN


Signaling Transfer Points also preserve the security of the signaling network. Each message received from another network is screened by type, origination, and destination. Messages that fail this screening are discarded.
Local Switching 1
Tandem Switching
Local Switching 2
AIN


Local Switching 1
Tandem Switching
Local Switching 2
AIN

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CRAFTON EXHIBIT RC-2
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FPSC DOCKET ____
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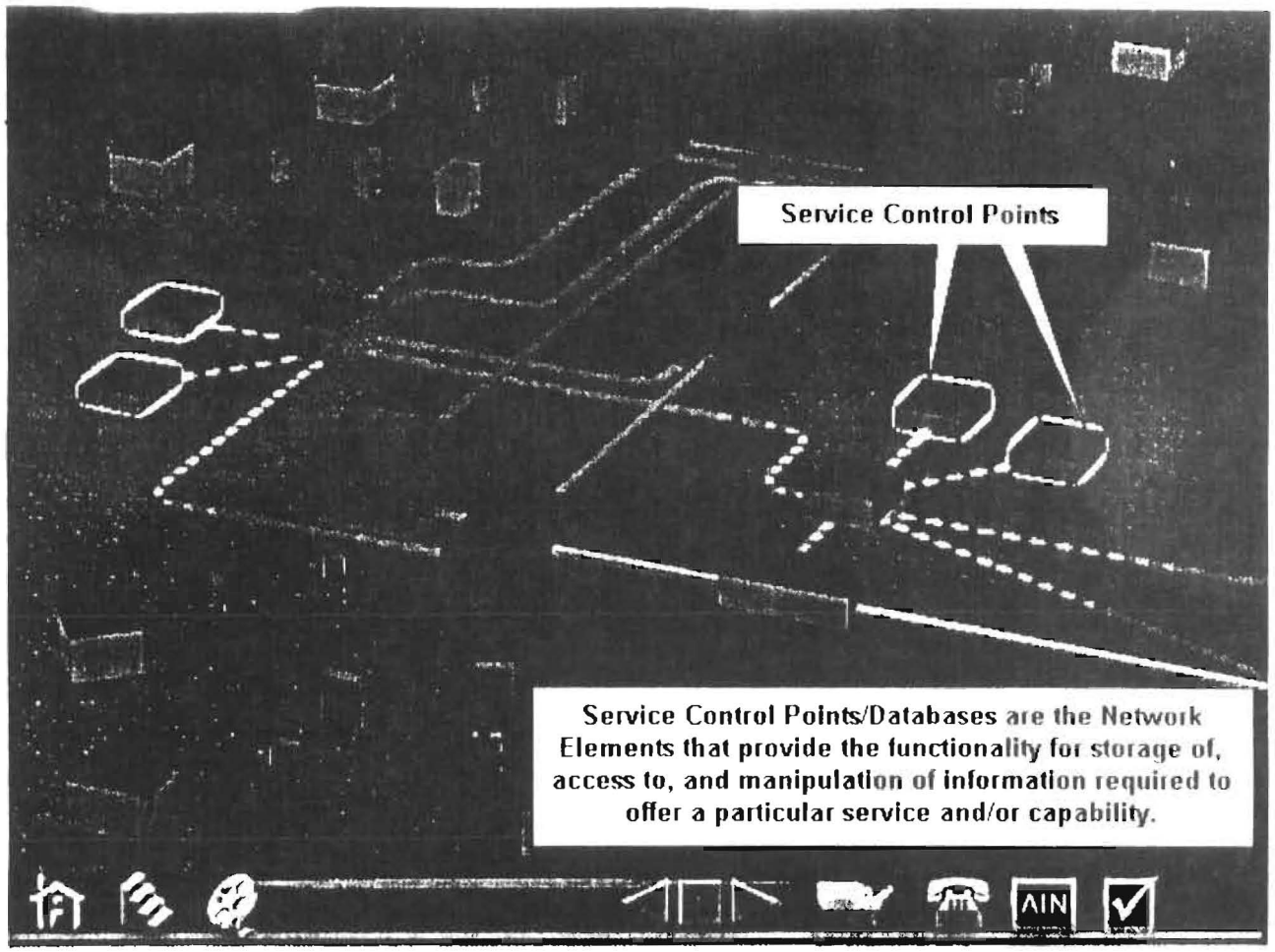

FPSC EXHIBIT NUMBER ____
FPSC DOCKET ____
CRAFTON EXHIBIT RC-2
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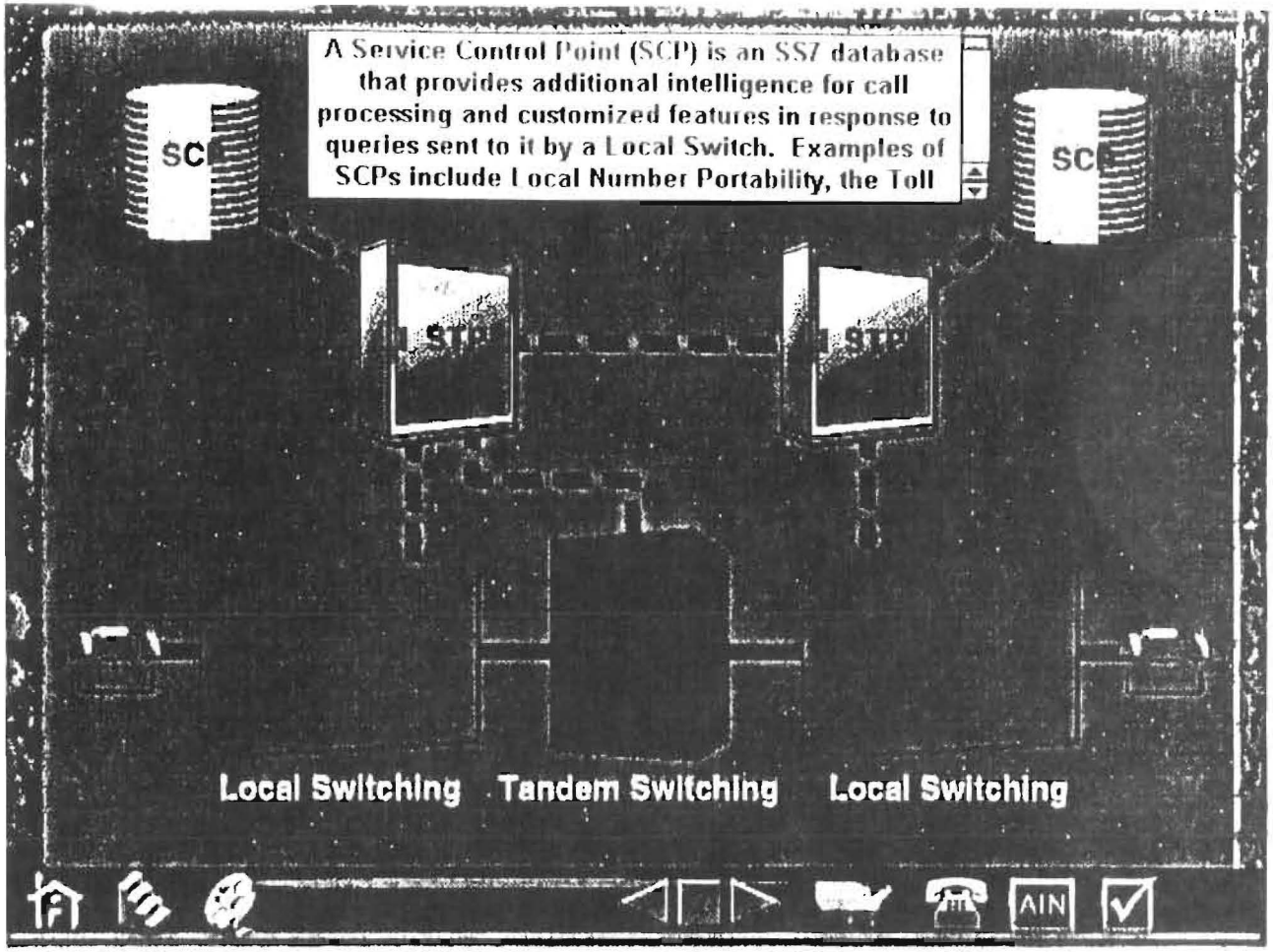
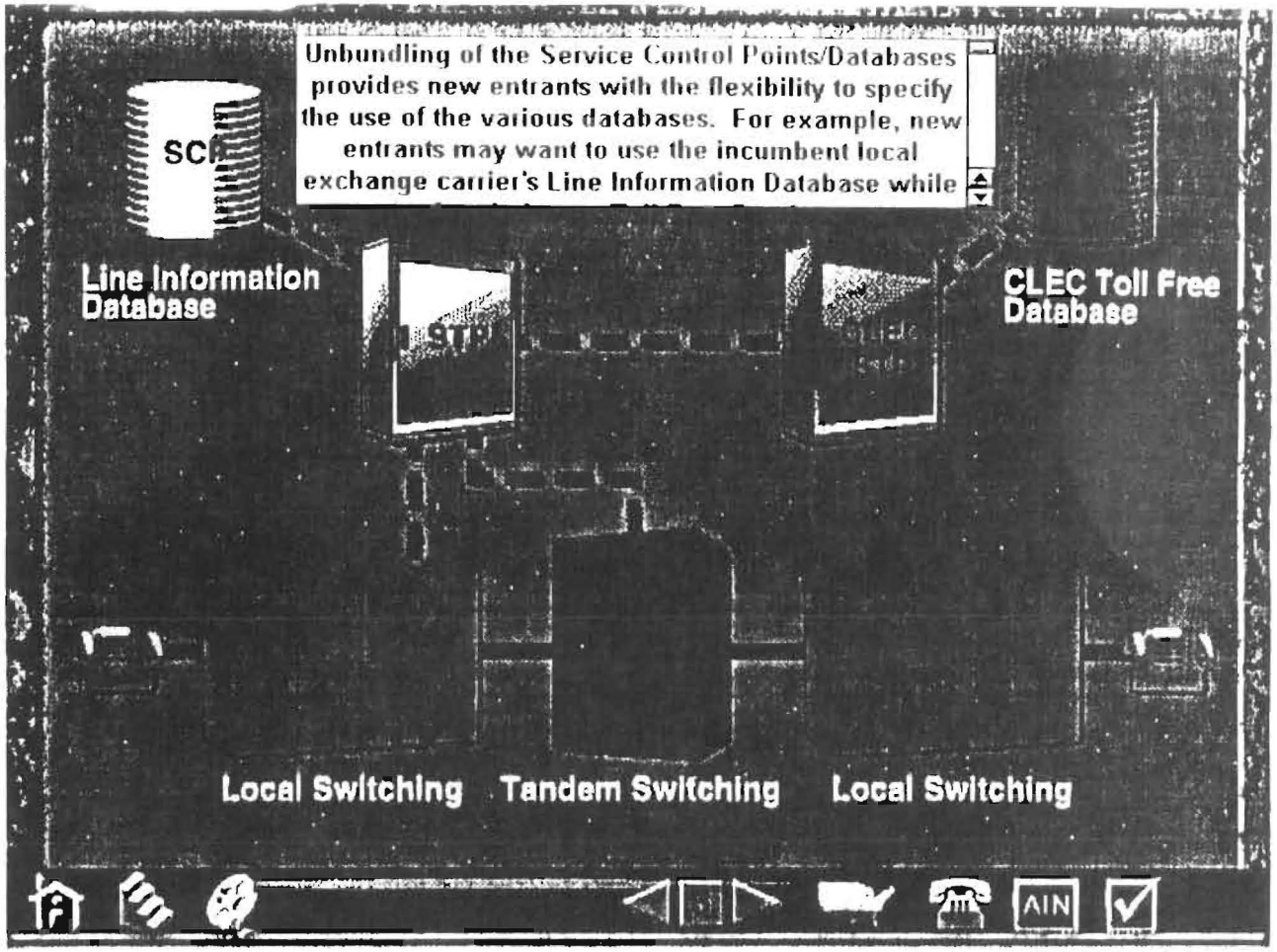
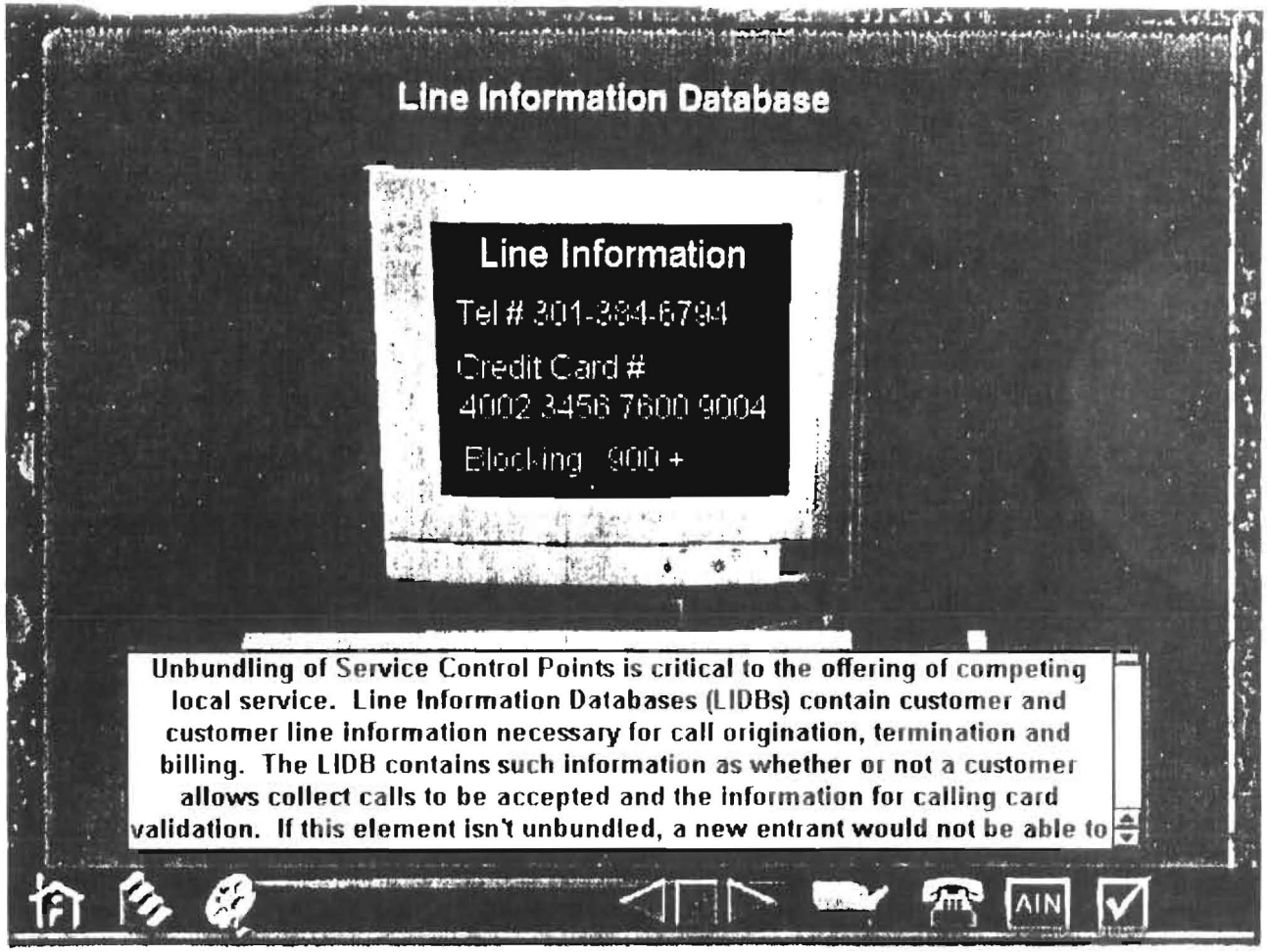
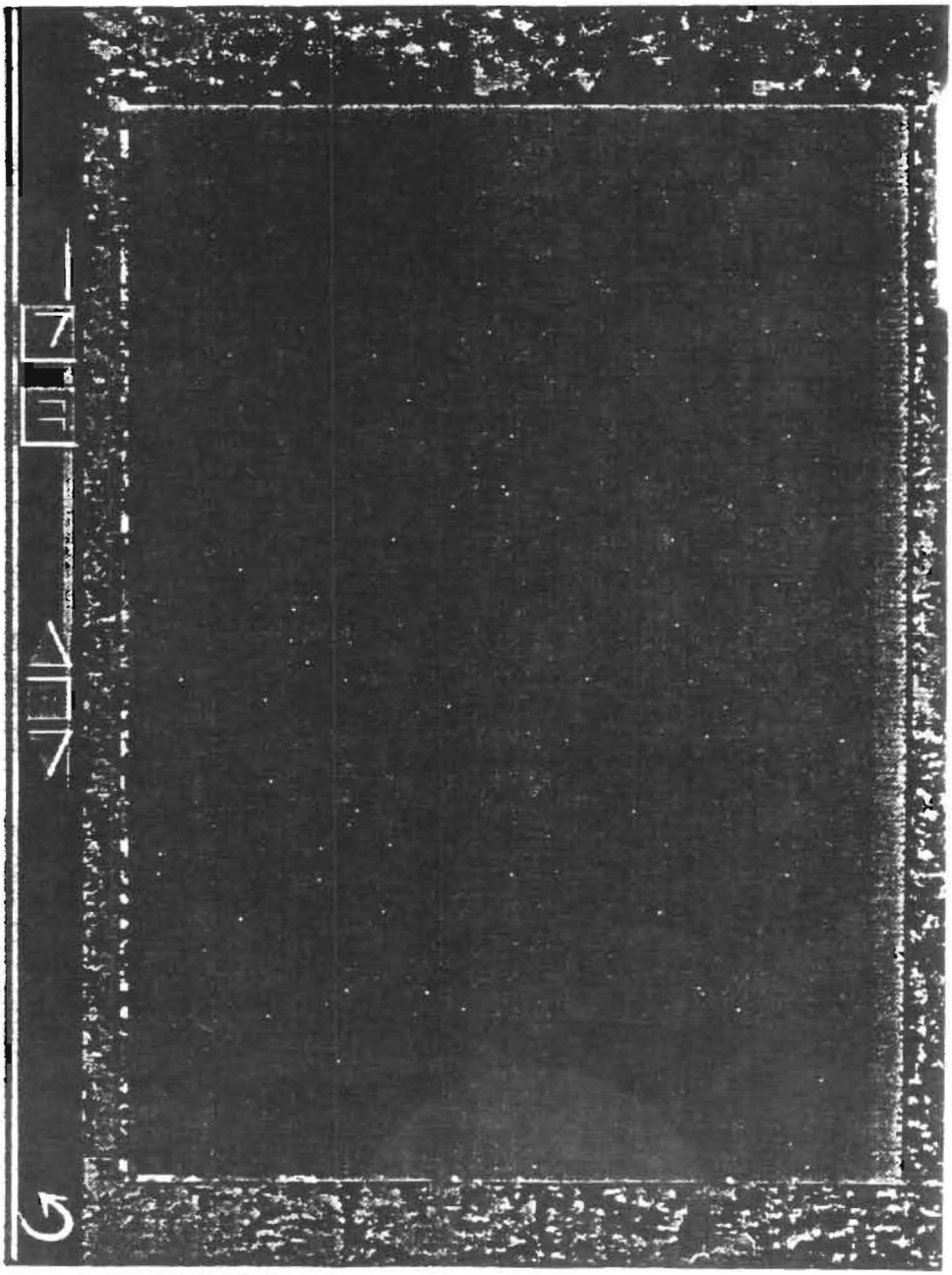



Unbundling of the Service Control Points/Databases provides new entrants with the flexibility to specify the use of the various databases. For example, new entrants may want to use the incumbent local exchange carrier's Line Information Database while
SCP
Line Information Database
CLEC Toll Free Database
Local Switching
Tandem Switching
Local Switching
AIN


Line Information Database
Line Information
Tel # 301-384-6794
Credit Card #
4002 3456 7600 9004
Blocking 900 +
Unbundling of Service Control Points is critical to the offering of competing local service. Line Information Databases (LIDBs) contain customer and customer line information necessary for call origination, termination and billing. The LIDB contains such information as whether or not a customer allows collect calls to be accepted and the information for calling card validation. If this element isn't unbundled, a new entrant would not be able to
AIN

Advanced Intelligent Network, AIN SCPs are another type of database, the availability of which will accelerate the development of new services and features.
AIN



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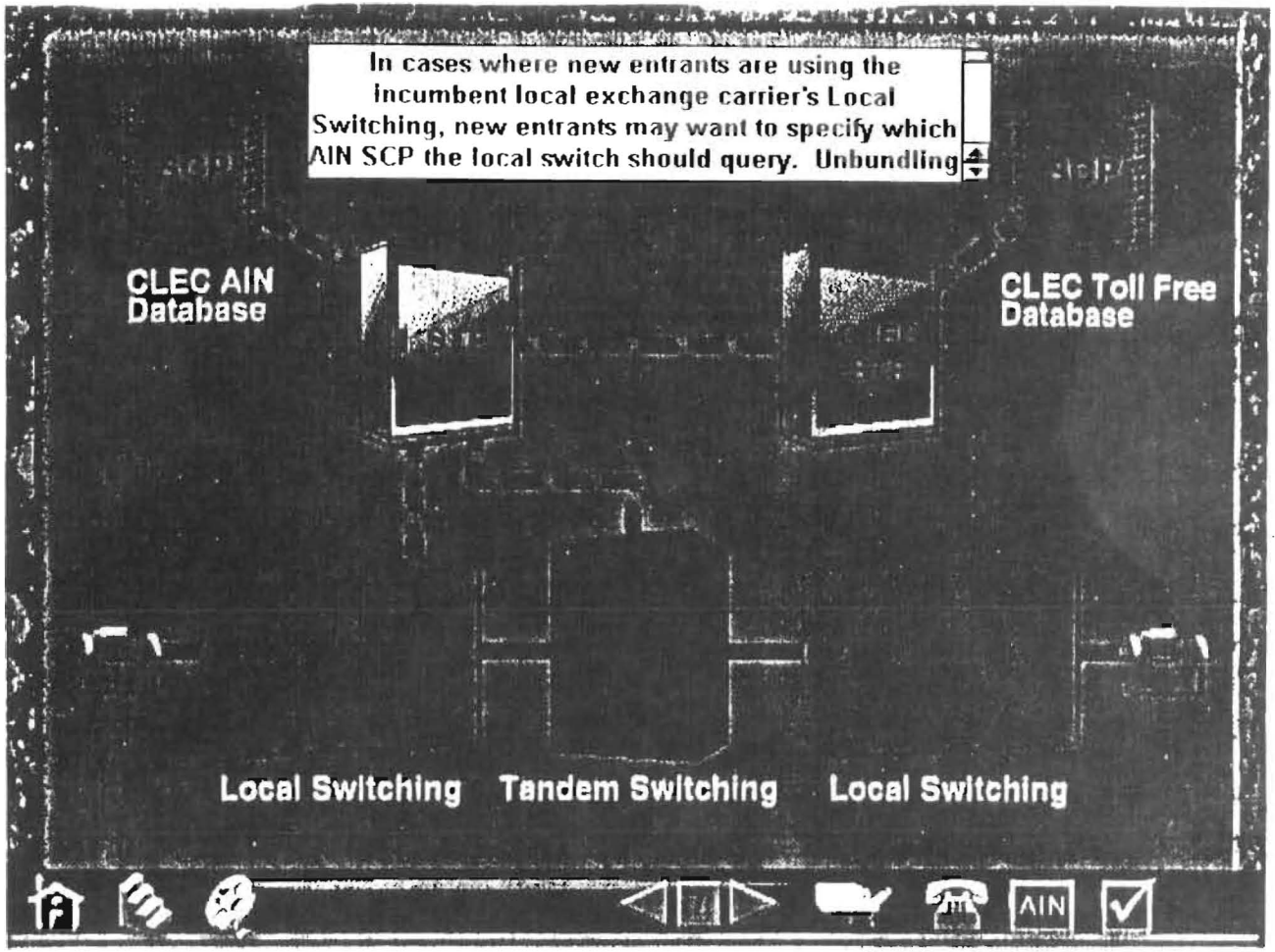

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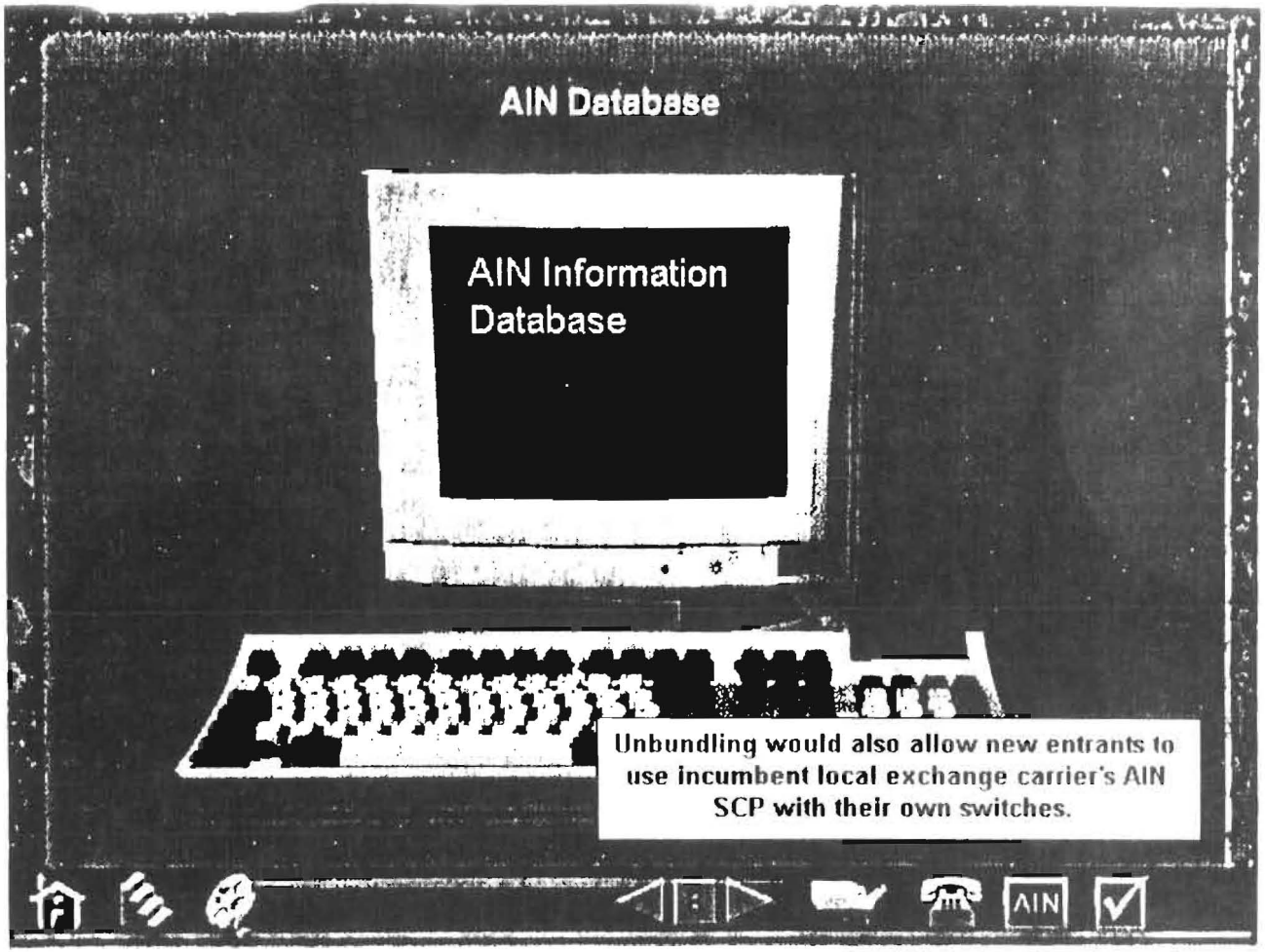

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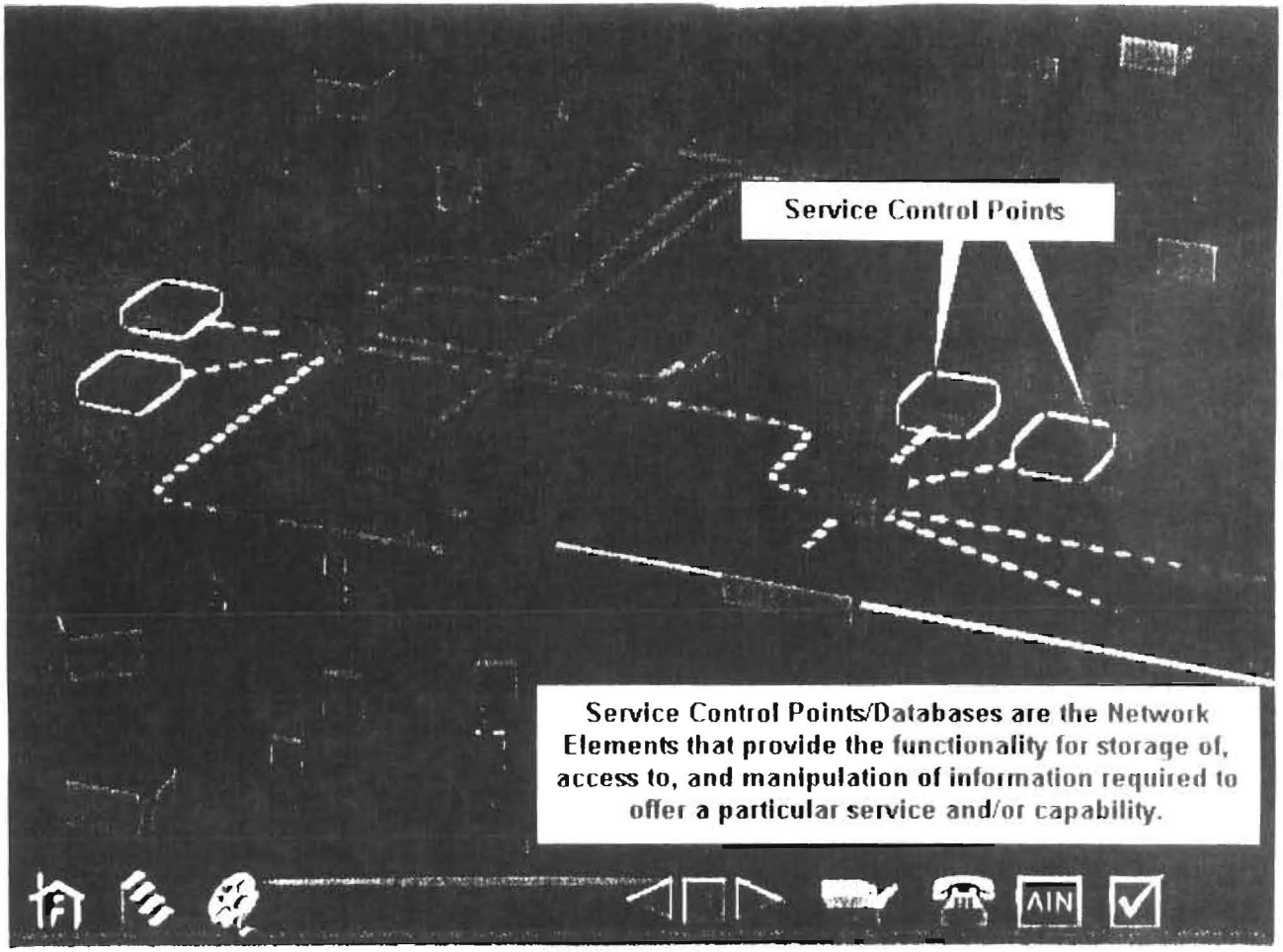
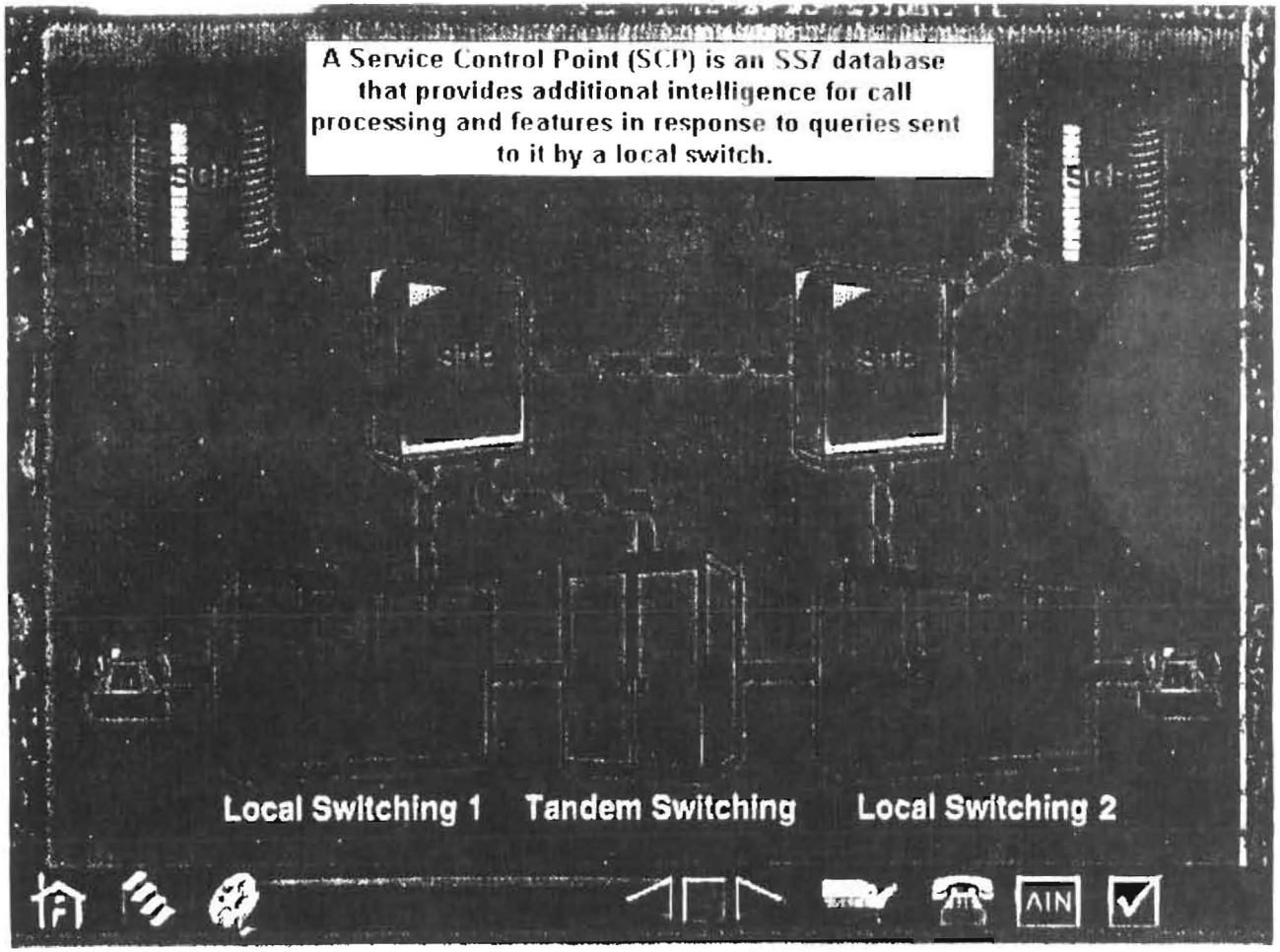
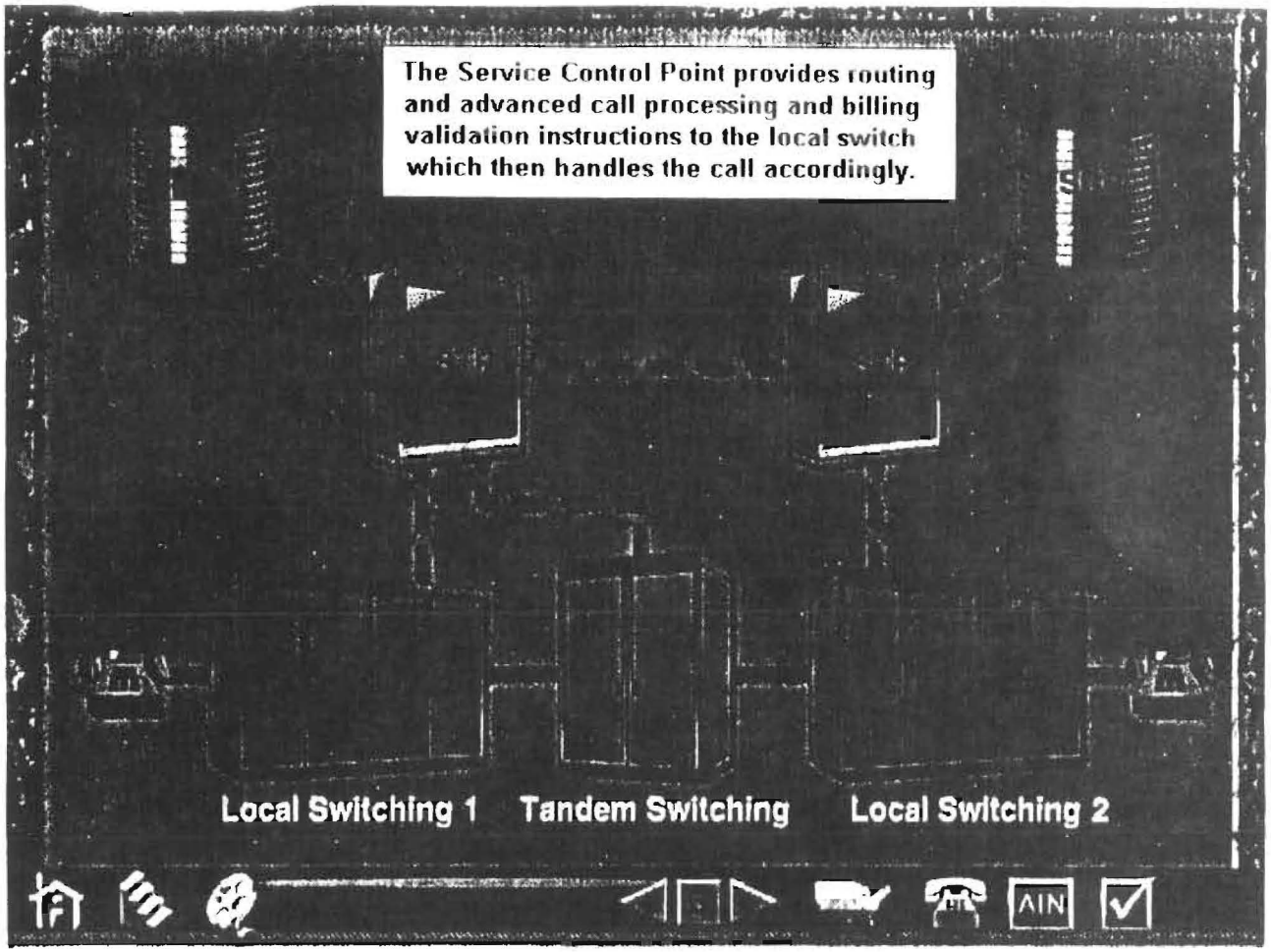
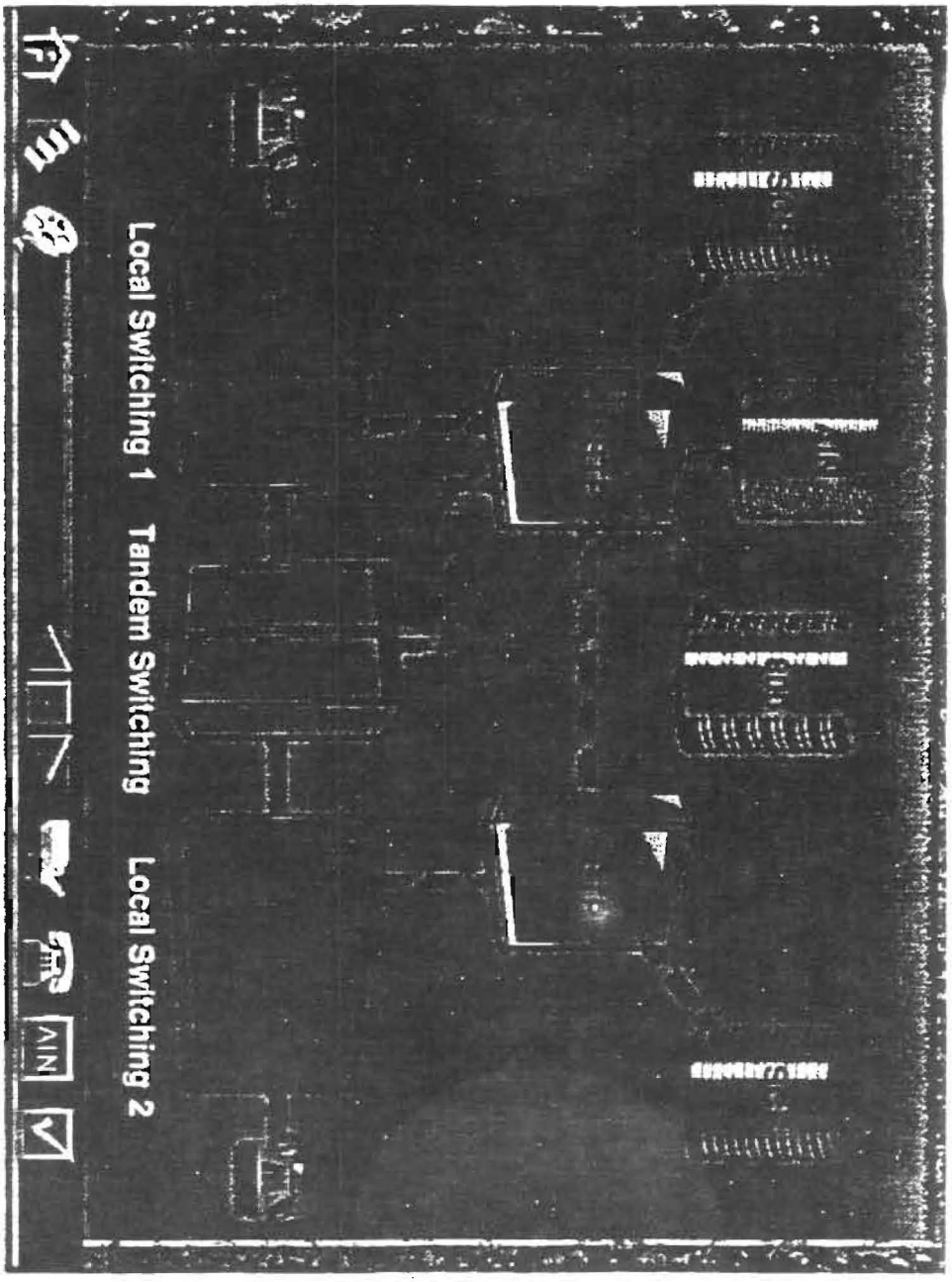



A Service Control Point (SCP) is an SS7 database that provides additional intelligence for call processing and features in response to queries sent to it by a local switch.
Local Switching 1
Tandem Switching
Local Switching 2
AIN


The Service Control Point provides routing and advanced call processing and billing validation instructions to the local switch which then handles the call accordingly.
Local Switching 1
Tandem Switching
Local Switching 2
AIN


Local Switching 1
Tandem Switching
Local Switching 2
AIN

FPSC EXHIBIT NUMBER _____
FPSC DOCKET _____
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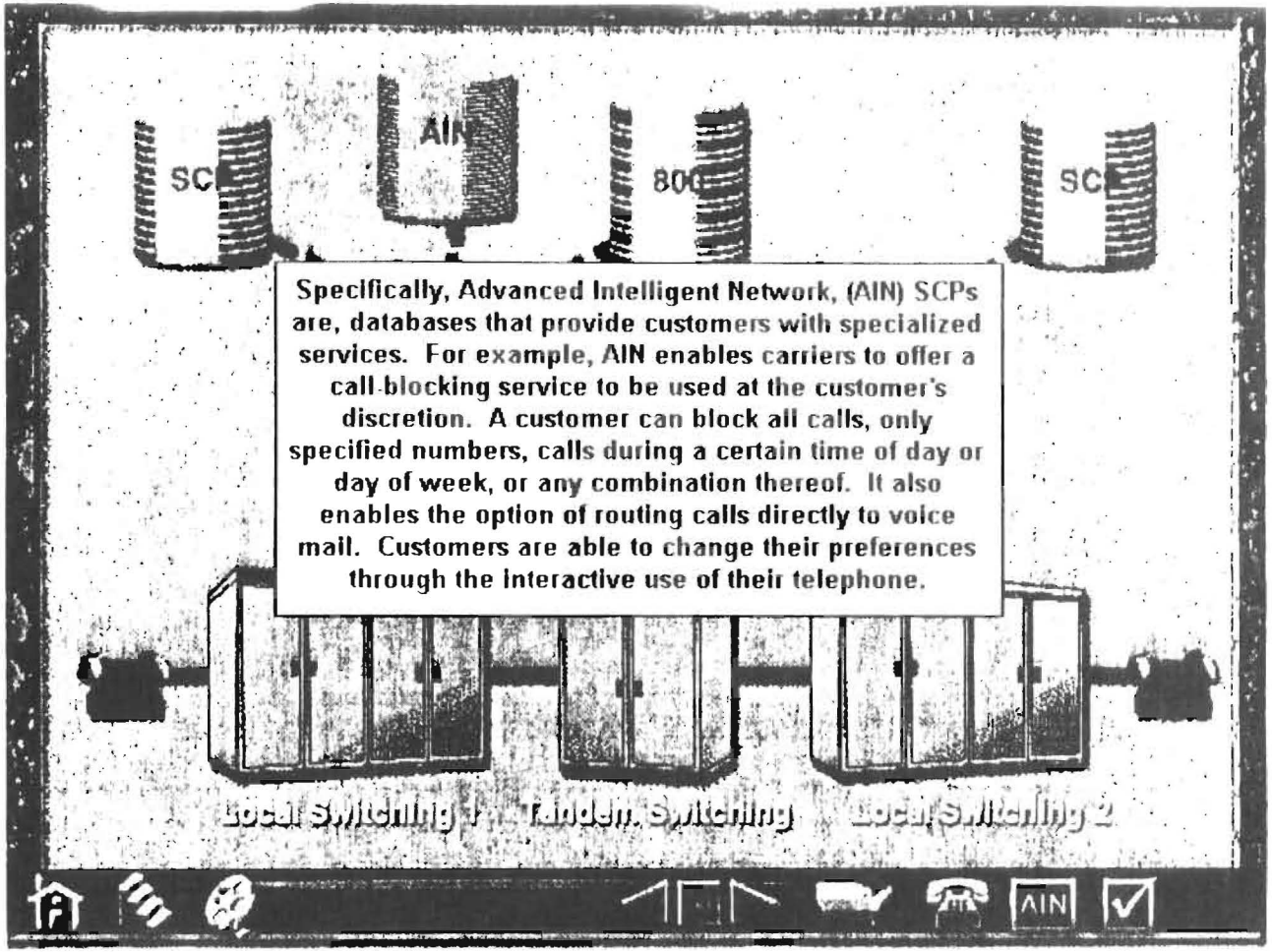
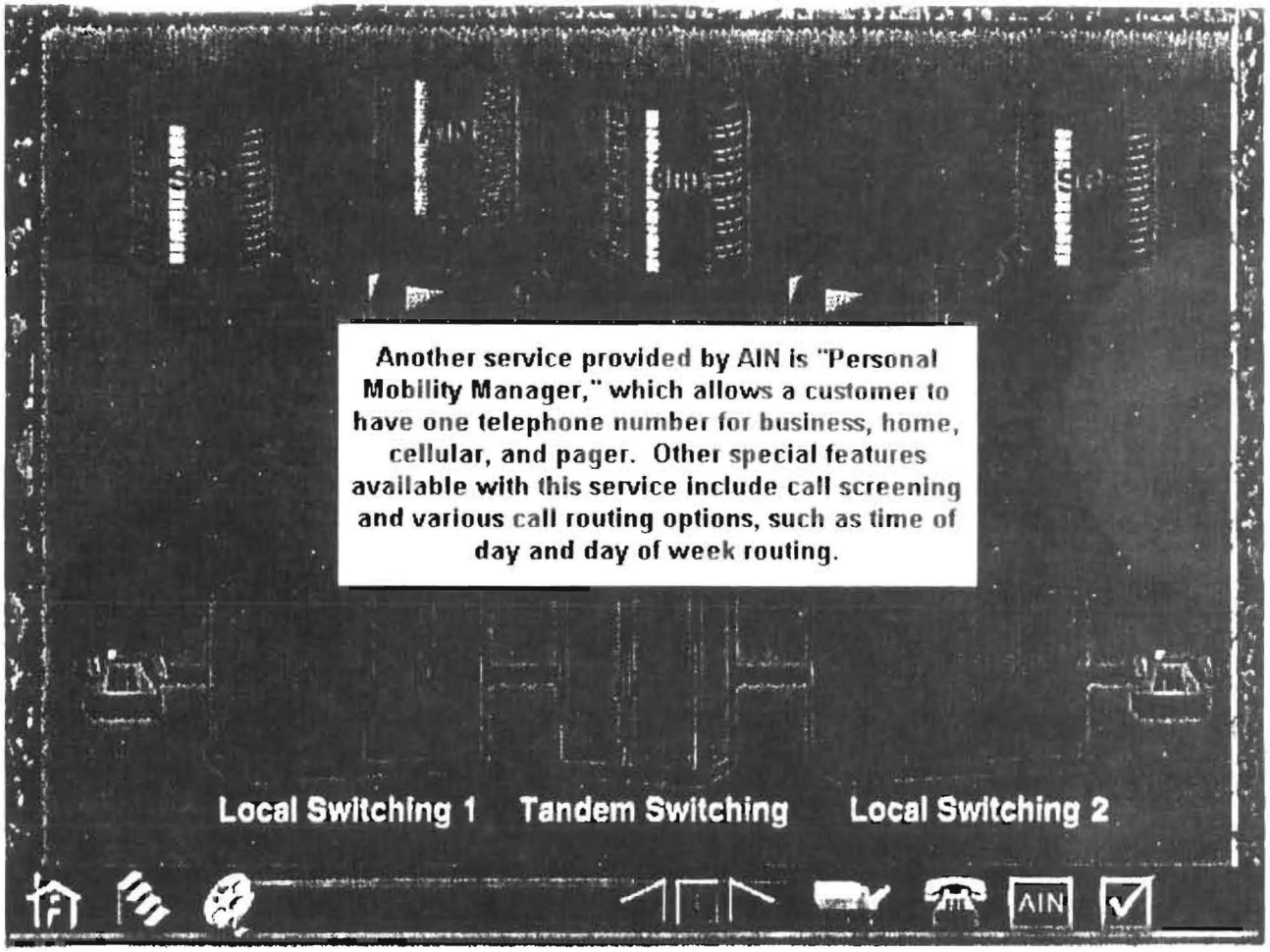
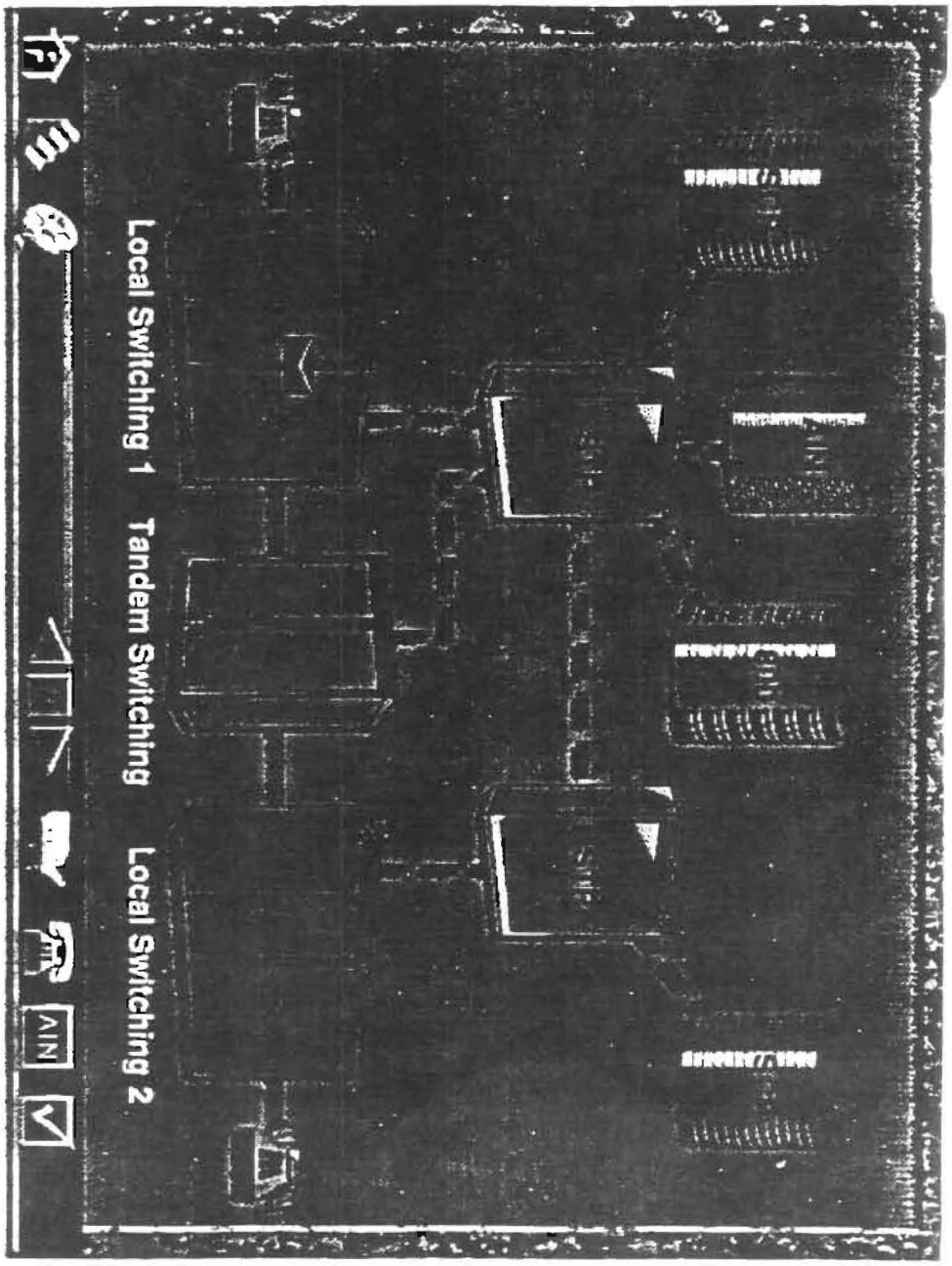
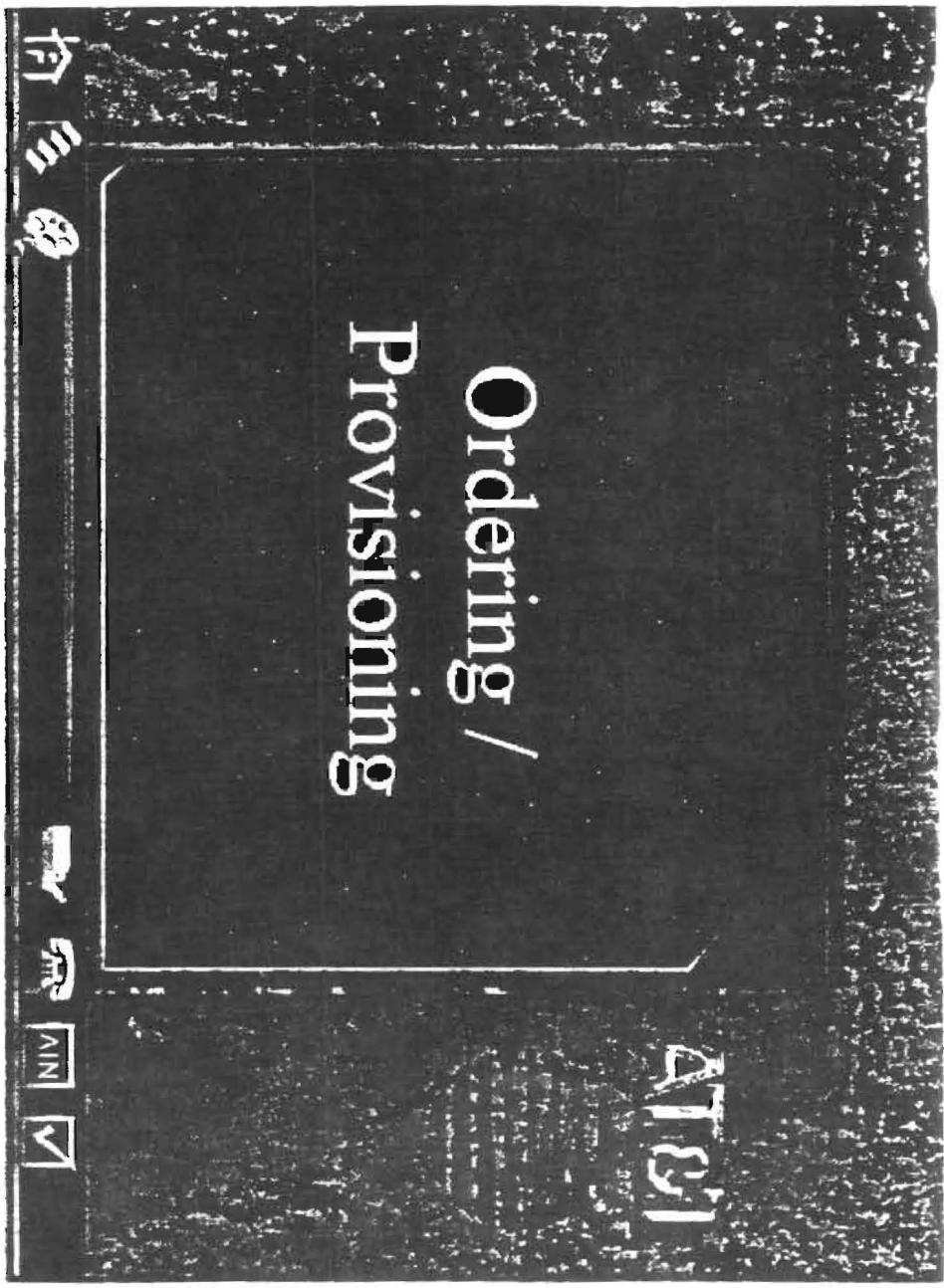



Another service provided by AIN is "Personal Mobility Manager," which allows a customer to have one telephone number for business, home, cellular, and pager. Other special features available with this service include call screening and various call routing options, such as time of day and day of week routing.
Local Switching 1
Tandem Switching
Local Switching 2
AIN


Local Switching 1
Tandem Switching
Local Switching 2
AIN


Ordering /
Provisioning
AT&T