

1 interests of carriers, resellers, new PCS carriers, and consumers in the face
2 of the cellular industry being saddled with an inefficient cost structure and
3 inefficient regulation. Thus, increased costs will harm consumers now and
4 will harm competition in the future because of a less efficient cellular
5 industry.

6 THE CSI PROPOSAL DOES NOT REFLECT MARKET REALITIES FOR CELLULAR SERVICE

7 17. Q. Is the CSI proposal for pricing practical given market
8 realities in cellular telephone?

9 A. No, the CSI proposal has precisely the defects that I discussed in my
10 testimony in Phase II of the OII. I stated:

11 "Whatever type of regulatory oversight is adopted, it is essential
12 that cellular markets be considered as the appropriate framework
13 of analysis, not the individual carriers in the markets. The two
14 carriers directly compete in each market, and any regulatory
15 framework which does not recognize this essential economic fact
16 will be seriously flawed....Thus, price or price bands set on an
17 individual carrier basis will not recognize adequately the
18 essential nature of this competition." (Statement of Professor
19 Jerry A. Hausman, p. 25)

20 The CSI proposal, since it is rate of return type regulation based on the
21 costs and return of each carrier, leads to significantly different prices for
22 the competing carriers in the same cellular markets, e.g. Mr. King's proposal
23 has a 14% difference in peak period rates in Los Angeles between the two
24 carriers despite an assumed equal rate of return. Real competitive markets do
25 not behave in this manner because when two products are very close substitutes
26 their prices will be very close also. Only a misguided regulatory proposal
27 would attempt to keep them far apart and will lead to large shifts of
28 customers and resulting economic inefficiency as one system becomes much more
29 highly utilized than the other system. Thus, as I stated in my testimony in
30 the OII, rate of return regulation is very ill-suited for competitive markets.

1 The CSI proposal of "back door" rate of return regulation ignores competitive
2 realities and creates the type of problems which I discussed in my previous
3 testimony.

4 18. Q. Earlier, CSI and Mr. King recommended rate of return regulation
5 as a necessary requirement to make the reseller switch a viable proposition.¹⁶
6 Have they changed their views?

7 A. Mr. King continues to offer rate of return regulation as one alternative.
8 However, probably recognizing that his proposition would require the
9 Commission to reverse its nearly three years of work and change its order that
10 rate of return regulation is inappropriate in the cellular industry, he now
11 proposes an additional alternative.¹⁷ The general purpose of the new
12 alternative remains the same: an economically inefficient transfer of
13 revenues from the carriers to the resellers. The transfer proposed by Mr.
14 King is misguided because it is the carriers who have taken the risk of the
15 investment in the cellular systems and the return for that investment is
16 appropriately left with the carriers, as the Commission recognized in its
17 Phases I and II order. It will result in economic inefficiency because it is
18 an alternative revenue sharing scheme that is dependent upon inflated costs
19 designed to create a protectionist price umbrella, leading to higher consumer
20 prices in what otherwise would be competitive retail market. As I testified
21 in my appearance in the first part of the Phase III hearings on the cost
22 allocation methodology, this is precisely the behavior one would expect from
23 competitors in a competitive market seeking to use the regulatory process for
24 inefficient protection.

25 19. Q. Does the CSI proposal increase competition in the cellular

26 ¹⁶ Please see Appendix A for references to CSI's and Mr. King's previous
27 statements on this topic.

28 ¹⁷ Please see Appendix B for reference to these previous Commission
29 statements.

1 industry?

2 A. The CSI proposal is unlikely to increase competition. The proposal puts
3 an inefficient cost structure in place that will be difficult to regulate for
4 years to come because it introduces cost based (and rate of return) regulation
5 into a competitive industry. The likely outcomes of the CSI proposal are:

6 (1) Costs and prices are likely to be higher. Economic efficiency will
7 decrease.

8 (2) According to engineering analysis, the cellular systems will be less
9 reliable. (See Mr. Chessher's testimony)

10 (3) Future advances in technology and risk taking will be hampered.

11 (4) The proposal provides more for an increase in regulation than an
12 increase in competition. The reseller switch proposal is yet another
13 attempt at cost based and rate of return regulation, not increased
14 competition in cellular telephone.

15 20. Q. Does this complete your testimony?

16 A. Yes.

APPENDIX A

THE RESELLER SWITCH CONCEPT
IS DEPENDENT ON
COST-BASED WHOLESALE RATES

CSI Phase II Opening Comments:

1. "CSI's proposal only makes economic and competitive sense if wholesale cellular carriers are required to unbundle the basic service elements of wholesale cellular service and offer such service elements at cost-based nondiscriminatory tariffed rates to switch-based resellers." p. 1.
2. "To derive a cost-based nondiscriminatory unbundled wholesale cellular tariff, airtime can be weighted as a function of the cost of construction as well as standard utility reasonable rate of return on the investment by the FCC-licensed cellular exchange carrier in its tower site and equipment." pp. 4-5.
3. "CSI requests that the Commission direct McCaw and other FCC-licensed cellular exchange carriers to implement these principles in a cost-based, nondiscriminatory unbundled wholesale tariff." p. 7.
4. "Additionally, under CSI's proposed plans, switch-based cellular resellers should be also able to purchase Type II interconnection from the LECs as well as cost-based tariffed interconnection arrangements with cellular carrier, equivalent to those carriers' interconnection with LECs so that all cellular exchange carriers--both resellers and FCC-licensed cellular carriers--can provide economical networks to their users." p. 10.
5. "[A]dditional interconnection issues concern the networks constructed by FCC-licensed facilities-based cellular carriers to which resellers do not presently have cost-based nondiscriminatory tariffed access." p. 12.
6. "Certainly, the identification of the basic service elements of a cellular system could be determined by analyzing the cost of cellular base stations, the cost of switching of cellular channels along with the proper allocation of general and administrative cost expenses to the wholesale and retail divisions of the facilities-based carriers. Based on this information, a cost based nondiscriminatory tariff could be formulated." pp. 12-13.

CSI Phase II Reply Comments:

7. "As a result, DRA recommends, and CSI concurs, that a cost-based unbundled nondiscriminatory tariff would allow for purchase of Basic Service Elements by switch-based resellers, which, in turn,

can provide enhanced services in competition with the FCC-licensed facilities-based cellular carrier." p. 4.

8. "By way of example, the following enhanced services could be provided by a switch-based reseller, if a cost-based nondiscriminatory wholesale tariff was required." p. 4.
9. "Thus, CSI requests that the Commission formally approve all elements of its switched-based certificated reseller proposal and unbundle the wholesale tariffs of the FCC-licensed carriers at cost-based rates and on nondiscriminatory terms and conditions." p. 5.

CSI Phase III Opening Comments:

10. "The concept of a reseller switch poses no technical problems, as demonstrated by the multiple switches already in operation in the larger MSAs in California. The primary unresolved issue relates to pricing. The only service that the reseller must obtain from the cellular carrier is radio channel access. By and large, most of the service elements bundled into cellular carriers' wholesale tariffs are not required by a reseller operating its own switch." p. 5.
11. "The price of basic service elements of a cellular system can be identified by analyzing the cost of cellular base stations, the cost of switching, and the cost of administering the wholesale and retail divisions of the facilities-based carriers. * * * Based on this information, a cost-based, unbundled, nondiscriminatory wholesale tariff with a reasonable rate of return for the cellular carrier could be formulated." pp. 7-8.

APPENDIX B

IN PHASE I AND II THE COMMISSION
REJECTED COST-BASED WHOLESALE RATES
FOR CELLULAR SERVICE AS INCONSISTENT
WITH BASIC COMMISSION REGULATORY GOALS

The Commission reviewed an entire range of regulatory options and concluded in Decision 90-06-025 that cost-based regulation would be inappropriate and would retard the rapid expansion of service and use of new technology in this developing and competitive industry.

- (i) "[C]ost of service regulation of wholesale prices is problematic in a competitive industry like cellular that is undergoing rapid technological change." p. 15.
- (ii) "D.89-10-031 articulated at some length our finding that technological innovation and cost cutting are hindered by such regulation." pp. 15-16.
- (iii) "The competitive duopoly market structure introduces other complications that would make it even more difficult [than it is in monopoly markets] to achieve efficiency through cost of service regulation." p. 16
- (iv) "Carriers differ in their numbers of customers, precise service areas, equipment, and in numerous other characteristics that affect costs. We would be faced with setting different prices or different allowed rates of return; the former would artificially bias the market towards one carrier while the latter could be attacked on fairness grounds." p. 16; see also, pp. 93-94 (Findings 17, 18).
- (v) "Keeping in mind the intent to promote competition for a discretionary service [such as cellular], rates should continue to be based on the market." p. 59.
- (vi) "In the cellular industry, there is no bottleneck monopoly, this is a discretionary service, and technological change and service expansion are key issues." p. 59.
- (vii) "The direct control of cellular prices through cost of service or rate of return regulation is inconsistent with the most important regulatory goals of promoting technological advancement, the expansion of service, and economic efficiency." p. 100 (Finding 90).

DIRECT TESTIMONY OF JEFFREY CHESSHER
IN PHASE III OF I.88-11-040
RE: RESELLER SWITCH

1. Q: Please state your name and business address.

A: My name is Jeffrey Chessher and my business address is 2150 River Plaza Drive, Suite 400, Sacramento, California 95833.

2. Q: By whom are you employed and in what capacity?

A: Since April 1, 1987, I have been employed as PacTel Cellular's Network Director in Sacramento. I am responsible for the management of network design, cell site and MTSO implementation, and daily maintenance of the Sacramento-Valley Cellular System which services the Sacramento, Yuba City, Stockton, Modesto, Redding, Reno and Tehama markets.

3. Q: Briefly review your qualifications and experience.

A: From 1962 to 1979 I was employed by the Nevada Bell Telephone Company. My responsibilities included network transmission, switching engineering, traffic forecasting and network operations. My operations experience included switching maintenance for both local and toll switching machines and microwave radio systems. I also served three and one-half years

as a Staff Manager with AT&T general departments where I was responsible for long range network planning.

In 1983, I joined Advanced Mobile Phone Service ("AMPS"). During my employment with AMPS and PacTel Cellular, I have been responsible for long range strategic planning, capital investment analysis, and project management for the Los Angeles cellular system.

4. Q: What is the purpose of your testimony?

A: My testimony addresses the concept of the reseller switch as articulated in the testimony submitted by Charles King, Harry Midgely, Ralph Widmar and David Raney. Specifically, my testimony comments on the impact of the proposed reseller switch on PacTel Cellular's operations (which utilize Motorola switches), and on the cellular network system, including service to end users.

The testimony presented by CSI provides an oversimplified and inadequate picture of interconnection with the carrier's switch. Moreover, contrary to the statements of CSI's witnesses, the reseller switch would not relieve the carrier switch of significant functions or provide innovative services not currently available. In fact, the carrier will incur increased costs in connection with the reseller switch.

5. Q: Does the testimony presented by CSI provide a proposal for a reseller switch?

A: No. The testimony of Mr. Midgely, primarily contains a general discussion of well known Bellcore standards for connection to the public switched network. The Bellcore standards do not address a nonstandard "cellular inter-end office trunk" as proposed by CSI or discuss any other specific requirements of a reseller switch.

The CSI testimony presents a concept lacking essential information for a complete evaluation of the impact of the switch on the cellular network system. The nonstandard facility proposed by CSI raises interconnection questions regarding circuit design layout, facility type (LEC or microwave), performance requirements, and hardware and software requirements at the carrier switch. For example, will the interconnection facilities be digital or analog? If an analog interface is used, what will be the overall circuit loss/gain? If a digital interface is used, what will be the digital circuit type, DS1 or DS3? What will the interconnection method be in a multiple vendor market such as Los Angeles?

Additionally, CSI has failed to provide sufficient information regarding routine protocol to ensure that CSI's switch communicates properly with the carrier's switch. What means will be used to synchronize the CSI switch with the LEC or

MTSO to ensure proper digital timing? If the CSI switch uses two way trunks, which switch will be programmed to back down when both switches simultaneously seize a trunk? Similarly the CSI concept fails to address the order of the trunk hunt that allows the switch to locate an available trunk for transmission.

Mr. Midgely's testimony implies that an additional node, such as the CSI reseller switch, can be added to the network with no effort. In fact, the introduction of such a node requires substantial acceptance of operator responsibility in at least three specific functional areas: provisioning, administration and maintenance. A complete proposal would provide additional specifics addressing these critical issues.

For example, CSI must explain how it will provide for the switching system and transmission facilities required for telecommunication service including: accurate forecasting of demands for service, ascertaining necessary changes to its switch and the network and determining where and when these modifications must be implemented. In addition, CSI must assume service administration responsibility for billing, engineering and service evaluation assistance. CSI's concept fails to discuss requirements that are necessary to equip the network for the reseller switch.

CSI has failed to provide any details regarding corrective and preventive maintenance procedures. CSI must

provide maintenance operations, such as a 24 hour maintenance center and an alarm center, to ensure that CSI's components work properly after installation. Additionally, CSI has not discussed the research and development commitment necessary to ensure that CSI will provide upgrades to keep pace with technological developments. Such an investment is crucial to avoid degradation of the entire cellular network.

Finally, the proposal as it stands has a number of technical problems. For example, Mr. Midgley's trunking projections are inadequate to meet his anticipated traffic pattern. For example, the subscriber projections estimated for the Los Angeles market range from 32,000 for the first year to 101,000 for year five. The number of trunks to the wireline carrier switch range from 31 at year one to 81 at year five. See Attachment A1 to Mr. Midgley's testimony. By distributing the CSI subscriber projections by the number of trunks to each carrier switch, the CSI trunk requirement is 52.26% underestimated. Similarly, the trunking requirements for the San Francisco and San Diego markets are underestimated by 38.15% and 36.61%, respectively. See Table A.¹ Mr. Midgley's trunking

¹ These projections are based on Erlang Table B. Lee, William, Mobile Cellular Communications System (1989), p. 34. Erlang tables are utilized by traffic engineers to calculate the number of radio channels and trunks to the PSTN. The projections assume .010 erlangs per customer at the busy hour. The Sacramento, San Diego and Los Angeles markets currently experience average erlangs per customer at the busy hour of .011, .011 and .014, respectively. Accordingly, the busy hour usage assumption is less than that currently experienced in PacTel Cellular's markets.

TABLE A

Los Angeles							
Year	Customers	CIOT Tks	Tks to A	Cust to A	Erlangs @.010	Tks Req	% over/under
1	32,000	201	31	4,935	49.35	63	-50.79%
2	48,000	292	44	7,233	72.33	88	-50.00%
3	65,000	360	56	10,111	101.11	118	-52.54%
4	81,000	433	67	12,533	125.33	144	-53.47%
5	101,000	519	81	15,763	157.63	178	-54.49%
						avg	-52.26%
Notes:							
1. Erlang B table .01 used							
2. assume .010 erlangs per customer at busy hour							
San Francisco							
Year	Customers	CIOT Tks	Tks to A	Cust to A	Erlangs @.010	Tks Req	% over/under
1	5,000	64	9	703	7.03	14	-35.71%
2	12,000	118	16	1,627	16.27	25	-36.00%
3	18,000	156	21	2,423	24.23	35	-40.00%
4	22,000	184	25	2,989	29.89	41	-39.02%
5	28,000	224	30	3,750	37.50	50	-40.00%
						avg	-38.15%
Notes:							
1. Erlang B table .01 used							
2. assume .010 erlangs per customer at busy hour							
San Diego							
Year	Customers	CIOT Tks	Tks to A	Cust to A	Erlangs @.010	Tks Req	% over/under
1	3,000	32	16	1,500	15.00	24	-33.33%
2	5,000	46	23	2,500	25.00	36	-36.11%
3	7,500	62	31	3,750	37.50	50	-38.00%
4	9,000	72	36	4,500	45.00	58	-37.93%
5	11,000	86	43	5,500	55.00	69	-37.68%
						avg	-36.61%
Notes:							
1. Erlang B table .01 used							
2. assume .010 erlangs per customer at busy hour							

projections will result in a blockage of calls, and thus a significant degradation in service. For example, Mr. Midgley's year one projections in the Los Angeles market will result in a 40% blockage at peak hours. As a consequence, CSI customers would experience unacceptable levels of blockage, and the carrier's switch itself would use significant processor time in the transferring of CSI's blocked calls.

In addition Mr. Midgley proposes use of a "cellular interoffice trunk" for connection between the reseller's and the carrier's switch. This is not a standard facility and may raise significant problems. A nonstandard facility may result in an increase in circuit and component failures. Moreover, the carriers may be forced to interconnect with multiple resellers using a variety of nonstandard facilities. The use of a well defined, standard interface will expedite interconnection, traffic interchange and the resolution of potential problems. CSI's concept fails to even acknowledge the need for standardization procedures.²

² PacTel Cellular refers to and endorses the discussion of the standards-setting process in the cellular telecommunications industry set forth in the testimony of Mark Nelson submitted by McCaw Cellular Communications.

6. Q: CSI claims that number administration, call recordation, call validation, billing and call routing will be "absorbed" by CSI's switch and avoided by the carrier switch. Would implementation of the CSI switch concept relieve the carrier switch of any functions?

A: No. The CSI switch would, on balance, add costs and functions rather than replace functions performed by the carrier switch. The only function that would even be partially reduced is number administration as discussed below. The CSI concept merely allows the reseller to assume the cost the carrier incurs for the interconnection to the PSTN for the reseller customers. PacTel Cellular is charged approximately \$0.034 per minute of Type 2A connection.³ If the reseller switch is implemented, CSI would incur these costs instead of the carrier and pass them on to the consumer.

Contrary to the testimony of Messrs. King and Midgley, the carrier switch would be required to perform in full (for all end users including the reseller's) all other functions currently provided. The reseller switch simply is an additional node on the network that duplicates functions provided by the carrier switch. The functions CSI claims are eliminated are discussed separately below.

³ Rates will vary according to the LATA and LEC and to the specific terms of the interconnection agreement. PacTel Cellular's rates for Los Angeles, Sacramento and San Diego are established in a master Connection and Traffic Interchange Agreement with Pacific Bell dated October 14, 1987.

Call Recordation

The carrier switch would maintain its call recordation function. Call recordation by the carrier switch must continue in order to charge the reseller for usage and to track the call through the system. In the Motorola DMX network the carrier's originating switch is the only entity that maintains the total billing record. The carrier's switch would start billing a few seconds before the reseller switch receives information that would allow it to commence billing. It is not currently feasible to send the carrier switch's originating time stamp to the reseller switch.

Number Administration

While the actual number administration of the NXX numbers of CSI subscribers would be handled by the CSI switch, this transfer would not reduce significantly the number function of the carrier switch. In general, except for the initial cost of the NXX numbers,⁴ the costs associated with administrating the numbers are minimal. This is primarily because the billing system that provides number administration is highly automated. Thus, the reduction in cost associated with the removal or

4 Currently the carrier under the Type 2A connection and traffic interchange agreement purchases blocks of 10,000 (NXX) numbers from the LEC. The LEC imposes a one time charge of \$11,000, amounting to a relatively insignificant cost to the carrier of \$1.10 per number. If these costs are amortized over the average life of a customer (36 months), the purchase cost for the NXX is approximately 3¢ per month per customer. Moreover, the numbers can be reassigned, thus essentially eliminating any financial impact. Also the LEC does not generally charge for the first block of numbers in a LATA.

avoidance of additional blocks of numbers would be too low to quantify. Of course, the carrier switch would continue to handle number administration for the carrier's subscribers.

The removal of the reseller NXX numbers from the carrier switch subscriber memory would provide additional space for carrier subscriber numbers. However, any savings arising from additional memory capacity will be offset by increased processing costs arising from remote validation required for reseller subscribers as discussed below.

Call Validation

Mr. Midgley's proposal of transferring call validation from the carrier switch to the CSI switch will increase, not decrease, carrier processing time. Currently the call is validated through the carrier switch. The carrier switch receives the MIN (cellular telephone number), the ESN (electronic serial number) and the digits of the number dialed. The ESN is checked against the serial number deny table. If the ESN is not in the deny table, the MIN is checked against the off code table. If the MIN belongs to a home subscriber, the subscriber record is checked for MIN/ESN match. If a match is found, the call is processed.

If the subscriber is identified as a roamer, his records will not be located in the carrier switch's database. A validating request is passed on to a DMX data circuit for

validation in a remote switch. Remote validation is more processor intensive than local validation in the carrier switch since it requires the MTSO to hold the call during a longer processing time while the message is sent to and received from the remote switch. Under the CSI concept, all CSI subscribers would require remote validation. Accordingly, the CSI concept utilizes more carrier switch capacity than current validation procedures.

Billing

The carrier would not be relieved of its billing functions. Currently, the carrier generates a reseller tape to allow the reseller to generate billing for its end user. Under the CSI concept, the only arguable savings to the carrier in connection with billing is the duplication of the reseller tape. However, the carrier most likely would generate and store the reseller tape to resolve any potential billing disputes.

The carrier would continue to perform all of its billing functions, including generating and processing billing records, in order to bill the reseller for total air time usage. Of course, this would require the same complete call by call recordation that the carrier does presently.

Call Routing

The carrier switch will continue to perform its routing function. Although the CSI switch routes to the PSTN, the carrier switch must route calls to the CSI switch. The carrier switch would be required to identify the CSI subscriber and route to the appropriate trunk group. In fact, the carrier may incur additional costs in routing to the CSI switch due to the increase in trunks to connect with the reseller switch.

In summary, even if CSI subscribers are diverted to the CSI switch, the functions of the carrier switch described above will be neither reduced nor eliminated.

7. Q: CSI implies that costs for call recordation, number administration, call validation, call routing, and billing will decrease. Is this true?

A: No.

Aside from the LEC interconnection costs, which the resellers propose to assume, the carrier operating costs as a result of accommodating the reseller switch will increase, particularly (as I have just testified) with respect to call verification and call routing.⁵ The carrier switch would experience increased processing requirements to transfer validation of the resellers' customers, and maintenance costs will increase in connection with testing additional trunk groups, resolving problems associated with the reseller switch and maintaining additional trouble reports.

In addition, the carriers will incur capital costs to enable the CSI switch to interconnect. Specifically, the carrier will incur hardware and software costs in order to interface with the CSI switch. Mr. Midgley "assumes" the MTSO has an adequate number of DTI interfaces, data circuit interfaces for the interswitch communication units and adequate data space for CSI's NPA-NXX codes. Alternatively, Mr. Midgley assumes the carrier can add these elements "with no problem."

5 The CSI concept involves merely a transfer of the LEC interconnection costs for reseller's customers. The CSI switch will result in an increase in operation costs for the cellular network.

The carrier will incur increased costs in connection with meeting these requirements.

Hardware Costs

There will be additional requirements to equip the carrier switch to receive the reseller trunk group. The carrier will incur the hardware and installation costs associated with adding a Digital Trunk Interface unit. In order to interface at a DS-1 digital level, Digital Trunk Interface (DTI) cards must be purchased. Additionally, a land trunk frame is required to house the DTI cards. There are 32 DTI positions on the land trunk frame.

There also will be hardware costs to the carrier to establish the reseller switch on the DMX (Motorola based technology) network. In order to directly connect to the reseller switch, each carrier switch would require network equipment such as SFCC cards, data modems and RS232 cables. In the case of an IS-41 network, each Motorola based carrier would require a Motorola VME protocol connector to interface between DMX protocol and IS-41.⁶

⁶ PacTel Cellular refers to and endorses the testimony of Mark Nelson regarding the problems associated with IS-41 submitted by McCaw Cellular Communications.

Software Costs

The carrier would incur the cost of developing software instructions to add the reseller to the DMX network. In addition, there are increased database costs to the carrier. For example, additional database capacity will be necessary for reseller routing requirements and reseller NXX codes in the roamer files.

In addition, the carrier potentially may incur software costs due to expansion limitations. Currently, the total number of switch connections available for DMX interfaces is 32. With multiple reseller switches, the carrier may be required to make software modifications to expand this limit.

8. Q: Will the CSI switch allow the carrier to reduce its fixed costs?

A: No. As I have just testified, the CSI proposal does not permit the carrier to avoid any of the functions currently provided by the MTSO.⁷ Moreover, the carrier switch is but one element of the provision of cellular service. The majority of the carrier's fixed costs arise from cell sites, buildings, towers, voice channels, trunks and interconnection facilities. PacTel Cellular has made capital investments totalling \$294,000,000, \$50,000,000 and \$35,000,000 for its cellular systems in Los Angeles, Sacramento and San Diego, respectively. These fixed costs would not be impacted if CSI's subscribers shifted to CSI switch. In fact, the carrier's fixed costs will increase due to additional modifications to interconnect and to provision for capacity requirements of the CSI subscribers.

9. Q: Is Mr. King's allocation between the "landline" and "radio" functions of the switch an accurate estimate?

A: No. Mr. King arbitrarily assigned 50% of the switching investment to his "radio" category and 50% to his "landline" category. While it is possible to associate various MTSO processing functions either to a mobile or land use, this

7 The carriers will avoid the LEC interconnection charges for the reseller's customers if the resellers take responsibility for paying those charges. However, LEC interconnection is not a function of the MTSO.

designation bears no relationship to the appropriate allocation of costs or functions avoided by the carrier because of the presence of the reseller switch. This issue is discussed in testimony filed herewith by Dr. Hausman. To determine the incremental or avoidable cost, an examination of the switch architecture by function and the process that each function manages is necessary. PacTel Cellular utilizes a Motorola EMX 2500 model switch in its Sacramento, Los Angeles and San Diego markets. The switch is comprised of processors reflecting 41 functions. Table B, the Motorola EMX 2500 functional diagram, depicts the switch architecture and proper allocation of the functions based on avoidable cost. Table C describes each function.⁸ The analysis of the functions reveals that with the exception of a nonquantifiable portion of the number administration function, none of the switch functions identified by the resellers would be avoided if CSI's subscribers migrated to the CSI switch. The processors are intrinsic to the switch and their functions are not divisible.

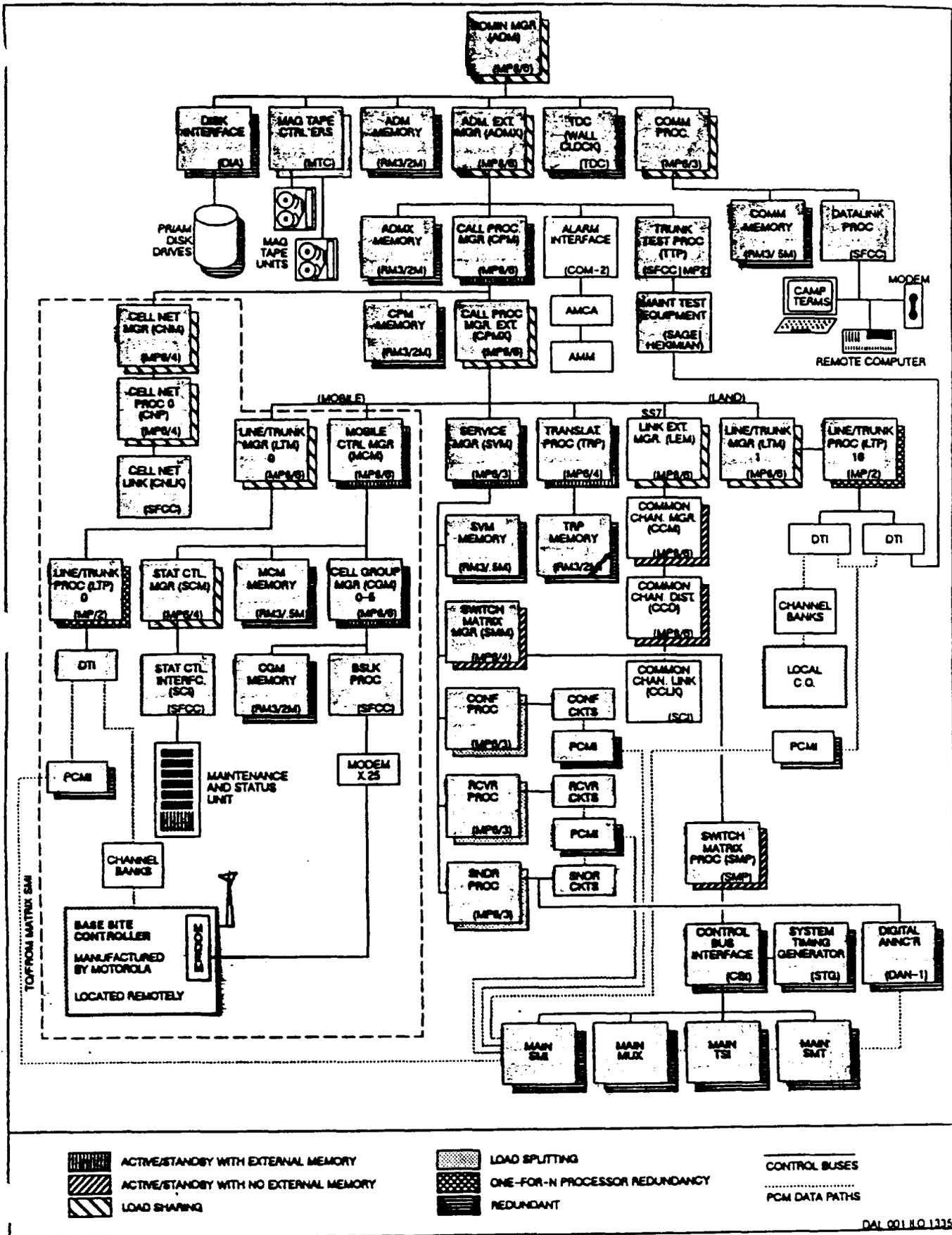
10. Will the addition of the CSI switch increase the efficiency of the cellular network system?

A: No. The addition of the resellers' switch to the network will decrease the efficiency of the system. Trunking efficiency is decreased under the CSI concept. The efficiency

⁸ The block designation on Table C corresponds with the acronym for each function identified on Table B.

TABLE B: AVOIDED FUNCTIONS

EMX 2500 SYSTEM DESCRIPTION



DAL 001.R0.1335

Figure 22. EMX 2500 Functional Diagram

FUNCTIONS AVOIDED

FUNCTIONS RETAINED

TABLE C

<u>BLOCK</u>	<u>DEFINITION</u>
ADM	Administrative Manager. Indirect Functions in collection and storage of AMA and TM&M data configuration.
ADMX	Administrative Manager Extension. Perform Administrative and Trunk Maintenance Functions.
AMCA	Alarm Multiplexer Communications Adapter. Alarm Function on Physical Bays and Power Supplies.
AMM	Alarm Maintenance Multiplexer. Remote Alarm functions reporting to AMCA from each Bay.
BSLK	Base Site Link. Data communication to cell site. For mobile function only.
CBI	Control Bus Interface. Provides Bus separation in Matrix for the SMP.
CGM	Cell Group Manager. Conveys information between BSLK and MCM cell control and handoff operations.
CNF	Conference Circuit. Use primarily for handoff operations.
CNM	Cellular Network Manager. Used for DMX Link to other cellular networks only.
CNLK	Cellular Network Link. Provides communication for redundant cell site data links.
CNP	Cellular Network Processor. Buffers information between CNLK and CNM.
COM	Asynchronous Communications Interface. Used in Alarm communication as asynchronous data link.
CONF	Conference Processor. Controls conference functions for handoffs and Call Waiting.
CPM	Call Processing Manager. Collects AMA and TM&M data and controls Trunk selection.
CPMX	Call Processing Manager Extension. Collects and reports state changes of Line Trunk Manager.
DAN	Digital Announcer. Provides recorded announcement, tone function and Matrix timing.