July 11, 1977

CONSUMER COMMUNICATIONS REFORM ACT

H.R. 8 AND S. 530

This bulletin analyzes the proposed changes in telecommunications policy that would amend the Communications Act of 1934 and would further require the Federal Communications Commission to make certain rulings with respect to specialized common carriers (herewith referred to as SCC's).

STATUS

H.R. 8 was introduced on January 4, 1977, by Congressman Teno Roncalio (D-Wyo.) for himself and Congressmen Cochran, Guyer, Perkins, Sebelius, Slack, Ketchum, and Pepper. It was referred to the Committee on Interstate and Foreign Commerce chaired by Harley O. Staggers (D-W. Va.). Subsequently, it was assigned to the Communications Subcommittee chaired by Lionel Van Deerlin (D-Calif.) where it is pending with no action scheduled and reportedly has a "low priority."

S. 530 was introduced on January 31 (legislative day, January 19), 1977, by Senators Clifford P. Hansen and Malcolm Wallop, both Republicans from Wyoming. It was referred to the Committee on Commerce, Science, and Transportation chaired by Warren G. Magnuson (D-Wash.) and subsequently assigned to the Communications Subcommittee chaired by Ernest F. Hollings (D-S. C.). There it is pending with no scheduled hearings at least for the next "couple of months."

BACKGROUND

In the Communications Act of 1934, Section 1 proclaimed a national policy "to make available...to all the people of the United States a rapid, efficient, nationwide communications service with adequate facilities at

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reasonable charges." Whereas in 1934 only 31% of the nation's households had telephones, today that figure is 95%. Also a coast-to-coast daytime telephone call costs only $1.30 a minute today versus in 1934 $9.00. The "Local Exchange Service" is provided exclusively by the Bell System and the independent telephone companies. Included in the Bell System are 23 local operating companies (17 wholly owned by AT&T, 4 in which Bell has majority ownership, and 2 where Bell holds a minority interest). Eighty-two percent of America's telephones in 48 states (not including Alaska and Hawaii) are served by Bell. The other 18% of telephone customers are served by 1,618 independent telephone companies in an area embracing 50% of the continental U.S. A major portion of that service is operated by local operating companies that are subsidiaries of the "Big 5" holding companies. These "Big 5" are General Telephone and Electronics Corporation; United Telecommunications, Inc.; Continental Telephone Corporation; Central Telephone and Utilities Corporation; and Mid-Continent Telephone Corporation.

Telephone service in the United States has operated in a monoply fashion for some time now. Since 1945 AT&T has had no competition for the same market in the same geographical area. However, from 1893 onward there was ruthless competition for area control between Bell and the independents. There has been in the last 20 years an Informational-Technological Revolution that is shifting communications and information transmission from the basic telephone to a whole plethora of computer, video, and data transferal devices.

Silicone Chips

The first major technological innovation was in solid state electronics. Silicone wafers are now being built up by layers of components through photographic and chemical processes. A trend is the increasing density or number of components within a single chip. The trend shows a continuation of the growing density of the integrated circuit (IC) from 10 in 1960 to 100,000 today to one million in 1980 (R. Whitehead, "The Bits that Bite the Industrial Bullet," Industry Week, January 12, 1976, p. 32.)

The Rand Corporation confirms this trend. They predict that chip densities will grow ten times between now and 1980. Large computers in 1968-1970 had a component density of 53,000/square inch, but the prediction for the 1980's is 4,000,000 per square inch. (Willis H. Hare, "Computers and Society--The Technological Setting" in Computers, Society and the Law: The Role of Legal Education, ed. by J. E. Feininger, Bruce Gilchrist, AFIPS Press, 1973, p. 11.)

While the number of components in semi-conductors are increasing, their reliability is growing. The chip failure rate (ppm) in 1960 was 1,000 which should decline to 0.001 in the 1980's (Whitehead, op. cit., p. 32).

Furthermore, increased chip density increases productivity and decreases IC cost. In 1977 a chip of 4K memory will cost 15¢ per chip per unit

while in 1978 a 16K memory chip will cost a penny. (New York Times, June 20, 1970). The costs of transistors have dramatically dropped also. In 1960 a single transistor cost $1.00, but this year 6,000 transistors cost $1.00, and the price of CMCS chips in watches have declined 60% in 12 months. (Business Week, March 1, 1976.)

Someone is bound to ask the question, why the sharp declines in prices? The answer is the same process that has always accompanied new products: Efficiency lowers cost, lower costs initiate price reductions, price reductions in turn yield manufacturing volume, and increased volume starts the volume all over again.

These reductions have allowed us to use chip technology in all facets of everyday life. This has included the hand calculator, the digital watch, the video game, and memory units in washers, dryers, and microwave ovens. Three years ago the consumer faced a $150 calculator, but now he can get one for $16.00 (U.S. News and World Report, July 17, 1976). An electronic calculator cost $107 in 1966, but by 1974 the cost dropped to $2.50. In 1976 7.5 million calculators were sold; in 1977 the number is expected to double. The price of digital watches are nosediving. Texas Instruments has announced a $20.00 watch, and last year 3.5 million digital watches were sold in the U.S.

The use of IC technology appears unlimited. Robert Boyce of Intel says that out of 25,000 potential applications of large-scale integration technology, only 10% are now being exploited.

U.S. firms account for 75% of the world's supply of IC's, 95% of the world's microcomputers known as computer-on-a-chip, 90% of MOS memory units (Business Week, op. cit.).

Terminals

A second innovation in communications is the use of remote terminals. These terminals incorporate logic and memory technology and have led to "smart" terminals in the computer field. Just three years ago in 1974, computer terminals accounted for 12% of computer hardware, but by 1980 24% of computer hardware is expected to be terminals (Roy Salzman, "The Computer Terminal Industry: A Forecast," Datamation, November, 1975, p. 49). According to a Frost and Sullivan Study, in 1970 the number of terminals in use were 280,000 with an annual increase of $50 million. However, by 1980 it is projected that the number of terminals in use will be 4,100,000 with an annual revenue of $5.55 billion (M. Irvin, testimony, The Industrial Reorganization Act, The Communications Industry, S. 1167, part 2, p. 1224, Subcommittee on Antitrust and Monopoly, Committee on Judiciary, 1973). A study by Arthur D. Little that classifies terminals into general purpose and special purpose use predicts the market to go from 266,000 in 1975 to 574,000 in 1980 (Salzman, op. cit. p. 49).

Banking terminals, point of sales terminals, and industrial data collection are known in the trade as "special purpose terminals." Their growth is expected to increase from 73 units to 183 units from 1975 to 1980, a growth in dollar volume from .3 billion to almost 5 billion dollars by 1980. A study by Creative Strategies on general purpose terminals reported a 34% a year compound growth rate to 1980 (Electronic News, July 12, 1976).

Computers

Computers are a growing force in the communications sector. In fifteen years their growth has been phenomenal. In 1960 the aggregate sales of computer hardware, software, information services, and support services were $1.1 billion, while the sales in 1975 were $27.5 billion (Ware, op. cit., p. 13). Although in 1975 some 30% of the U.S. labor force depends on data processing to do its work, it is predicted to increase to 50% by 1980 and 70% by 1985.

The reliability, greater power, smaller size, and lower costs of computers have been a factor in their greater use by business and the public and their decline in prices. These computers have experienced a 15% drop in price every year--a development predicted to continue for the next five years (U.S. News and World Report, "Coming: Another Revolution in Use of Computers," July 19, 1976, p. 54).

The "computer on the chip," invented in 1971, places logic and memory in a single silicone chip. These microcomputers had a sales growth of $60 million in 1975 and are expected to grow to have a $.5 billion to $1 billion in sales by 1980 (Business Week, March 1, 1976). The decline in memory cost is expected to grow just as fast. A Rand Corporation study showed that in 1964 the cost estimate was approximately $1.00 per bit. In 1965 the cost dropped to 8¢ a bit, and by the 1980's it will approach .001¢ a bit which means that 20 words will be stored for a penny.

Communications Innovations

New techniques and equipment in the communications industry have led to more efficient means of business communications. For example, large switching machines are changing over from electro-mechanical to digital. "A rising percentage of all switching will be controlled by stored program and electronic control increasing from 1970 estimates of 4% to 50% by 1985 and 86% by the year 2000." (Paul, Baren, Andrew J. Lipinski, The Future of the Telephone Industry, 1970-1985, Institute for the Future, California, 1971, p. 53).

Bell is replacing their electro-mechanical toll switches (4A) with large digital ESS switching units (ESS#4), and by 1990 the transferring to electronic switching on the toll level should be completed. The use of

microwave coaxial, millimeter wave guide and laser optics is expected to dramatically increase in long-haul transmission. For example, the Rand Corporation found that satellite channel costs declined from $20,000 to $2,000 in 1970, and satellite costs are expected to fall to $70 per channel by 1980.

The burgeoning field of fiber-optics (movement of signals through specialized synthetic fibers) is further contributing to cost reduction. A single fiber per channel cable will decline from $6.00 per meter today to 30¢ in 1990. The Navy is now using fiber-optics telephone systems, and the growth of fiber-optics is expected to go from a base of $1 million in 1975 to $64 million in 1980 to $823 million by 1990. The fact that fiber-optics enhanced by 25 times the channel capacity of cables is sure to have a significant effect on communications.

Technological Change: What Are The Implications?

Engineers and scientists are just beginning to forecast what these trends in technology will have on the business and private lives of the American consumer. Since these innovations are so fast moving, and in fact seem to change not yearly but sometimes in the space of months or even weeks, new uses for this technology can only be anticipated. A rough estimate provided by the Institute of The Future outlines present and future communications services. (See attachment A.)

Projections on revenue from the data communications field seem to have the same optimistic cast. W. F. Redderson, AT&T, has estimated that "data communications revenue will grow from $5 billion in 1975 to some $22 billion in 1985. That latter figure is about the size of the total revenues of the Bell System in 1973. In the same period, revenues for data terminals will be going from $2 billion (represented by some 1.3 million terminal devices installed this year) to $14 billion (6 million terminals, including control units and cluster arrangements)" (Datamation, November, 1975). Estimates are that total carrier revenues of voice and data will exceed $65 billion in ten years (Rashan L. Sharma, Data Communications, 1976-1986 presented at conference on Federal Government Data Systems, April, 1976, p. 15).

Competition

Because of the technological innovations in the communications industry, new firms have been created to provide the specialized services that business is requiring. These services fall into two areas:

A. Terminal Equipment

Within recent years manufacturers have produced a number of devices that when attached to the basic telephone network help to facilitate a more efficient transmission of communications. Examples of these

devices include answering services, machines that exchange printed material (the standard office telecopier), miniature switchboards (for small businesses), and telephone sets that permit frequently used numbers to be reached by pushing one button.

B. Private Lines

These specialized services allow individual companies to tie together, through their own wired or microwave facilities, distant offices that frequently communicate with each other. The communications may include oral, printed, or even computer messages.

The competition in all of these services is only of recent origin. Up until 1968 the AT&T barred "foreign attachments" to their lines. However, a manufacturer of mobile radio units fought AT&T, and the FCC sustained the challenger in the historic "Carterfone" ruling. In 1969 MCI Telecommunications Corporation applied to the FCC to build and operate specialized common carrier facilities and private-line service between Chicago and St. Louis. The FCC approved the request and allowed MCI to plug into the AT&T system at those terminals. After a two-year "experiment," the FCC concluded that entry into this field served the public interest, and it proceeded to license other common carriers. Finally in 1972 (in the DOMSAT decision), the FCC decided that any company financially sound and technically qualified should be given the opportunity to enter the domestic communications satellite field.

According to the FCC, in order to encourage these companies to enter the business and compete with AT&T, it ruled that Bell could not offer comparable competitive service for three years.

At this time this is where Bell, the independent telephone companies, and the specialized common carriers rank in this competitive field.

If you were to look for AT&T in the Fortune 500, you would look in vain and that is because Ma Bell as a regulated utility does not qualify. However, if she did, Bell would throw Exxon out of first place. The total assets of AT&T are $80.2 billion, the largest in the world compared to Exxon's $32.9 billion. In net income AT&T is still the winner with $3.2 billion, clearly ahead of Exxon--$2.5 billion. It employs more people (939,054), has more shareholders (3 million), and owns more vehicles (170,000) than any other company around. As mentioned before, it has 23 regional phone companies, and its manufacturing and supply arm (Western Electric Company) ranks number 18 on the Fortune list. The Bell Telephone Laboratories serve as a R&D unit for the telephone companies and Western Electric, while the Long Lines Department operates the long distance and other inter-city service. This year AT&T posted a $1 billion per quarter profit record. "In a $35 billion industry dominated by the $29 billion operating revenues of the Bell System and the $5.5 billion received by the independents, the revenues enjoyed by the new terminal equipment suppliers and specialized carriers amount to less than $200 million." (Senator Gary Hart (D-Col.) Congressional Record, Vol. 123, No. 32, February 24, 1977.)

AT&T and the independent telephone companies control 97% of the United States telecommunications industry. "...the statistics show that both the comparative markets (terminal equipment and private lines) are expanding at a much faster rate than the revenues of the new entrants. AT&T's and the independents' revenues from terminal equipment and private lines are increasing each year by substantial amounts--by $373 million in 1975, for example, nearly twice as much as the total revenues of their competitors. Currently the established industry dominates these competitive markets overwhelmingly with over a 95% share of the $4.2 billion of industry revenues which comes from private lines and terminal equipment. All projections are that they will continue to dominate these areas in the future with increasing revenues" (Hart, Ibid).

On the other side of the issue are the 400 or so companies manufacturing the terminal equipment and serving as SCC's. They are one-half of 1% share of the total telecommunications market. In 1975 the total revenues of the Interstate Private Line--Telephone Equipment market was $4.2 billion. Out of that figure only $194 million was received by Bell's competitors. (See Attachment B.) Most of these companies are small; however, they do include such communications giants as RCA, Western Union, IBM, ITT, and Southern Pacific.

Lobbying Efforts

It is obvious that AT&T, faced with the increased competition in specialized business communications, is significantly involved in the lobbying effort to persuade Congress to restrict entry by the SCC's into this lucrative field. The Bell System along with the "Big 5" independents and the much smaller other independent telephone companies are vigorously supporting the Consumer Communications Reform Act. In 1976, AT&T spent over $2.5 million lobbying for this legislation. For the first three months of 1977 it also spent $342,000 in support of this legislation while the independent phone companies in the same time period spent $30,000.

On May 19 of 1976, the Ad Hoc Committee for Competitive Telecommunications was formed. It is composed of five companies that provide a variety of private line services. It has an annual budget of $270,000. They are: MCI Telecommunications Corporation which offers a private line service in 34 metropolitan areas linked by a microwave network; Data Transmission Company which operates a private line service transmitting data to 23 areas across the country; Graphanet Systems, Inc.; Southern Pacific Communications Company; and United States Transmission Systems, Inc. Furthermore, there are two trade associations that oppose AT&T's "monopoly" position. They are the North American Telephone Association, Inc., a group of equipment manufacturers; and the Computer Industry Association, a group of small and medium-sized computer firms.

Major Provisions Of The Bill

A. Preamble - Section 2

According to Bell Telephone, this is a restatement of the Communications Act of 1934. This preamble declares that duplication of telephone facilities and services is "contrary to the public interest" because it supposedly fosters higher charges and results in economic and technical inefficiencies.

B. Equipment - Section 2(d) and Sections 6 and 7

This would give the states the authority to regulate the rates for telephone equipment used both in interstate and intrastate services. Recently the FCC has allowed competitors to enter the equipment market.

C. Specialized Carriers - Sections 4, 5, and 8

This would make it possible for AT&T to purchase the assets of the competing carriers driven out of business by this bill. Furthermore, these sections state that any company not primarily providing exchange services will be denied a certificate to operate unless the FCC determines that the proposed service of the specialized carrier is "not like or similar to any service or services provided by a telephone or telegraph" company. This would prevent the FCC from continuing those decisions that have permitted the growth of companies providing private lines tailored for specific markets.

Arguments For

1. Control

Centralized control of the lines, traffic capability, and technological innovation centralizes responsibility. Accountability rests with one firm, one carrier, and one entity charged with the workability of telecommunications. This gives the customer the best communications at the lowest possible price.

2. Compatibility

Compatible standards of usage, equipment, and protocols are crucial to permit different equipment and technology to evolve and grow as a single entity.

3. Quality

Quality is guaranteed through Bell Telephone Laboratory criteria. A sole source supplier is the nation's best insurance for future communication quality.