
Chapter 6

Findings, Conclusions, and Observations

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Findings, Conclusions, and Observations

Introduction

The telecommunication systems of the United States are the most sophisticated, efficient, and all-encompassing in the world. These systems are a vital element of our economic strength and security; they are an essential part of our culture. Other nations, recognizing the key role that telecommunication plays in national and international affairs, are constantly striving to surpass the United States in technological inventiveness and in the practical exploitation of the many telecommunication subsystems that make up the modern “information society.”

As a leader in technology, the United States has been able to proceed with its domestic telecommunication programs more or less independent of international concerns. The United States has played a major role in shaping what has been essentially a benign and passive international mechanism responsive to the task of providing order to the key element in 20th century communications—the radiofrequency spectrum.

This international regime is coming under considerable stress as the result of sharply increased demand for new communication services and resulting congestion in key parts of the radio spectrum. WARC-79 and related international conferences and meetings demonstrate conclusively that contention for access to radio spectrum and its important collateral element, the geostationary orbit for space satellites, presents new and urgent challenges to vital U.S. national interests.

Given the complexities of spectrum management in a changing world environment and the increased importance of telecommunication to both developed and developing

nations, it is highly unlikely that traditional U.S. approaches to these issues will be sufficient to protect U.S. vital interests in the future. The growing differences among nations over the use of the radio spectrum and related satellite orbit capacity are reflected in the Final Acts of WARC-79.

Overall, the results of WARC-79 are mixed. Generally, the proceedings of an administrative conference of the International Telecommunication Union (ITU) are geared toward arriving at decisions and adopting provisions that are acceptable to all nations. It is expected that all nations will report favorable results with certain exceptions identified. Even then, a country is free to take a reservation and not be bound by specific unacceptable results. Therefore, finding a useful way to measure success and evaluate a country's relative standing following an administrative radio conference is not easy. Comparing specific U.S. proposals submitted to the conference with the Final Acts of the conference is not a straightforward exercise. Too many events intervene to color the comparison between the preconference position and the ultimate result on many important issues. While such a comparison is important, it does not reflect the underlying reasons and motives for particular decisions, the problems encountered or any apparent trends important in evaluating results of an administrative conference.

It is important to understand the intervening events that underlie decisions, not only to evaluate the results of WARC-79, but to prepare for the many future conferences of consequences for the United States. As a highly developed user of spectrum and a

world leader in telecommunication technology, the United States has much to offer

and much to lose in the international process of establishing rules and regulations.

Principal Findings of the OTA Study

The most significant findings of the study are the following:

1. There is an urgent need for higher level attention to Government policy coordination and accountability for international telecommunication issues generally and for spectrum management issues and international negotiations specifically.
2. Streamlined processes, coordinated Government policies and sufficient resources on a continuing basis are essential to effective and timely preparation for the several major international conferences of ITU now scheduled to occur over the next 7 years.
3. New U.S. approaches are necessary to address radio spectrum and related satellite orbit issues in a changing world environment. Solutions to satellite orbit allocation and spectrum reallocation issues as envisioned by the Third World nations require strategies not yet developed or tested.
4. WARC-79 resulted in the loss of some U.S. flexibility in certain key spectrum areas—particularly those affecting national defense—and enhanced opportunities in many other areas.
5. Operating costs will increase for certain radio services; interference protection will become less certain; and administrative costs will need to rise to adequately implement WARC-79 decisions and to prepare for future radio conferences.

General Observations and Trends

- The world environment for telecommunications has changed significantly in recent years; two-thirds of the 155 member nations of ITU can be classified as developing or Third World countries.

- The United States must develop approaches to use its technology and expand its influence if future actions in a “one-nation, one-vote” forum, like ITU, are to be favorable to U.S. positions.

- There has been a gradual shift toward recognizing the legitimacy of nontechnical factors such as political and cultural interests and values in ITU deliberations. In other international forums, Third World countries have raised related issues under concepts of the New World economic order and New World information order.

- There are basic differences between the United States and Third World countries over the principles that should govern the allocation and use of radio spectrum and related satellite orbit capacity. There is increasing need to identify and assess middle range options to reconcile the sometimes sharply divergent goals of developed and developing countries.

- The disparity between nations in their ability to use the spectrum is growing; this leads to growing disagreements over the allocation and use of specific frequency bands for specific services.

- Third World countries are increasingly able to influence and shape international communication policies in international forums.

- Spectrum decisions arrived at as a result of voting within ITU, as opposed to the commonly practiced consensus approach, will tend to be increasingly adverse to the United States.

- U.S. requirements for access to the frequency spectrum and satellite orbit locations are expanding with the explosive growth in telecommunication/information technology, the growing use of satellites, and the increasing dependence on radio and

satellites for military and national security purposes.

- International telecommunication development is entering a phase in which regional and domestic needs and policies will predominate, as opposed to more general global facilities expansion. The thrust will be on intraregional communications and the development or enhancement of interregional communication routes.

U.S. Policymaking Structure and Processes for Spectrum Management and International Strategies

Need for High-Level Government Policy Coordination and Accountability

- The responsibility for spectrum management and policymaking is divided among several Federal agencies with coordination conducted on a structured, but often informal, basis without clear responsibility and accountability for policy at a high level of Government.

- The United States does not have a consistent and coordinated national telecommunication policy because of a lack of appreciation and concern at the top levels of Government and industry, a lack of high-level policy coordination for international telecommunication negotiations, and a failure to assign sufficient importance to international telecommunication matters, including spectrum management and the State Department's role in international negotiations.

- The United States is not adequately equipped to provide comprehensive assessments required to effectively plan for the future use of the radio spectrum, to forecast future requirements, to assess the costs and benefits of shifts to new technology, or to evaluate alternative strategies to deal with

international issues regarding allocation and use of radio spectrum and the geostationary satellite orbit.

- Within the U.S. telecommunication industry there has been significant growth and change over the past 15 years, which has produced more competing domestic interests with conflicting demands for spectrum use.

- The United States' permanent spectrum management mechanisms are not adequately equipped to review and verify all the stated requirements of Government and nongovernment spectrum users and to adjust needs consistent with national policy objectives. The U.S. lacks an effective ongoing means of collecting data, developing and adjusting guidelines to evaluate the merits of one spectrum use over any other.

- The State Department's International Communications Policy Office is not at a high enough level in the Department's organizational structure to be in a position to prepare adequately for all the important upcoming conferences of ITU and make its influence felt in the upper echelons of Government and industry.

- Lack of high-level concern has also led to a shortage of trained and experienced

spectrum management personnel to replace those retiring from Federal Government service; there has been insufficient attention to the need for personnel with supplementary diplomatic, language, negotiating, economic, and legal skills.

- The rather general wording of Executive Order 12046 establishing the National Telecommunications and Information Administration (NTIA) leaves it ambiguous as to how far NTIA can go in its coordinating role with respect to U.S. international telecommunications policy, particularly when that mandate risks encroachment on the general regulatory responsibilities of the Federal Communications Commission (FCC).

- The schedule of 10 major international conferences over the next 7 years to consider a number of issues vital to U.S. interests underscores the fact that the United States must reform its policymaking mechanisms and streamline the cumbersome and time-consuming procedures for developing U.S. proposals for international telecommunication conferences.

- A mechanism is needed for collecting and evaluating information on the perceived needs of other nations for spectrum and orbit resources; their receptivity to intraregional and/or common-user systems, and other factors.

Need for New Strategies to Address Spectrum and Related Satellite Orbit Issues

- There are critical years ahead for ITU. For the most part, the manner in which activities have been conducted by telecommunication experts and international diplomacy has avoided debate on ideology and politically motivated objectives. The trend toward basing decisions on factors other than economic and technical matters, and demonstrated need is challenging ITU to provide mechanisms for resolving differences among nations without a further shift toward the

polemical norms common to international political debate.

- Third World countries are likely to resist drastic changes in ITU rules and procedures that operate on the principle of "one-nation, one-vote" and that provide them with increasing influence and power. They will continue to seek technical assistance from the developed countries while pursuing compromises favorable to their own interests.

- The developed countries are expanding their use of spectrum to higher frequency bands as lower, more economical bands become congested. They rely on technology to provide solutions to problems of accommodating new demands in the future. It is becoming increasingly difficult for the developing countries to accept the proposition that they will have access to spectrum on an interference-free basis at some future date as their needs materialize. The outlook is that the radiofrequency spectrum and geostationary orbit will become more congested in the lower, more economical and desirable frequency bands even though use of frequencies by one country does not necessarily preempt those same frequencies from use by other countries. It seems increasingly clear that the United States will need to explore new strategies and policy options to reconcile Third World interests with the objectives of the United States.

- WARC-79 showed the increasing influence of the Third World as a political force in ITU. The struggle for influence between the developed and developing nations will continue at future ITU conferences. At the present time, the developing countries derive their power from their collective numbers; the developed countries from their technical competence, knowhow, and leadership. The influence of the developing countries can most effectively be exploited in the ITU legislative forums; the developed nations through ITU technical administrative organs.

- The success of ITU has been due in large measure to the willingness of its members to adhere voluntarily to commonly arrived at agreements and regulations. The inherent flexibility in the ITU processes has also enhanced its effectiveness. Reservations and footnotes offer escape for individual countries from disagreeable decisions of the majority. However, excessive use of these exceptions by a sufficient number of countries—or by a few large users—serves to reduce the value of the agreements and regulations for all users.

- Existing ITU procedures that vest rights in the use of spectrum to countries on an “as needed, first-come, first-served basis” are viewed by developing countries as not serving their objectives and they now seek to alter those procedures.

- The growing lack of agreement among nations over which specific frequency bands should be allocated for which specific radio services (the International Table of Frequency Allocations) strongly suggests that mechanisms other than service classifications should be examined.

- ITU is a political organization that performs both political and technical functions. However, while there is a primarily technical focus for most ITU activities, there has been a gradual shift toward recognizing the legitimacy of nontechnical factors, such as political and cultural interests and values. The United States must recognize this shift and develop strategies to use its technology more broadly as a tool for resolving these broader international issues that are not subject to technical solution.

- Many of the nontechnical issues raised in ITU—like those concerning reallocation of spectrum and guaranteed access to the geostationary satellite orbit—are among the many issues raised by Third World countries in other international forums under the principles propounded by the New World economic order and New World information order. Those countries seek to alter the age-old pattern and structure of trade, communi-

cation, and information flow by developing and using telecommunication infrastructure themselves.

- Developing countries will continue to seek changes in the existing mechanism for vesting rights in the use of frequencies and access to the geostationary orbit. They seek a shift away from the current notification and coordination procedure on a “first-come, first-served” basis, toward a negotiated plan developed on an a priori basis. This is expected to reduce the uncertainties they fear in gaining access through the current approach, albeit at the expense of a possible “freezing” of technology.

- The administrative regulations of ITU serve the desirable objective—without the use of sanctions for noncompliance—of avoiding the interference, incompatibilities and chaos that would ensue if these or similar regulations were not followed.

- The voluminous, complex, and detailed provisions of the international radio regulations are becoming more burdensome for the world and less meaningful to individual users.

- Third World countries will continue to advocate changes in rules, regulations, and procedures that help guarantee their perceived right of access to the spectrum and geostationary satellite orbit. They do not wish to rely on the “good efforts, promises, and technical ability of the developed countries to “engineer-in” future systems on a case-by-case basis, as needed.

- ITU administrative radio conferences seek to produce results that all nations can accept. Reservations, footnotes and other means to reduce negative consequences allow each nation to more or less view the results as favorable. This approach supports the perception of having all winners and no losers. However, because of growing differences among nations, these procedures are beginning to produce diluted and cumbersome results that may render existing mechanisms to regulate world spectrum use less and less meaningful.

- Because of competing interests and growing differences over use of the spectrum there will be winners and losers in the future as a result of the ITU decisionmaking process.

- The preeminence of U.S. technological leadership and technical ability served the United States well in international spectrum negotiations when decisions were primarily based on technical matters. But more and more U.S. problems with other countries involving spectrum use are nontechnical.

- Certain U.S. requirements to use spectrum, such as radars for military purposes, are not of interest to the majority of other countries which prefer to have this same spectrum allocated to services they need or desire. The difficulty that faces the United States in seeking to convince a majority of the 155 other ITU member countries to adopt regulations that accommodate U.S. radars that conflict with other possible uses by other countries is real and was demonstrated at WARC-79.

- Rights to frequencies and satellite locations to individual nations are not vested indefinitely under current ITU procedures, and changes in operating parameters require recoordination and registration. This creates uncertainty for present satellite system operators. The risks may increase that spectrum and orbit will not be available to provide for continuity of service from the present to the next generation of satellites. Moreover, this problem is not overcome by the adoption of a negotiated rigid a priori allotment plan to assure future access, since such a plan would tend to freeze technology and accommodate only those new or second generation satellites that fit the original technical scheme.

Options

Possible Structural Improvements

There are three fundamental weaknesses in the present Federal Government policymaking structure:

1. The lack of attention at the top decision levels of the Government and industry as to the vital role of telecommunications in the international and domestic political, economic, and private affairs of the United States and the need for policy coordination;
2. There is a lack of high-level centralized policy coordination and guidance for international telecommunication negotiations at a high enough level in the Government to be effective.
3. The State Department's International Communications Policy Office is neither staffed nor institutionally organized to carry out effectively all of the functions involved in international telecommunication negotiations.

Congress could consider ways to improve the present structure or examine possible changes in the structure. A detailed analysis of alternative structures was beyond the scope of this study, which concentrates on the results of WARC-79. However, at least four options are available to Congress:

1. maintain the status quo and make no changes;
2. maintain the present structure, but raise the level of attention and accountability within the responsible agencies;
3. establish a mechanism—such as a task force of high-level government officials—to develop, examine, and make recommendations on structural and procedural improvements; or
4. establish a permanent board, council, or interagency committee of high-level Government officials to be responsible and accountable for international telecommunication policy coordination and the preparations for international conferences.

Possible Procedural Improvements

- Improvements needed in the present procedures for managing and planning Government and nongovernment use of the spectrum include better means to provide adequately for:

- evaluation and validation of spectrum requirements, giving particular attention to current spectrum usage, technology and development trends, and sharing opportunities between competing users of the spectrum;
- inclusion of spectrum and orbit efficient techniques and technology in system design of both Government and nongovernment systems;
- apportionment of frequency spectrum between Government and nongovernment services based on national priorities;
- effective planning for future spectrum and orbit needs;
- efficient and timely preparation for and participation in ITU conferences; and
- effective management of existing services and users on a continuing basis.

• Many of these shortcomings could be corrected without fundamental changes in the Government structure.

The validation of spectrum requirements, and the apportioning of spectrum between Government and nongovernment users, needs closer scrutiny. An enhancement of existing mechanisms using analytical tools to help evaluate needs and arrange priorities among contentious users would provide better information for decisionmakers. Military requirements are reviewed by the Interdepartment Radio Advisory Committee (IRAC) and its Spectrum Planning Subcommittee, but this function needs to be strengthened and broadened to be more effective in the future.

• Economic techniques should be considered, at least on an experimental basis, to provide guidance on the consequences of different spectrum allocation decisions and the introduction of newer technology. These should include techniques for evaluating the relative economic viability of alternative spectrum uses, as well as radio v. nonradio communication systems.

• FCC, perhaps with the aid of a task force including other Government agencies

that have studied the question, industry groups and private experts, should select a few services and frequency bands for detailed analysis of the prospects of using one or more economic techniques. The Commission could then present its recommendations for the experimental application of a selected technique, or techniques, on one or a limited number of services and frequency bands to the Congress for its information and action, if necessary.

• Problems relating to forming a U.S. delegation for WARC-79 could be addressed and the effectiveness of U.S. participation in international meetings could be improved by several steps:

1. industry and other nongovernment delegates could again be permitted to participate fully as U.S. representatives at international telecommunication conferences and take any assignments on the delegation for which their skills and experience qualify them;
2. consideration could be given to finding means to comply with due process requirements under the Administrative Procedure Act and still name industry and other nongovernment representatives to delegations on a timely basis;
3. permanent guidelines to name the chairman and individual delegates to the U.S. delegation could be established;
4. qualifications required, distribution of various skills needed, and type of representation desired could be determined at an early stage of preparation for conferences;
5. individuals chosen to serve on U.S. delegations could be selected from the best candidates available, especially those who participated in the preparatory effort; and
6. any special Government support necessary to acquire particular representation on the delegation could be available early in the preparatory stages.

• Preparations for international telecommunication conferences could be improved

by replacing the ad hoc approach with an ongoing conference preparatory structure with a focal point for high-level responsibility and

accountability involving all the concerned Government and nongovernment telecommunication interests.

Strategies to Address International Issues and Deal With ITU

The United States must make some policy decisions reflecting changes in U.S. strategy or in the structure or procedures of ITU, and then augment the scope and training of the responsible U.S. personnel consistent with those decisions.

The United States has essentially two alternatives: 1) it can seek various improvements in the present means for solving spectrum allocation problems within ITU as it is now constituted; or 2) it can seek to alter the existing structure, procedures, or mechanisms of ITU itself. The policy options considered here may be divided into two broad categories, strategic and structural.

Strategic Approaches – Options

• From the strategic standpoint, assuming no significant changes in ITU, the United States has a wide range of options. At one extreme, the United States may conclude that the drawbacks of continued participation in ITU outweigh the benefits, and withdraw from the organization or decline to participate in its deliberations. At the other extreme, the United States may decide to yield to other nations on controversial matters, accept all decisions taken within ITU, and play a passive role in its deliberations. Between these extremes there are a number of alternatives.

- 1 Seek to remove the most controversial issues from the ITU forum and attempt to solve them in other ways. A current example might be to respond to the demands of developing countries for “guaranteed access” to radio spectrum

and satellite locations by developing the institutional arrangements to ensure domestic communication services to qualifying nations. This could be a common user satellite system either building upon the present INTELSAT structure or creating a separate system for domestic services. Such a solution would offer each nation a role and stake in the system with satellite services or capability it could realistically use. This could avoid the issue of allocating to small nations significant amounts of the radio spectrum and satellite orbit locations which might then remain unused for the foreseeable future.

2. Develop a comprehensive program with necessary resources to better coordinate U.S. views and objectives with other nations, in advance of ITU meetings, and adjust U.S. proposals based on improved understanding of other nations’ views.
3. Develop a range of options for “planning” the use of the geostationary satellite orbit—between the evolutionary approach advocated by the United States and any rigid a priori allotment plan that may be advocated by some developing countries—and consider these options informally with key countries prior to ITU conferences.
4. Seek to raise the level of technical competency among ITU member states and raise the level and quality of communications and information capabilities accessible to them through educational and technical assistance programs.

Structure of ITU – Options

• From the structural standpoint, assuming that ITU can be changed, a number of options are available. One relatively extreme option would be for the United States to withdraw from ITU. Another option would be to seek to revise the voting formula of ITU to one more advantageous to the United States, perhaps by giving added voting weight to those countries that contribute most heavily to the U.N. budget. A more modest option would be to increase the number of ITU regions beyond the present three so that regional issues could be dealt with by a smaller number of countries most directly concerned.

1. *Withdrawal from ITU*—Member nations of ITU rely on the organization to avoid interference from the radio signals of others and to achieve compatibility of interconnected telecommunication systems. Avoidance of interference is the essence of spectrum allocation or frequency assignment processes of ITU. Withdrawal from ITU could well intensify the risk of interference. It seems clear that preemption of radio spectrum by the United States would be ineffective and that U.S. radio services would be vulnerable to interference without recourse to the protections provided under the international radio regulations. Any nation that chose to interfere, whether due to a valid need for a particular frequency band or by intentional jamming, could greatly reduce the value to the United States of the preempted spectrum. Withdrawal from the ITU organization would not eliminate the mutual desirability for the United States and other countries to coordinate spectrum use as well as other telecommunication activities now performed through ITU.
2. *Revised ITU voting formula*—As an option less drastic than withdrawal from ITU, the United States might join with other developed nations to force a revision of the ITU's "one-nation, one-vote" decisionmaking formula toward one that would reflect the dominance of the developed nations in the actual use of the spectrum. If successful, this option would greatly reduce the ability of the Third World nations to block or force changes in U.S. positions. But those nations are likely to resist such revisions vigorously and given their current voting strength it is difficult to see how any weighted voting scheme could be forced in ITU short of amassing pressure in many other areas.
3. *Increased regionalization of ITU*—At present, ITU divides the world into three geographic regions and many issues that can be treated separately and effectively in a single region are considered in this way. Regional administrative radio conferences are scheduled on a variety of specific issues, allowing the World Administrative Radio Conferences to "spinoff" certain controversial matters (and incidentally, to delay their consideration). One option would be to extend this process of regionalization on a geographic basis to smaller subregions, and/or an issue basis to include only those nations directly affected by the particular issue. The purpose would be to reduce the number of nations voting on issues that do not affect them directly, thus reducing unnecessary contention and possibly reducing costs and time of reaching a multilateral agreement.

Consequences of WARC-79

General Observations

- ITU administrative radio conferences are difficult to rate in terms of success or failure. The box score approach, which measures proposals submitted against the conference Final Acts, is inadequate and misleading because it fails to take account of the importance and consequences of particular decisions. The underlying trends and the bases for decisions and compromises, which have important future consequences, are not captured in the win, loss, and tie columns.

- WARCs are conducted and apply mechanisms that allow each member-nation to perceive that most of its needs are met no matter how unfortunate the results may be for the collective international community.

- In general and apart from any specific proposal or action, the members of the informed community responding to the OTA-sponsored survey perceived WARC-79 as producing results that were either somewhat better than expected or about what was anticipated before the conference. However, expectations may have been colored by the growing concern over possible confrontation with the Third World that preceded WARC-79.

- The OTA-sponsored survey found that most individuals responding to the questionnaire believe that WARC-79 had a favorable impact on both U.S. national interests (53 percent) and their own organization (58 percent). The major exception to this view is found among a minority of individuals mainly in the private sector, who maintain that WARC-79 had a net unfavorable impact on their organizations' operations (15 percent). A substantial number of respondents (33 percent) said that the results of WARC-79 were neither favorable or unfavorable to U.S. national interests.

- The 1977 broadcasting satellite WARC was of great importance for the United

States because it demonstrated conclusively that the developing countries could unite to pursue a collective goal. In this case, the goal was consistent with the objectives of the Western European countries goal (albeit for different reasons), but inconsistent with U.S. (and others) proposals and efforts to adopt a different approach based on technical arguments to support the U.S. position. It also showed that the perceptions and priorities of the developing countries differed from ours and that technical arguments could not be counted upon to win out over political considerations.

- At WARC-79, there was too much to do, too little time to do it, and too many conflicting interests to deal effectively with many of the issues. Therefore, the conference made use of the several vehicles available to an administrative conference to proceed without forcing agreements or attempting to resolve difficult issues that could be postponed. Taking footnotes to the allocation table; adopting resolutions; postponing issues to future conferences; and taking reservations are vehicles that have always been available, but at WARC-79 ITU members found it necessary to use them more than ever before.

- No immediate changes in operations using the radio spectrum or geostationary satellite orbit are required in the United States as a result of WARC-79. However, the longer range impacts in terms of increased operating costs, reduced operating flexibility, uncertainty surrounding important pending issues, and the need for thorough preparations to address issues at future conferences require immediate attention.

- The radio regulations serve essentially two functions: 1) to establish technical standards and regulations about what kinds of services can use what parts of the spectrum under given conditions; and 2) to establish procedures for countries to acquire operating rights and protection from interfer-

ence. Developed countries participate in WARCs with a strong focus on improving and elaborating on technical standards and procedures to protect existing spectrum users; developing countries want to focus on underlying principles, alternative ways to vest rights in the use of frequencies, and ways to make ITU more responsive to their needs.

- INTELSAT, as a world organization of 106 member countries, had significant influence at WARC-79 on fixed-satellite service (FSS) matters.

- The nonaligned nations played a significant role at WARC-79, frequently operating as an effective force.

- WARC-79 adopted several resolutions and provisions that call for increased assistance in various forms to developing countries.

- The conference resolutions calling for a number of future conferences, including those to “plan” space services and the international broadcasting service, demonstrate that the achievement of U.S. objectives at ITU conferences will no longer be a matter of reaching agreement on technical solutions to problems of spectrum allocations and frequency coordination; it will require imaginative approaches, with political negotiations involving long, hard bargaining.

Major Decisions and Consequences

- There is no major immediate cost impact imposed by WARC-79 regarding national security systems, largely because of the frequency flexibility of existing U.S. equipment, the success of the U.S. delegation at WARC, and reservations taken by the United States. However, there will be future, undetermined costs resulting from actions at WARC-79—costs associated with frequency management, the development and procurement of more sophisticated equipment, compatibility studies, and coordination to prevent harmful interference with competing users of the spectrum.

- Department of Defense (DOD) interests were impacted by losses of exclusivity for radiolocation (radar) operations and by increased sharing with other services in many of the radiolocation bands. For example, demands that radar operations be discontinued in certain bands in order to accommodate expanded FSS operations led to considerable acrimony, which was only eased by a nonbinding U.S. commitment in a formal declaration to try to accommodate FSS in those bands. The status of radiolocation was retained but the pressure from FSS interests will certainly continue.

- Radar usage by the radiolocation service is extremely heavy in the radiolocation bands between 8500 and 10,000 MHz. The addition of the radionavigation service and the multicountry fixed and mobile footnotes in this band have taken 900 MHz of virtually exclusive radiolocation allocations in the current radio regulations and added one or more primary services over the entire band. Technical and administrative solutions must be sought if radiolocation is to retain its effectiveness. IRAC, in particular, could develop a set of recommendations for use by the State Department in discussions with other countries with a view to encouraging the orderly and restrained introduction of radionavigation on an “as needed” basis in order to buy time for the development of technical solutions to sharing problems. In the absence of such a planned introduction, the radiolocation service may soon find itself having a de facto secondary status because of the safety-of-life priorities accorded the radionavigation service.

- The United States took a reservation indicating that the United States, in the operation of radars, will not guarantee protection to, nor coordination with, other services. The action was necessary because the existence of the fixed and mobile services footnotes in every radiolocation band between 1 and 40 GHz jeopardized radar operations to serve national defense.

- Notwithstanding the fact that WARC-79 did little to reduce the total spectrum

available for radar operations, and also, that U.S. military radars are now required to operate worldwide in a secondary status, the costs of radar development and operation must increase as a result of decisions taken at WARC. New coordinating activity must now take place between the radiolocation service and a number of other services that will share the same frequency bands, particularly the fixed, mobile, and radionavigation services. A significant number of interference incidents can be anticipated in these bands. In the long term, modifications of existing systems and development of new ones must be increased to guarantee the performance of military radars in the presence of increased interference. A further added cost derives from the need for radar developers to expand their participation in CCIR in order to lay a better foundation for U.S. proposals concerning radars at future conferences.

- U.S. objectives for FSS and the mobile-satellite service (MSS) (including DOD satellite interests) were achieved in large measure. The DOD goal of adding 125 MHz for up- and down-links for the two services was achieved, but this meant that the partial exclusivity that existed for FSS was lost. There may be problems in satisfying some DOD satellite communication requirements in the 7- and 8-GHz bands. Also, the United States and most NATO countries took a reservation regarding language in the Final Acts that requires that stations in MSS operating in the band 235 to 399.9 MHz not cause harmful interference to those of other services operating, or planning to operate, in accordance with the table of allocations.

- Significant amounts of spectrum were added to allocations for FSS, in general accordance with U.S. objectives. The technical rules that affect the design, operation, and cost of satellite systems were generally in agreement with U.S. positions. Where U.S. desires were not precisely met, no significantly adverse repercussions resulted. No immediate or significant changes in the structure or operation of U.S. fixed-satellite

telecommunication services will result from conference decisions. No operational or economic dislocation was imposed on any existing FSS system. No major burden appears to be placed on the U.S. Government or private operating entities in order to comply with the decisions of WARC. However, the differences between the United States and many developing countries over approaches to use of the geostationary satellite orbit, to be resolved by future conferences, leaves the impact on FSS uncertain.

- While, based on U.S. proposals, WARC-79 largely eliminated frequency sharing between FSS and broadcasting-satellite services (BSS) in the Americas, BSS must now share with the terrestrial-fixed service. This sharing could result in interference to BSS Earth-station receivers operating in the same area as fixed-station transmitters. This could have a negative impact on private microwave systems that use the band 12.3 to 12.7 GHz. These private systems are widely used in the United States by a variety of users. If required to vacate the band to protect BSS and move to a higher frequency band, there would be economic and operational consequences.

- WARC-79 made substantial increased allocations to FSS in the "lower" frequency bands where technology is well developed and relatively economical. WARC-79 also reaffirmed the FSS allocations near 20 and 30 GHz where the next generation of domestic communication satellites is now under development. This new generation of satellites is likely to offer a greater variety of services to more users and lower costs.

- Because of the highly efficient use already being made of existing allocations for the fixed service, the changes adopted at WARC-79 consisted mainly of attempts to align the allocations among the three regions and, through footnotes, to accommodate the specific needs of individual countries.

- The decisions of WARC-79 affecting the use of microwave radio relay systems do not

mandate any drastic U.S. changes in spectrum allocation and management.

- In order to simplify the administrative process for certain countries which otherwise might need to coordinate with a number of neighboring states, the radio regulations were revised and simplified at the risk of creating future interference problems. The changes were opposed by the United States, Canada, and others that felt that sound technical judgments should not be eroded by political or administrative considerations.

- The U.S. objective to gain more frequency allocations for high frequency (HF) broadcasting could only be done at the expense of

the fixed service, and was therefore opposed by many developing countries. The HF broadcasting allocations were increased conditioned on the successful outcome of a specialized HF broadcasting conference to be held in the mid-1980's to "plan" for more efficient and equitable use of the broadcasting bands. While the conference agenda will be relatively broad and open, it was apparent at WARC-79 that the United States and the developing countries have significant differences as to the type of planning to be undertaken. Also, political issues, such as "prior consent," could prove troublesome, at this conference.

Options Regarding Ratification of the Final Acts of WARC-79

1. The United States can ratify the Final Acts without delay with the normal clarification of U.S. statements in the Final Protocol. Completing the ratification process prior to January 1, 1982, when the 1979 radio regulations enter into force will indicate to other nations our goodwill and determination to abide by our international obligations. The Final Acts constitute the "Radio Regulations, Geneva, 1979," which replace the 1959 regulations as partially revised by the administrative radio conferences held in 1963, 1966, 1967, 1971, 1974, and 1978. The Final Acts also incorporate the provisions of the 1977 broadcast satellite WARC as modified by WARC-79.

2. The United States can ratify the Final Acts with conditions, thereby underscoring and making explicit the reservations taken at Geneva. In particular, the United States could reiterate the reasons for taking reservations in the Final Protocol to emphasize U.S. Government concern regarding these issues.

3. The United States can ratify the Final Acts with additional reservations that either

state U.S. refusal to acquiesce to particular decisions taken at WARC-79, beyond those cited in earlier U.S. protocol statements, or set forth U.S. policy with respect to future actions by ITU or specific implementation of the WARC-79 Final Acts. While it is not uncommon for the Senate to attach conditions to a resolution of ratification of a bilateral international agreement, which the other party can readily accept or reject through its own ratification processes, attaching conditions to a multilateral agreement raises difficulties.

4. The United States can ratify the Final Acts in part, specifically withholding ratification of those provisions (which would have to be listed in precise detail) where the United States chooses to remain bound by the provisions of existing regulations previously ratified (which would also have to be listed in precise detail).

5. The United States can withhold ratification of the Final Acts pending the outcome of several important international conferences dealing with telecommunication issues. This would deny FCC and the current

administration any legal basis for implementing decisions taken at WARC-79, many of which were strongly advocated by the United States and fought for by the U.S. delegation, and which are scheduled for implementation by other ITU members on January 1, 1982. The most immediate international telecommunication conference of great importance to the United States is the September 1982 plenipotentiary. The actions

taken at this conference to revise the ITU convention will be basic to all future conferences of ITU.

6. The United States can reject the Final Acts of WARC-79 in their entirety and announce that we intend to abide by the preexisting radio regulations, as amended. The consequences would be similar to those cited above.

Future Conferences and Issues

1982 Plenipotentiary

- This conference provides the United States with an opportunity to propose changes in the structures and procedures of ITU, and to resist changes proposed by others that are not in the interest of the United States. It is vital that the United States make thorough preparations for this meeting and to anticipate fully the proposals that may be put forward by other ITU members.

- The basic principles contained in the ITU convention will be reviewed and modifications made in accordance with the will of the majority. The convention serves to guide international cooperation for use of telecommunications of all kinds, and governs the functioning of ITU itself. Changes in the convention will be fundamental to future meetings of ITU. For example, any change in article 33 of the convention concerning use of the spectrum and the geostationary satellite orbit would have a direct bearing on the WARC scheduled to plan space services using the geostationary orbit.

- The United States should give careful consideration to the future role of ITU vis-à-vis international information policy issues and the New World information order demands of Third World countries.

The results of the OTA-sponsored survey shows that more than 80 percent of the respondents agree that the conflicting posi-

tions and approaches between the United States and other countries for use of the radio spectrum and the geostationary satellite orbit are issues for the 1982 ITU plenipotentiary conference and justify a major U.S. effort to prepare for the conference.

Space Planning Conference

- This specialized WARC on the use of the geostationary satellite orbit and the planning of space services utilizing it will have two sessions—July 1985 and September 1987. It poses a serious threat to potential U.S. use of space communications because it could result in a form of “planning” contrary to U.S. interests. The extent to which a flexible and efficient method of planning space services can be devised and “sold” to the conference represents a challenge to the United States.

- The conference will also determine which frequency bands used for space services are to be planned. U.S. efforts to have the conference concentrate on those higher frequency bands that are unoccupied, or little used, will collide with the demands of developing countries to have the conference concentrate on planning the use of the more economical, lower frequency bands. The United States must determine its own readiness to incur the expense of moving to higher frequencies and its readiness to understand the motivations and deal effec-

tively with the pressures to plan a broad range of frequency bands.

HF Broadcasting Conference

- This conference, to be held in two sessions starting in January 1984, is to plan the efficient and equitable use of the HF broadcasting bands. Active U.S. participation and careful preparation will help ensure that the increased allocations to HF broadcasting made at WARC-79 are not jeopardized by failure to accommodate the fixed services that were removed from the international broadcasting bands, but must be reaccommodated in other parts of the spectrum.

- Rapid developments in direct broadcasting from satellites are likely to rekindle debate on such political issues as "prior consent" at the HF planning conference. The United States will need to be prepared to address this and other current issues over the question of the free flow of information.

1983 Broadcasting Satellite Conference for Region 2

- To prepare for the 1983 region 2 conference, the United States will need to develop its detailed requirements for broadcasting satellite channels and submit them to ITU a year in advance of the meeting. Also, the desired satellite coverage areas are required to be submitted. A U.S. position will need to be taken on the total bandwidth to be allocated to broadcasting satellites as opposed to satellites operating in the fixed satellite service in the 12 GHz band.

- The United States could be faced with the prospect of a majority of region 2 countries voting for a rigid orbital and frequency allotment plan such as the one adopted for regions 1 and 3 at the 1977 WARC for BSS. According to the OTA-sponsored survey, a majority of the respondents, 68 percent, believe that a practical compromise is possible and desirable, although relatively few have any specific concept of the form such compromise could take; an additional 15 per-

cent believe that a compromise is possible, but undesirable; only 8 percent of the respondents believe that a compromise between the United States and the Third World positions on a priori assignment is impossible; another 9 percent expressed no opinion. This underscores the need to identify and analyze specific strategies and options which might provide the basis for such a compromise.

- WARC-79 made allocations for BSS from 12.3 to 12.7 GHz and for FSS from 11.7 to 12.1 GHz. Left to be resolved at the 1983 conference is the band 12.1 to 12.3 GHz allocated in 1979 to both services. Decisions surrounding the 1983 conference bear directly on the future growth of domestic satellite service. FSS and BSS both will be affected by these decisions. Domestic issues involving direct broadcasting satellites planned for operation in the 12-GHz band must be addressed as a part of the overall policy considerations by the United States.

Other Conferences

- The 10 additional administrative radio conferences to be held over the next 7 years include some that will be as important, if not more so, than WARC-79 itself. (Scheduling is tentative and some could be delayed by action of the ITU's administrative council and/or the 1982 plenipotentiary conference.) Some of these conferences offer the United States an opportunity to reopen the question of allocation proposals that were not accepted by WARC-79 (e.g., WARC for the mobile services in 1983).

- These future conferences offer a forum for the United States to reiterate the importance of the radiolocation service and to help resolve coordination problems arising from the sharing of bands with the fixed and mobile services.

. The following is a list of the future ITU conferences currently scheduled:

November 1981, 6 weeks, region 2, MF-BC RARC, second session;

August 1982, 4 weeks, region 1, FM-BC RARC, first session;
September 1982, 6 weeks, ITU Plenipotentiary Conference;
February 1983, 3½ weeks, Mobile Services WARC;
June 1983, 5 weeks, region 2, Broadcasting Satellite RARC;
January 1984, 5 weeks, HF-Broadcasting WARC, first session;
October 1984, 6 weeks, region 1, FM-BC RARC, second session;
July 1985, 6 weeks, Space Services WARC, first session;

January 1986, 7 weeks, HF-Broadcasting WARC, second session;
September 1986, 4 weeks, region 2, HF-Broadcasting RARC (New Bands);
January 1987, 4 weeks, African VHF/UHF-Broadcasting RARC;
September 1987, 6 weeks, Space Services WARC, second session;
March 1988, 6 weeks, region 3, VHF/UHF Bands RARC; and
September 1988, 6 weeks, Mobile Services WARC.