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The International Telecommunications Union, Space Radio Communications, and U.S. Cold War Diplomacy, 1957–1963

In October 1963, a delegate representing the United States at an international meeting involving officials from most of the countries belonging to the United Nations (UN) reported to his superiors that the discussions had reached a critical phase: "The confrontation . . . between the West on the one hand and the USSR and under-developed countries on the other is about to take place. We hold our collective breath."[1] Contrary to expectation, the U.S. delegate was not reporting on a major political meeting discussing crucial geopolitical events involving countries like Cuba or the Congo. The meeting was held to discuss the seemingly mundane subject of radio frequencies. The delegate represented the United States at a major convention organized by the International Telecommunications Union (ITU), a specialized agency of the UN. The statement shows that the Cold War penetrated even highly technical discussions at international meetings. More accurately, the statement underscores the complex interrelationships between technology and science and Cold War diplomacy.

The ITU, which dates from a meeting in Paris in 1865, is one of the earliest international, intergovernmental institutions. In an effort to coordinate separate telegraph systems across Europe, twenty nations signed two agreements at the 1865 conference, an International Telegraph Convention and the related Telegraph Regulations. An important provision of the Convention called for the establishment of an International Telegraph Union, which would meet periodically to review the general rules and specific regulations. The first official meeting of the union took place in Vienna in 1868. During this meeting, the members decided to create an International Bureau in a neutral location—Berne, Switzerland. The Swiss Bureau would be responsible for preparing conferences and keeping track of basic information. Contributions from union members paid for the bureau's expenses, including the salaries of the Swiss staff. Similar separate arrangements were made for radio after its development around the turn of the century.

1. C. W. Loeber to Thomas E. Nelson, October 17, 1963, folder "Telecommunications: TEL 8-1, Radio Frequencies, 8/1/63, ITU" box 3655, Central Foreign Policy File, 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

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A meeting in Berlin in 1906 established an International Radiotelegraph Convention and annexed regulations. The two administrations merged to create the ITU during a meeting in Madrid in 1932.[2]

The management of the radio spectrum has been one of the most important activities of the ITU. International agreements for the use of the radio spectrum have been necessary because radio waves do not simply stop at national borders. Governments have viewed the spectrum as an international common resource. Without international agreements for the management of the radio spectrum, interference could spoil its use for all users. The 1906 Radiotelegraph Conference first established a spectrum management role for the ITU. The conference made two crucial decisions—it decided to set aside discreet bands of frequencies for specific "services," and it decided that radio users had to tell the international bureau in Switzerland about their use of specific frequencies. Generally, the second decision also established an informal policy of first-come, first-served for the use of specific frequencies. Decisions about assigning specific radio "services" to specific parts of the spectrum became the major function of periodic administrative meetings of the ITU. This has been an ongoing issue as new technological innovations have opened up new regions of the spectrum (higher frequencies).[3]

Despite a general recognition of the importance of the ITU and international radio spectrum management, detailed historical studies are needed that include analyses of the relationship between technical issues involving the radio spectrum and broader social, political, and economic developments.[4] Detailed studies based on archival material of key meetings involving spectrum management are especially important. This study focuses on the development of spectrum policy for one of the most significant new "services" of the twentieth century: radio transmissions involving outer space. Crucial ITU administrative radio conferences in 1959 and 1963 organized especially by the United States laid the foundation for the Cold

2. George Arthur Codding, Jr., *The International Telecommunication Union: An Experiment in International Cooperation* (Leiden, Netherlands, 1952), 13–179. On early radio conferences before World War II, see James Schwoch, *The American Radio Industry and Its Latin American Activities, 1900-1939* (Urbana, IL, 1990), 56–95; James Schwoch, "The American Radio Industry and International Communications Conferences, 1919-1927," *Historical Journal of Film, Radio, and Television* 7 (October 1987): 289–309.

3. Codding, Jr., *The International Telecommunication Union*, 13–179.

4. Most general discussions of the ITU have been written by non-historians. See especially Codding, Jr., *The International Telecommunication Union*; James G. Savage, *The Politics of International Telecommunications Regulation* (London, 1989); George Arthur Codding, Jr. and Anthony M. Rutkowski, *The International Telecommunication Union in a Changing World* (Dedham, MA, 1982); Harold K. Jacobson, "ITU: A Potpourri of Bureaucrats and Industrialists" in *The Anatomy of Influence: Decision Making in International Organization*, ed. Robert W. Cox and Harold K. Jacobson (New Haven, CT, 1973), 59–101. The best historical analysis of ITU radio conferences is by James Schwoch, who has focused especially on political debates about which countries should be included at radio conferences and the role of private industry in global communications policy. See especially Schwoch, *The American Radio Industry and Its Latin American Activities*, 56–95; James Schwoch, *Global TV: New Media and the Cold War, 1946-69* (Urbana, IL, 2009), 18–25, 31–35.

War space race. A focus on the efforts by the United States to manage the meetings is particularly important for gaining a deeper understanding of Cold War diplomacy and international relations during this crucial period. A central concern of the early efforts to arrive at international agreements for space frequencies was satellite communications. The United States was particularly concerned about convincing the international community to set aside large blocks of frequencies for a planned global satellite communications system that would serve multiple national security objectives. The global satellite system would, in turn, play an important role in convincing other countries to agree to set aside frequencies for all forms of space communication.

Historians who have analyzed the role of technology and science in the Cold War have tended to focus exclusively on the implications of military-related research or on the international debates about atomic energy, nuclear weapons, and new types of conventional weaponry.[5] But technology and science also played a crucial role in another aspect of the Cold War with important implications for international relations and diplomacy: both sides in the East–West conflict

5. On the implications of Cold War military research see, for example, David Hounshell, "The Cold War, RAND, and the Generation of Knowledge," *Historical Studies in the Physical and Biological Sciences* 27 (1997): 237–67; Daniel J. Kevles, "Cold War and Hot Physics: Science, Security, and the American State, 1945-56," *Historical Studies in the Physical and Biological Sciences* 20 (1990): 239–64; Stuart W. Leslie, *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford* (New York, 1993); Martin J. Collins, *Cold War Laboratory: RAND, the Air Force, and the American State, 1945-1950* (Washington, DC, 2002); Rebecca S. Lowen, *Creating the Cold War University: The Transformation of Stanford* (Berkeley, CA, 1997); David H. DeVorkin, *Science with a Vengeance: How the Military Created U.S. Space Science after World War II* (New York, 1992); Thomas J. Misa, "Military Needs, Commercial Realities, and the Development of the Transistor, 1948-1958," in *Military Enterprise and Technological Change: Perspectives on the American Experience*, ed. Merritt Roe Smith (Cambridge, MA, 1985), 253–88; Daniel Kevles, "K1S2: Korea, Science, and the State," in *Big Science: The Growth of Large-Scale Research*, ed. Peter Galison and Bruce Hevly (Stanford, CA, 1992), 312–33; Thomas J. Misa, "Command Performance: A Perspective on Military Enterprise and Technological Change," in Smith, *Military Enterprise and Technological Change*, 329–46. On the role of science and technology in weapons development and diplomacy, see especially, Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI*, rev. ed. (Stanford, CA, 2000); Robert Gilpin and Christopher Wright, eds., *Scientists and National Policy-Making* (New York, 1964); Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca, NY, 1999); Harold Karan Jacobson and Eric Stein, *Diplomats, Scientists, and Politicians: The United States and the Nuclear Test Ban Negotiations* (Ann Arbor, MI, 1966); Jeremi Suri, "America's Search for a Technological Solution to the Arms Race: The Surprise Attack Conference of 1958 and a Challenge for 'Eisenhower Revisionists'," *Diplomatic History* 31 (1997): 417–51; Joseph Manzione, "'Amusing and Amazing and Practical and Military': The Legacy of Scientific Internationalism in American Foreign Policy, 1945-1963," *Diplomatic History* 24 (2000): 21–55. Also see the special issue of *Osiris* 21 (2006), including the following articles: Clark A. Miller, "An Effective Instrument of Peace: Scientific Cooperation as an Instrument of U.S. Foreign Policy, 1938-1950"; John Krige, "Atoms for Peace, Scientific Internationalism, and Scientific Intelligence"; Gabrielle Hecht, "Negotiating Global Nuclearities: Apartheid, Decolonization, and the Cold War in the Making of the IAEA"; Kai-Henrik Barth, "Catalysts of Change: Scientists as Transnational Arms Control Advocates in the 1980s." And for new perspectives on science and the cold war, also see the articles in *Isis* 101 (2010): 362–411.

attempted to use spectacular peaceful activities involving technology and science to win over the hearts and minds of average citizens in countries around the world. The nuclear standoff meant that some of the most important battles between the United States and the Soviet Union involved propaganda and symbolism rather than direct armed conflict. Geopolitical leadership was determined by a country's ability to convince the world of its superior performance in advancing technology and science, especially for peaceful objectives.[6] This is not to downplay the importance of military research during the Cold War; however, to gain a complete understanding of the relationship between the Cold War and technology and science, it is important to remain open to an exploration of complex interrelationships. The historical analysis in this essay thus focuses on three major themes. The first is the broader meaning of Cold War national security concerns in the context of the development of communications and space policy during the Eisenhower and Kennedy Administrations. The second theme is the importance of exploring how the ITU meetings focusing on the new service of space radio transmissions reinforced the link between the United States and European allies and underscored the need for the United States to improve relationships with countries in the Third World. In the context of total cold war, diplomacy was closely linked to a broad range of national security concerns, not only military preparedness but also the

6. On the international implications of space exploration during the Cold War, see especially John Krige, "Technology, Foreign Policy, and International Cooperation in Space," in *Critical Issues in the History of Spaceflight*, ed. Steven J. Dick and Roger D. Launius (Washington, DC, 2006); Walter A. McDougall, *The Heavens and the Earth: A Political History of the Space Age* (Baltimore, MD, 1985). For other sources dealing with the interaction between science and technology and Cold War diplomacy that take a broader perspective, see Allan A. Needell, "'Truth is Our Weapon': Project Troy, Political Warfare, and Government-Academic Relations in the National Security State," *Diplomatic History* 17 (1993): 399–420; Allan A. Needel, *Science, Cold War, and the American State: Lloyd V. Berkner and the Balance of Professional Ideals* (Amsterdam, 2000); Clark A. Miller, "Scientific Internationalism in American Foreign Policy: The Case of Meteorology, 1947-1958," in *Changing the Atmosphere: Expert Knowledge and Environmental Governance*, ed. Clark A. Miller and Paul N. Edwards (Cambridge, MA, 2001); Nick Cullather, "Miracles of Modernization: The Green Revolution and the Apotheosis of Technology," *Diplomatic History* 28 (2004): 227–54; John H. Perkins, *Geopolitics and the Green Revolution: Wheat, Genes, and the Cold War* (Oxford, 1997); Jacob Hamblin, *Oceanographers and the Cold War: Disciples of Marine Science* (Seattle, WA, 2005); Schwoch, *Global TV*; Kurk Dorsey, "Dealing with the Dinosaur (and Its Swamp): Putting the Environment in Diplomatic History," *Diplomatic History* 29 (2005): 573–87; Ronald E. Doel and Kristine C. Harper, "Prometheus Unleashed: Science as a Diplomatic Weapon in the Lyndon B. Johnson Administration," *Osiris* 21 (2006): 66–85; Ruth Oldenziel and Karin Zachman, eds., *Cold War Kitchen: Americanization, Technology, and European Users* (Cambridge, MA, 2009). For an overview of the historical interaction among science, technology, and diplomacy, see especially John Krige and Kai-Henrik Barth, "Introduction: Science, Technology, and International Affairs," *Osiris* 21 (2006): 1–21; Ronald E. Doel and Zuoyue Wang, "Science and Technology," in *Encyclopedia of American Foreign Policy*, ed. Alexander DeConde, Richard Dean Burns, and Fredrik Logevall, rev. ed. (New York, 2001), 443–59; Ronald E. Doel, "Scientists as Policymakers, Advisors, and Intelligence Agents: Linking Contemporary Diplomatic History with the History of Contemporary Science," in the *Historiography of Contemporary Science and Technology*, ed. Thomas Söderqvist (Amsterdam, 1997), 215–44; Walter Lafeber, "Technology and U.S. Foreign Relations," *Diplomatic History* 24 (2000): 1–19.

symbolic and material struggle over hearts and minds. Third, to understand the general success of the United States in convincing countries to agree to its proposals for space frequencies, especially at the crucial 1963 ITU meeting, it is important to understand not only the significance of changing Soviet–American relations but also the specific strategies used by American diplomats and other government officials. Particularly significant was the use of spectacular demonstrations, diplomatic "missionary" activities in preparation for meetings, and a form of boundary work to finesse the interrelated geopolitical and technical issues that have been central to the work of international governmental institutions such as the ITU.

BACKGROUND ON THE MODERN ITU

The modern ITU originated with the crucial 1947 meeting held in Atlantic City, New Jersey. The members had agreed to join the UN two years earlier. The 1947 meeting was the first opportunity to reorganize the ITU consistent with the practices of the UN. This meant, most importantly, the establishment of an Administrative Council composed of eighteen members elected by the general conference of the ITU, called the Plenipotentiary Conference. The council normally met annually during the period between Plenipotentiaries, carrying out the major decisions of the ITU conferences and determining the agenda for future meetings. A General Secretary, responsible to the Administrative Council, assumed the traditional responsibilities of the old ITU Bureau in Berne, Switzerland. The Switzerland connection was not completely eliminated, however. The headquarters of the new ITU was located in Geneva. Plenipotentiary Conferences not only elect officials but also review, and if necessary, change the ITU's basic working guidelines, the International Telecommunications Convention. The regulatory work of the union takes place at periodic administrative conferences. Management of the radio spectrum is the responsibility of administrative radio conferences. The most important are world administrative radio conferences (WARCs), which make decisions about the majority of the usable radio spectrum, and extraordinary administrative radio conferences (EARCs), which decide about specific blocks of frequencies.[7]

The 1947 meeting, the largest ITU gathering ever, combined a Plenipotentiary and a World Administrative Radio Conference. As the conference host, major economic power, and most important user of telecommunications in the postwar period, the United States dominated the 1947 ITU Conference. The United States was especially interested in changing the traditional practice of allowing countries to effectively claim spectrum rights in a haphazard way, based especially on a policy of first-come, first-served. The old Berne Bureau in Switzerland had

7. Savage, *The Politics of International Telecommunications Regulation*, 38–40; Codding and Rutkowski, *The International Telecommunication Union in a Changing World*, 21–24. The best general historical discussion of the 1947 conference is Schwoch, *Global TV*, 17–30.

registered member country's claims to the use of frequencies with little oversight. Nearly all nations had abused the practice by recording fictitious uses of frequencies. The Soviet Union was particularly notorious for making excessive claims along these lines. The United States succeeded in convincing the 1947 Conference to establish a new agency, the International Frequency Registration Board (IFRB), with a mandate to develop a rational allocation plan based primarily on engineering considerations and the true needs of individual countries.[8]

But these efforts to create an engineered spectrum foundered during the late 1940s and early 1950s as Cold War tensions escalated with the Korean War and other geopolitical crises. The Soviet Union viewed the IFRB as a threat to the nation's sovereign use of radio frequencies. Although the Soviets failed to eliminate the radio board, they did largely block its ability to undertake rational planning of the use of specific frequencies by different countries. The pattern that developed during the 1950s was for users to inform the IFRB after they started operations on specific frequencies; if no interference was reported during a two-month period, the board would automatically add the frequency use to a master list.[9]

The Soviet Union increasingly viewed the ITU as an institution largely serving the interests of the United States and its allies.[10] The dominant pattern during the early 1950s was for the Soviets to primarily seek to obstruct U.S. efforts at ITU conferences. Stalin believed it was to his nation's advantage to work to destabilize an institution dominated by the United States. During acrimonious discussions at the 1952 Plenipotentiary Conference in Buenos Aires, the Soviets repeatedly threatened to withhold annual contributions to the union. The Soviet Union and its allies refused to sign the final acts of the Extraordinary Radio Administrative Conference held in Geneva in 1951.[11]

The Soviet Union's treatment of the ITU partly reflected the fact that the country was less interested in participating in international communications compared to the United States and other democratic-capitalist nations. But a more important factor was Stalin's general hostility to the UN and its specialized organizations. According to Robert G. Weston, "Soviet policy became little more, as the Soviets put it, than preventing the United Nations from being made an instrument of imperialism and using it to check the warmongers." Stalin directed Soviet delegates to obstruct the work of the UN because of its dominance by the United States during the first postwar decade. Although the United States generally could count on support from forty-five to fifty voting members, the Soviet Union could only count on the support of about a half dozen countries at the UN. Partly

8. Savage, *The Politics of International Telecommunications Regulation*, 40–41, 70–74; Codding and Rutkowski, *The International Telecommunication Union in a Changing World*, 25–26.

9. Savage, *The Politics of International Telecommunications Regulation*, 41, 75–77; Codding and Rutkowski, The *International Telecommunication Union in a Changing World*, 26–31.

10. Jacobson, "ITU: A Potpourri of Bureaucrats and Industrialists," 97.

11. Savage, *The Politics of International Telecommunications Regulation*, 75–77; Codding and Rutkowski, The *International Telecommunication Union in a Changing World*, 31–39, 212.

because of the dominance of the United States and partly because of Stalin's indifference or hostility toward the organization, the early UN had a "disproportionate percentage of Americans on its staff." And UN technical assistance programs did not include any Soviet experts during the entire Stalin period.[12] Because of its dominant role, the United States was much more interested than the Soviet Union in having the UN deal with international disputes. To counter UN initiatives infringing Soviet sovereignty and political interests, Soviet delegates during the Stalin era worked to undermine the authority of UN officials, most notably, Secretary General Trygve Lie, who was forced to resign late in 1952 after the Soviets boycotted and publicly insulted him.[13]

U.S. GOVERNMENT PLANNING FOR THE ITU DURING THE COLD WAR

Officially, the State Department in the United States prepares the government for ITU meetings and coordinates U.S. participation. This derives from the department's general authority to conduct foreign affairs.[14] Specifically, the department has responsibility for organizing preparatory meetings of U.S. government agencies, selecting the U.S. delegation, and providing delegates with general instructions. The Telecommunications Division located in the Office of Transport and Communications of the Bureau of Economic Affairs in the State Department organized many of these responsibilities during the late 1950s and early 1960s.[15] But in practice two other government agencies also played very important roles in

12. Robert G. Weston, "The United Nations in the World Outlook of the Soviet Union and the United States" in *Soviet and American Policies in the United Nations: A Twenty-five Year Perspective*, ed. Alvin Z. Rubinstein and George Ginsburg (New York, 1971), 6–8, 18, quotations on 8 and 18.

13. Paul Gordon Lauren, "The Diplomats and Diplomacy of the United Nations" in *The Diplomats, 1939-1979*, ed. Gordon A. Craig and Francis L. Loewenheim (Princeton, NJ, 1994), 469.

14. Senate Committee on Aeronautical and Space Sciences Staff Report, *Communication Satellites: Technical, Economic, and International Developments*, report prepared by Donald R. MacQuivey, 87th Cong., 2nd Sess., 1962, Committee Print (CIS-NO:S0525), 18–19.

15. During most of this period, the State Department was organized into regional bureaus and a number of key specialized bureaus headed by Assistant Secretaries and Deputy Assistant Secretaries. Besides the Bureau of Economic Affairs, these specialized bureaus included the Bureau of International Organization Affairs, the Bureau of Congressional Relations, and the Bureau of Public Affairs. Besides the Secretary, Under Secretary, Assistant Secretaries, and Deputy Assistant Secretaries, the other major officers included the second Under Secretary (either Under Secretary for Political Affairs or Under Secretary for Economic Affairs), the Deputy Under Secretary for Political Affairs, and the Deputy Under Secretary for Administration. The Deputy Under Secretary for Political Affairs had an important role of working with the Defense Department and the intelligence agencies. See especially Memorandum from Secretary of State Rusk to President Johnson, 31 December 1964, S/S-Ball Files, Lot 74 D 272, Under Secretary Ball-1964, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1964–68, Lyndon B. Johnson, volume 33, Organization and Management of Foreign Policy, United Nations, The Department of State and the Coordination and Supervision of U.S. Foreign Policy, #16.

decisions about U.S. participation in international frequency allocation conferences—the Federal Communications Commission (FCC) and a committee composed of representatives of government agencies that use radio called the Interdepartment Radio Advisory Committee (IRAC).[16] The Communications Act of 1934 gave the FCC authority to assign radio frequencies to nongovernment users in the United States. The President delegated authority to IRAC to assign frequencies to users of radio in the federal government. As a result, the two agencies have arrived at final decisions for domestic frequency allocations as well as recommendations for ITU radio conferences through a complex process of negotiation.

To understand the context of U.S. participation in the first ITU conferences dealing with the use of radio frequencies for outer space, it is important to first understand how U.S. communication policy became increasingly driven by national security concerns during the Cold War. During the first two decades after its establishment in 1922, IRAC had been closely connected to civilian agencies, first the Department of Commerce and then the FCC. A representative of the Department of Commerce headed IRAC for the first eleven years. During the next eight years, IRAC was run by the chairman of the FCC. But defense demands for radio frequencies after the outbreak of the Korean War in 1950 and the emergency drive to mobilize the country's resources to fight the Cold War resulted in a militarization of IRAC. The agency's funding became increasingly dependent on the Department of Defense. In 1953, when President Eisenhower issued an executive order placing IRAC under the administration of the Office of Defense Mobilization (ODM), the military and national security influence became even stronger.[17] The president delegated responsibility to the director of the mobilization office to "assure maximum security to the United States in time of national emergency with a minimum interference to continuing nongovernmental requirements."[18] This connection to mobilization agencies continued during the 1950s and early 1960s, first under the Office of Civil and Defense Mobilization, beginning in 1958, and then three years later under a new successor agency, the Office of Emergency Planning. An IRAC member who had represented the Army served as chairman of IRAC in 1952 and 1953. Beginning in 1954 and continuing into the

16. Senate Committee on Aeronautical and Space Sciences, *Radio Frequency Control in Space Telecommunications*, report prepared by Edward Wenk, 86th Cong., 2nd Sess., 1960, Committee Print (CIS-NO: S2131), 23.

17. House Subcommittee of the Committee on Interstate and Foreign Commerce, *Spectrum Allocation: Hearings on Allocation of Radio Spectrum between Federal and Non-Federal Government Users*, 86th Cong., 1st Sess., June 8, 1959, 105–20. On establishment of IRAC see Louise M. Benjamin, "Regulating the Government Airwaves: Creation of the Interdepartmental Radio Advisory Committee (IRAC)," *Journal of Broadcasting and Electronic Media* 51 (2007): 498–515.

18. Executive Order 10460 quoted in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, 87th Cong., 1st Sess., August 23, 1961, 113.

early 1960s, the chairman of IRAC, William E. Plummer, was a former CIA employee who also represented the mobilization agencies on the committee.[19]

The fact that no one agency decided about allocating frequencies in the United States or prepared recommendations for international conferences was a major source of controversy. As one industry critic colorfully complained in 1959, "we have two cooks and one pot."[20] The major criticism was that IRAC and the FCC arrived at final decisions through "give and take compromise" and political negotiation rather than through "adherence to logical, economic, or technical principles."[21] During the 1950s and early 1960s, critics in Congress—including Senator John O. Pastor (D-Rhode Island) and Senator Vance Hartke (D-Indiana), both members of the Communications Subcommittee of the Committee on Commerce [Pastore was the chairman]—made a number of unsuccessful attempts to convince administrations to consider centralizing communications policy, including the possibility of having a single agency that would evaluate both federal and nonfederal use of the radio spectrum.[22] But the fragmentation strengthened as national security concerns increasingly influenced IRAC decision-making. In 1961, Fred C. Alexander, the telecommunications official in the mobilization agency who played a key role in decisions about frequency allocations, defended IRAC's practice of holding closed meetings not only because open meetings would "be extremely cumbersome," but also because they would "in many cases . . . jeopardize the national defense and security."[23]

Members of Congress favoring a more centralized communication policy were especially vocal critics of IRAC's secretive proceedings. During hearings in August 1961, Senator Pastore grumbled about the inevitable outcome of his attempts to discover the reasons for IRAC decisions: "you always run into the question that

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19. House Subcommittee of the Committee on Interstate and Foreign Commerce, *Spectrum Allocation: Hearings on Allocation of Radio Spectrum between Federal and Non-Federal Government Users*, June 8, 1959, 119–20. Herbert I. Schiller, "The Increasing Military Influence in the Governmental Sector of Communications in the United States," *Administrative Law Review* 303 (1966–67): 303–18.

20. H. Leslie Hoffman [member of the spectrum study committee, Electronic Industries Association] testimony in House Subcommittee of the Committee on Interstate and Foreign Commerce, *Spectrum Allocation: Hearings on Allocation of Radio Spectrum between Federal and Non-Federal Government Users*, June 8, 1959, 71.

21. Untitled report dated February 10, 1961, attached to letter from John O. Pastore to John Fitzgerald Kennedy, March 6, 1961, folder "ND 3 Communications—Electronics," box 4, National Security—Defense ND 3 Collection, Lyndon B. Johnson Library, Austin, Texas, 2.

22. John O. Pastore to John Fitzgerald Kennedy, March 6, 1961, folder "ND 3 Communications—Electronics," box 4, National Security—Defense ND 3 Collection, Lyndon B. Johnson Library. On some of the major studies undertaken during this period that focused on the possibility of centralizing communication policy, see especially discussion in "Statement by Senator Vance Hartke in support of Senate Joint Resolution 32," in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 1, 1961, 99.

23. Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, 147.

you have raised about national security and there the door shuts right in your face and you can't go beyond that and we remain in the dark."[24] Testifying at the same Senate hearings, some civilian users believed that the amount of spectrum set aside for federal government agencies had risen from about 50 percent in 1951 to approximately 70 percent ten years later, "with about 40 percent exclusively Government and totally withdrawn from citizen use."[25] Fred Alexander, the telecommunications official at the mobilization agency, admitted that final decisions by IRAC and the FCC over the division of the spectrum among different users tended to favor the military because there were "certain highly classified uses" that he believed the FCC preferred "not to know and I am sure they do not know."[26] Senator Pastore was particularly critical of IRAC because he believed the organization allowed the military services to use national security concerns to avoid proving that "proper use is being made of the bands that are allocated to the Government."[27] He thought that government decision-making resulted in the defense establishment receiving "unreasonably large" blocks of frequencies that were "neither required nor used by the military services."[28] In a revealing response, Alexander admitted that he could not be sure of efficient use by all government agencies: "Not in all cases; no, sir."[29]

Because government officials serving on IRAC were users rather than regulators of the radio spectrum, they had a primary incentive to maximize requests for frequencies for their agencies, irrespective of the overall needs of the country.[30] Critics attacked the FCC for being "unwilling to counter pressure of demands of executive agencies."[31] Cold war imperatives led the commission to give in to IRAC pressure and the demands of the mobilization agencies. In 1959, the chairman of the FCC, John Doerfer, testified that "I think the day is past when every single person in this country is not a soldier in the next war for sure, whether it is hot or continues to be a cold one. . . .We all have to recognize that. And we have to put national defense first. That's the first consideration that the FCC makes."[32]

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24. Ibid., 149.

25. Donald Beelar quoted in ibid., 168.

26. Ibid., 159.

27. Ibid., 161.

28. Untitled report dated February 10, 1961, attached to letter from John O. Pastore to John Fitzgerald Kennedy, March 6, 1961, folder "ND 3 Communications—Electronics," box 4, National Security—Defense ND 3 Collection, Lyndon B. Johnson Library, 2.

29. Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, 161.

30. Ibid., 168.

31. Ibid.

32. John Doerfer testimony in House Subcommittee of the Committee on Interstate and Foreign Commerce, *Spectrum Allocation: Hearings on Allocation of Radio Spectrum between Federal and Non-Federal Government Users,* June 8, 1959, 65. The role of the radio spectrum in the cold war was particularly important during the period of increased tension following Sputnik, when critics pressured the Eisenhower Administration to respond aggressively to Krushchev's threats. See Kenneth Osgood, *Total Cold War: Eisenhower's Secret Propaganda Battle at Home and Abroad*

Before the Soviet Union launched the first Sputnik satellite in October 1957, the ITU's table of frequency allocations did not give special consideration to transmitters and receivers potentially used in connection with space exploration and research. *Sputnik I* transmitted on a frequency (20.005 MHZ) set aside for other users of the spectrum. This practice was not necessarily a problem as long as the satellite did not interfere with other transmitters operating according to ITU policies. But because it reportedly did interfere with stations in the Netherlands, England, and the United States, a clear need existed for new regulations authorizing frequencies for the new service.[33] Further cases of interference during the late 1950s reinforced this view.[34] Planners recognized that special radio frequencies needed to be set aside not only for planned operational systems—such as communications satellites, meteorological satellites, and reconnaissance satellites—but also for individual space launches. Experts in the United States argued that during a single launch they would need to use as many as twenty-five different bands for tracking and sending commands to space vehicles, range safety, impact prediction, and microwave links. Each section of multistage vehicles would have its own transmitters and receivers.[35] Interference from other users could cause a rocket to veer off course, potentially threatening public safety.

The first opportunity to revise the ITU's frequency table came in the fall of 1959 at the World Administrative Radio Conference. The United States took the leading role in trying to convince the dozens of countries that belonged to the ITU to agree to reserve frequencies for space radio transmissions. This was a higher priority for the United States than the Soviet Union mainly because of the geographic differences between the two countries.[36] The Soviets were less concerned about strict frequency assignments and radio interference because they could control the radio airwaves necessary for space operations over a much larger area compared to the United States. A satellite or space vehicle would simply spend

(Lawrence, KS, 2006), 323–53; Robert A. Divine, *The Sputnik Challenge: Eisenhower's Response to the Soviet Satellite* (New York, 1993).

33. Nandasiri Jasentuliyana, "Regulatory Functions of I.T.U. in the Field of Space Telecommunications," *Journal of Air Law and Commerce* 34 (1968): 65.

34. J. Henry Glazer, "The Law-Making Treaties of the International Telecommunication Union through Time and in Space," *Michigan Law Review* 60 (1962): 285–86, note 59.

35. James P. Gleason (NASA) to Lyndon B. Johnson, July 12, 1960, reprinted in Senate Committee on Aeronautical and Space Sciences, *Policy Planning for Space Telecommunications*, 86th Cong., 2nd Sess., 1960, Committee Print (CIS-NO: S0378), 128.

36. Despite the willingness of Soviets during the late 1950s to participate in the UN and its specialized agencies, the United States still dominated in terms of personnel. They sent only a dozen delegates to the 1959 meeting. The United States, by contrast, sent over one hundred. See *Report of the Chairman of the United States Delegation to the Administrative Radio Conference of the International Telecommunications Union, Geneva, Switzerland—August 17, 1959 through December 21, 1959*, annex A, folder "399.20-ITU/5-260," box 837, Central Decimal File, 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

much more time over Soviet bloc territory.[37] The Americans were more dependent on other countries for tracking space vehicles. During the late 1950s, the United States established tracking stations in a number of countries, including Ecuador, Antigua, Chile, Peru, Australia, and South Africa.[38] During the early 1960s, agreements were extended to Spain, the United Kingdom, Nigeria, Mexico, and Zanzibar.[39] The United States needed international agreements for space frequencies especially because of the high potential of interference from a wide variety of domestic users in these different countries.[40]

In preparation for the 1959 ITU radio conference, officials connected with IRAC, the Office of Civil and Defense Mobilization, and the FCC decided to initially only request allocations for space research. They realized that they would not likely be able to convince countries without space capabilities at this early date to agree to set aside valuable radio frequencies for advanced operational satellite systems connected with communications, navigation, and meteorology.[41] Events at the conference confirmed this fear. The United States could not even convince other nations to agree to reserve a relatively narrow range of frequencies for space research. In the face of opposition, the Americans reduced their proposal for research frequencies by 50 percent.[42] The conference thus agreed to set aside thirteen narrow bands of space frequencies.

The policy of the new Soviet leader Nikita Krushchev towards the UN and its specialized agencies such as the ITU differed significantly from Stalin's. Ensuring that ITU frequency agreements did not impinge on national sovereignty was still very important, but in contrast to Stalin, the new leader's priority was not to work to obstruct and block proceedings as a fundamental principle. Krushchev was

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37. Jasentuliyana, "Regulatory Functions of I.T.U.," 66–67. The Soviets also developed medium-altitude (not geostationary) satellites with special orbits more appropriate for a large country located in the far north. The communication satellite the Soviets developed during the mid-1960s, part of the Molniya series, had a highly elliptical orbit oriented in such a way that when it was nearest to the earth it would appear to be relatively stationary over Soviet territory for long periods of time.

38. Senate Committee on Aeronautical and Space Sciences, *Radio Frequency Control in Space Telecommunications*, 1960, 50–51. On the development by the U.S. military of tracking and earth stations, see David Christopher Arnold, *Spying from Space: Constructing America's Satellite Command and Control Systems* (College Station, TX, 2005).

39. Action Memorandum from the Director of the Office of International Scientific Affairs (Rollefson) to Secretary of State Rusk, July 11, 1963, Central Files 1960-63, SP 10 US, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, volume 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, U.S. Space Program, #382.

40. Senate Committee on Aeronautical and Space Sciences, *Radio Frequency Control in Space Telecommunications*, 1960, 50–51.

41. Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, 151.

42. Senate Committee on Aeronautical and Space Sciences, *Policy Planning for Space Telecommunications*, 51.

willing to engage the UN. Favorable developments during the early and mid-1950s partly explain the new leader's willingness to open the country to international relations, including the steady economic development of the Soviet economy, the country's consolidation of power in Eastern Europe, and the achievement of nuclear capability. The Stalinist belief in the inevitability of wars and revolutions was replaced by a new belief in "peaceful coexistence" and a new conviction that world socialism would develop through peaceful processes. Krushchev was willing to gamble by threatening conflict, especially by pursuing nuclear brinkmanship, but better relations with the West was his ultimate goal. By the late 1950s, this goal became increasingly important because of his desire to relieve the pressure on the consumer sector by reducing the country's defense budget through disarmament agreements.[43] The first UN meeting that Khrushchev attended coincided with the 1959 ITU radio conference. In the speech he gave to the General Assembly in September, Krushchev stressed the positive role of the UN in helping the world achieve peaceful coexistence and disarmament.[44] Thus, unlike during the Stalin-era, Soviet opposition to U.S. proposals was not simply based on a commitment to obstructing UN proceedings as a fundamental principle. The Soviets opposed U.S. proposals for space radio frequencies partly because of a general commitment to the principle of national sovereignty but also because they were less dependent on protected radio frequencies for actual and planned space operations.[45]

Krushchev's rise to power in the mid-1950s coincided with a period of major change in the membership of the UN and its specialized agencies. During the first decade of its existence, the membership was relatively static as the United States and the Soviet Union each refused to accept new members promoted by the other.[46] The watershed event was the UN meeting in December 1955, when sixteen states gained membership, raising the total from sixty to seventy-six. Krushchev sought to exploit the fact that the new members added in this period mainly represented ex-European colonies with grievances against the West. During his 1959 speech to the United Nations General Assembly, Krushchev

43. Vladislav M. Zubok, *A Failed Empire: The Soviet Union in the Cold War from Stalin to Gorbachev* (Chapel Hill, NC, 2007), 94; William Taubman, *Krushchev: The Man and His Era* (New York, 2003), 347–48; Weston, "The United Nations in the World Outlook of the Soviet Union and of the United States," 12–13; Vladislav Zubok and Constantine Pleshakov *Inside the Kremlin's Cold War: From Stalin to Khrushchev* (Cambridge, MA, 1996), 174–85; Aleksandr Fursenko and Timothy Naftali, *Khrushchev's Cold War: The Inside Story of an American Adversary* (New York, 2006), 22–32, 241; Alexander Dallin, *The Soviet Union at the United Nations: An Inquiry Into Soviet Motives and Objectives* (London, 1962), 39–40, 115–22.

44. Dallin, *The Soviet Union at the United Nations*, 130.

45. Weston, "The United Nations in the World Outlook of the Soviet Union and of the United States," 13.

46. Ibid.

demonstrated his commitment to the goals of developing countries by promoting a declaration favoring the independence of all colonial peoples.[47]

The 1959 ITU radio frequency conference was especially significant because it underscored the emergence of developing countries as a powerful new force in the UN organization. Much of the opposition to the U.S. proposal to set aside space radio frequencies came from this segment of the ITU membership. According to the official report of the U.S. representative at the conference, "A new element which had not arisen at earlier radio conferences was the treatment to be accorded the requirements of so called new or developing countries. Throughout the Conference reference was made frequently to these countries, and the Conference became aware at an early date of the necessity of giving earnest consideration to this rather ill-defined but very active group." Soviet opposition to U.S. proposals to set aside special frequencies for space vehicles and space communications also served to demonstrate solidarity with the concerns of Third World countries. For many former colonies in particular, turning over the use of scarce radio frequencies to a few space-capable countries sounded very similar to what they went through as European colonies—the exploitation of their natural resources in a one-sided manner.[48]

In a special ad hoc committee of the 1959 radio frequency conference created to deal with the concerns of this new group of nations, the Americans discovered that many were more interested in technical assistance than in new frequency assignments: "it was found that the needs included complete telecommunication systems, skilled native technicians and engineers, and a knowledge of the Radio Regulations, particularly in regard to frequency assignment procedures."[49] An important result of the 1959 meeting was thus the adoption of measures to provide technical assistance to developing countries. During the late 1950s, foreign aid and technical assistance were becoming increasingly important to both the Soviet Union and the United States as the Cold War struggle moved out of Europe and into the Third World. Eisenhower's State of the Union address a few months after Sputnik, in January 1958, warned of the need to fight a "total Cold War," which would especially involve a symbolic and material struggle for hearts and minds around the world, especially in developing countries. Besides emphasizing the importance of foreign aid, the Eisenhower Administration stressed the need for psychological and political warfare to convince nations potentially attracted by Soviet achievements, especially during the early space race, of the

47. Harold Jacobson, "Decolonization" in *Soviet and American Policies in the United Nations: A Twenty-five Year Perspective*, ed. Alvin Z. Rubinstein and George Ginsburg (New York, 1971), 79–82; Dallin, *The Soviet Union at the United Nations*, 40.

48. Report quoted in Senate Committee on Aeronautical and Space Sciences, *Policy Planning for Space Telecommunications*, 98.

49. Ibid.

superiority of U.S. political, social, and economic institutions.[50] Foreign aid and technical assistance would also forge economic ties between the United States and developing countries—especially newly independent, ex-colonies.

U.S. officials viewed the 1959 ITU radio conference in the context of this symbolic and material global struggle for hearts and minds. An important lesson from the conference was the need to convince developing countries that they would benefit from American space technology and exploration. This issue was also addressed in more general terms at the 1959 General Assembly meeting of the UN. On December 12, the UN members voted to make permanent an Ad Hoc Committee on the Peaceful Uses of Outer Space established the previous year, and to pass a resolution calling for efforts to ensure that all countries would benefit from the peaceful use of space, irrespective of their level of development.[51]

These concerns coming out of the United Nations General Assembly and the ITU radio conference provided an important incentive for the Kennedy Administration in 1961 and 1962 to establish a global satellite communication system open to the participation of all countries in the world.[52] Kennedy was even more committed than Eisenhower to using all available resources in the global struggle. Officials in the Kennedy Administration valued communication satellites not only because of their potential military value but also because of their potential role in the Cold War battle to win hearts and minds through the use of both spectacular and practical developments in technology and science. A global system open to all countries would go far toward convincing all countries in the world, especially developing countries, that they could benefit directly from spectacular developments in space technology. Satellite communications proved to be particularly important for the United States in justifying the need to set aside large blocks of radio frequencies for all uses of space, both civilian and military. And, as we will see, satellite communications not only provided a justification for the largest blocks of frequencies at the 1963 Space Radio Conference but among the different uses for space frequencies dealt with at the meeting, it also proved to be the most controversial. Thus, to understand the crucial 1963 ITU conference, it is important to first understand the significance of satellite communications for the Kennedy Administration.

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50. Osgood, *Total Cold War: Eisenhower's Secret Propaganda Battle at Home and Abroad*, especially 323–53, Eisenhower quoted on 347; Chester J. Pach, Jr., "Introduction: Thinking Globally and Acting Locally" in *The Eisenhower Administration, the Third World, and the Globalization of the Cold War*, ed. Kathryn C. Statler and Andrew L. Johns (New York, 2006), xi–xxii; Zubok, *A Failed Empire*, 139.

51. Matthew J. Von Bencke, *The Politics of Space: A History of U.S.-Soviet/Russian Competition and Cooperation in Space* (Boulder, CO, 1997), 42–43.

52. The idea that the United States should take the lead in developing a global satellite communication system serving Cold War aims, especially by linking non-Western or non-aligned countries to the United States, was first expressed in a staff report written in the fall of 1960, less than one year after the UN proceedings, at the request of the Senate Committee on Aeronautical and Space Sciences, chaired by Senator Lyndon Johnson. See Senate Committee on Aeronautical and Space Sciences, *Policy Planning for Space Telecommunications*, 87, 99–100, 120.

SATELLITE COMMUNICATIONS AND THE COLD WAR

The first communication satellites were developed especially for military and narrow economic reasons. AT&T was the most important company involved in the development of communication satellites during the late 1950s. As the dominant telecommunications company in the United States, AT&T was interested in communication satellites to supplement undersea cables for international communications. Because it was primarily interested in making a profit, the company was mainly concerned with providing supplementary service to the most lucrative international routes, especially the trans-Atlantic route. During the last year of the Eisenhower Administration, AT&T announced plans to spend $170 million to develop a global system using fifty random-orbiting, medium-altitude satellites. It assumed the federal government would treat commercial satellite communications as simply another form of privately owned international telecommunications. Towards the end of 1960, Eisenhower announced his policy preference for satellite communications, essentially supporting the view of the NASA administrator, T. Keith Glennan, who favored allowing established communication companies like AT&T to develop the new technology according to traditional practices. Although Eisenhower pushed the country to fight a total Cold War, he also worried about the potential negative social and economic implications of an extreme mobilization. Both Eisenhower and Glennan had accordingly sought to avoid plunging the country into an unlimited race with the Soviets for spectacular space achievements of questionable scientific or commercial value. But Kennedy was more open to robust space competition, especially because of its important symbolic value as an indicator of global leadership and prestige. The Kennedy administration did not allow AT&T to pursue its plans to establish a system of medium-altitude satellites. Instead of allowing private companies to set up separate systems that would likely primarily serve profitable communication routes to Europe or other major "developed" regions, the Kennedy Administration decided to take the lead in the establishment of a single global system fulfilling Cold War objectives rather than simply maximizing private profits.[53]

This decision also needs to be understood in the context of the Administration's response to the Soviet's launch of the first human into orbit, the Yuri Gagarin flight of April 12, 1961. This event rivaled Sputnik as a major psychological blow to the United States. President Kennedy decided to not only join the space race but to race to win.[54] He asked Vice President Johnson, the head of the Space Council, to conduct an "overall survey" of American accomplishments to identify space

53. David Whalen, *The Origins of Satellite Communications, 1945-1965* (Washington, DC, 2002).

54. For a good overview, see especially John M. Logsdon, "The Evolution of U.S. Space Policy and Plans," in *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program, Volume 1: Organizing for Exploration*, ed. John M. Logsdon (Washington, DC, 1995), 379–81.

programs that promise "dramatic results in which we could win."[55] In his first report to the president, Johnson emphasized that countries "will tend to align themselves with the country which they believe will be the world leader—the winner in the long run. Dramatic accomplishments in space are being increasingly identified as a major indicator of world leadership." Among the programs identified by Johnson as fulfilling these objectives were not only the "manned exploration of the moon," but also the development of advanced satellites for world-wide communications. Satellite communications was an area in which the United States had an "advance position" that it could use to "attain world leadership" if "properly programmed with the interests of other nations."[56] Kennedy's famous speech to a Joint Session of Congress on May 25, 1961 in which he called for sending an American to the moon by the end of the decade also emphasized making the "most of our present leadership by accelerating the use of space satellites for world-wide communications."[57]

Vice President Lyndon Johnson played an especially important role in linking satellite communications to Cold War objectives. In preparation for meetings of the Space Council in June to discuss specific recommendations, Johnson instructed participants to "Explore the ultimate in communications satellites, tell us what can be done to accelerate this program, what the by-products might be in such things as telephone conversations between remote areas in the world where it might [take] years, and world wide TV, and the thrust of this should be to show us what the glories of this might be for the United States, for the free world, and to demonstrate the great difference between our system and the Soviet system."[58] The head of the communications commission later recalled how Johnson had

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55. John F. Kennedy to Vice President, April 20, 1961, Presidential Files, John F. Kennedy Library. Reprinted in Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Cicil Space Program, Volume 1: Organizing for Exploration*, Document III-6, 424.

56. Lyndon B. Johnson to John F. Kennedy, "Evaluation of the Space Program," 28 April 1961, NASA Historical Reference Collection, History Office, NASA Headquarters, Washington, DC Reprinted in Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program, Volume 1: Organizing for Exploration*, Document III-8, 427–28.

57. John F. Kennedy, "Urgent National Needs," Speech to a Joint Session of Congress, May 25, 1961, NASA Historical Reference Collection, History Office, NASA Headquarters, Washington, DC Reprinted in Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program, Volume 1: Organizing for Exploration*, Document III-12, 454.

58. Johnson's instructions were recorded in "Memorandum for Record," June 6, 1961, folder "Communications Satellite Corporation" box 15, NASC General Correspondence, 1961–69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland. For chronology of events leading to July policy statement on satellite communications, see "Chronology of Significant Events: National Aeronautics and Space Council," folder "NASC—History Project," box 24, NASC General Correspondence, 1961–69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland. On NASC decision leading to July policy statement, see NASC "Staff Document" on Communication Satellites, July 6, 1961, folder "Science: Space and Aeronautics—Space Council, Communications Satellites [1 of 2]," box 117, Vice President, 1961–63, Lyndon B. Johnson Library.

given him a long and "very impassioned talk" about the importance of communications satellites for promoting education in "underdeveloped" countries.[59]

Linking Third World countries to a global satellite communications system established by the United States would also help tie these countries economically to the United States through expanding global trade and commerce. U.S. electronics and communications manufacturers could benefit through the sale of satellite earth stations, but more important would be the indirect, long-term economic benefits resulting from the close connection between economic expansion and communications. By replacing the international cable systems operated by European colonial administrations, the global satellite communication system would potentially serve to shift global economic patterns from Europe to the United States. But in general, Cold War national security concerns were more important than economic factors as motivations for government planners. In reality, the sale of earth stations to most Third World countries proved difficult to justify economically. And the major international telecommunications carrier in the United States, AT&T, had to be forced by the government to go along with the plan to establish a system that would not only serve desirable profitably routes, especially trans-Atlantic communication, but also unprofitably routes to poorer countries.

The Kennedy Administration decided to establish a global satellite communications system during a period of increased tension with the Soviet Union that specifically involved a renewed focus on the importance of the Third World in the global Cold War struggle. Krushchev had been desperate to achieve agreements with the Eisenhower Administration during late 1959 and early 1960. Such was his optimism that he announced to the Supreme Soviet in January plans to relieve the pressure on the civilian economy by reducing the armed forces by over one million troops.[60] But the shooting down of Francis Gary Powers' U-2 spy plane on May 1, 1960 had a chilling effect on Krushchev's relationship with Eisenhower.[61]

The Soviet leader initially tried to work with Kennedy, who entered office with a clear desire to reduce tensions. Krushchev liked Kennedy's inaugural address, which included a proposal for cooperation in the peaceful uses of space.[62] Events during the spring of 1961 undermined this early optimism, however. The Gagarin flight and Kennedy's embarrassment over the disastrous outcome of the Bay of

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59. Newton Minnow interview quoted in Robert Dallek, "Johnson, Project Apollo and the Politics of Space Program Planning" in *Spaceflight and the Myth of Presidential Leadership*, ed. Roger D. Launius and Howard E. McCurdy (Urbana, IL, 1997).

60. Taubman, *Khrushchev: The Man and His Era*, 448–49; Zubok, *A Failed Empire*, 135; Fursenko and Naftali, *Krushchev's Cold War*, 241–55.

61. Taubman, *Khrushchev: The Man and His Era*, 447.

62. Taubman, *Khrushchev: The Man and His Era*, 487; Fursenko and Naftali, *Krushchev's Cold War*, 342. On the space proposal in the inaugural address, see comments with draft of proposal made by the administration on the topic in April with Document I-36 in John M. Logsdon, "The Development of International Space Cooperation" in *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships*, 143–47.

Pigs invasion of Cuba five days later emboldened Krushchev to test the new American leader by challenging him globally.[63] Tensions peaked in October 1962 when Krushchev's policy of nuclear brinkmanship led to the Cuban Missile Crisis. Krushchev's decision to intensify global tensions during the period leading to the Cuban Missile Crisis was thus an important context for the Kennedy administration's decision to establish a global satellite communication system. Especially significant was Krushchev's decision to take back his promise to halt nuclear testing and his increased commitment to the Third World. In August 1961, he accepted a KGB proposal to create "a hotbed of unrest" in Latin America by supporting local revolutionary movements.[64]

In response to the Kennedy Administration's initiative in promoting the development of a global communications satellite system, Congress passed the Communication Act of 1962 to create a unique company, COMSAT, which in turn helped set up and manage the international system, INTELSAT. By the end of the decade over sixty countries belonged to INTELSAT, with twenty-eight members operating fifty earth stations. The system achieved world-wide coverage in 1969, when geosynchronous satellites successfully served the Pacific, Atlantic, and Indian Ocean basins. A geosynchronous satellite appears to an observer on the ground to remain stationary because it orbits at a special altitude of 22,300 miles, allowing its velocity to exactly match that of the Earth's surface at the equator. But the focus of this article is not the organization of INTELSAT.[65] The important

63. Gerard J. Degroot, *Dark Side of the Moon: The Magnificent Madness of the American Lunar Quest* (New York, 2006), 135.

64. David Tal, *The American Nuclear Disarmament Dilemma, 1945-1963* (Syracuse, NY, 2008), 180–81; Taubman, *Khrushchev: The Man and His Era*, 502–3. For quotation, see Fursenko and Naftali, *Krushchev's Cold War*, 379.

65. Most of the key international negotiations debating the organization of INTELSAT occurred after the 1963 Space Radio Conference. The most important organizational meetings included an initial one in Rome in February 1964 and a final meeting in Washington on July 12. See especially documents in box 2, INTELSAT Administration File 1969–71, Plenipotentiary I, II, III; Records of International Conferences, Commissions, and Expositions; Record Group 43; National Archives and Records Administration, College Park, Maryland. Some general negotiations relating to the organization of INTELSAT did occur before the Space Radio Conference. William G. Carter (Special Assistant for International Space Communications, Bureau of Economic Affairs, Department of State) conducted early international negotiations before COMSAT was organized and had an opportunity to get involved. These negotiations focused on the general organization of the global system rather than negotiations over frequency allocations. See summary of the early activities of the Department of State along these lines attached to letter from G. Griffith Johnson to Joseph V. Charyk, April 16, 1963, folder "TEL 6, 3/1/73(sic)," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Also see early position paper in preparation for preliminary talks with the UK and Canada from Richard W. Gardner to Michael Blumenthal titled "U.S. Policy on the Organization of Global Satellite Communications," October 4, 1962, folder "COMSATS—Miscellaneous" box 7, Directors COMSAT Records 1962-66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4]. This document was mainly written by William Carter. See Interview with William Gilbert Carter [COMSAT History Project], July 15, 1985, 14–19, COMSAT Collection, Johns Hopkins University Special Collections, Baltimore,

issue for this discussion is to realize that before the global system could be established, the United States had to convince the 1963 ITU space radio conference to set aside large blocks of the radio spectrum for satellite communications.[66] Although the federal government established COMSAT and put in place measures to guarantee strong oversight, it was a commercial company that sold shares to the public. Setting aside frequencies through international agreements was thus also necessary to create confidence and attract investors potentially worried about the future development of the global system.

To understand how general national security concerns involving not just a symbolic and material struggle over hearts and minds but also military preparedness drove U.S. efforts leading to the 1963 ITU Space Radio Conference, the implications for electronic communications of the crises involving Cuba in 1961 and 1962 also need to be taken into account. Difficulties with communications among agencies of the U.S. government contributed to the failure of the Bay of Pigs Invasion in 1961. And during the Cuban Missile Crisis in October 1962, President Kennedy was unable to communicate "in a timely fashion" with a number of foreign leaders, including the heads of Latin American countries and of the Soviet Union.[67] The Cuban problems focused the attention of the U.S. government on the need for "a reliable, secure, flexible link for Presidential and command control communications to remote areas of the world and to meet

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Maryland. For an excellent overview of the series of meetings leading to the final signing ceremony on August 20, 1964 for the "Interim Arrangements for a Global Commercial Communications Satellite System," see testimony of William Carter in House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part 2): Hearings*, 88th Cong., 2nd Sess., August 6, 1964, 660–87. Some relevant archival documents about organizational negotiations for the global system have also been published in U.S. State Department, *Foreign Relations of the United States*. See especially Johnson Administration, 1964–68, vol. 34, Energy, Diplomacy, and Global Issues.

66. A detailed history of COMSAT and INTELSAT using especially declassified records has not yet been written. This article is part of a larger study analyzing the establishment and organization of the global satellite communication system by the author. For the best sources, see Schwoch, *Global TV*, 139–55, Slotten, "Satellite Communications, Globalization, and the Cold War," 315–50; David Whalen, *The Origins of Satellite Communications, 1945-1965* (Washington, DC, 2002); David Whalen, "Billion Dollar Technology: A Short Historical Overview of the Origins of Communications Satellite Technology, 1945-1965," in *Beyond the Ionosphere: Fifty Years of Satellite Communication*, ed. Andrew J. Butrica (Washington, DC, 1997). For other general sources by nonhistorians, see Jonathan F. Galloway, *The Politics and Technology of Satellite Communications* (Lexington, MA, 1972); Michael E. Kinsley, *Outer Space and Inner Sanctums: Government, Business, and Satellite Communication* (New York, 1976); Delbert D. Smith, *Communication via Satellite: A Vision of Retrospect* (Boston, 1976); Roger A. Kvam, "COMSAT: The Inevitable Anomaly," in *Knowledge and Power: Essays on Science and Government*, ed. Sanford A. Lakoff (New York, 1966), 271–92.

67. Memorandum for the President, March 11, 1964, subject "Appointment of a Special Assistant to the President for Telecommunications," folder "ND 3 Communications-Electronics," box 4, National Security-Defense ND 3, Lyndon Johnson Library.

crisis emergencies."[68] A National Communications System Working Group established in late August 1962 by National Security Advisor McGeorge Bundy and Secretary of Defense Robert McNamara led to the organization of a Subcommittee on Communications by the National Security Council.[69] Named the Orrick Committee after the chair William H. Orrick, Jr., the Deputy Under Secretary of State for Administration, it recommended in May 1963 that the president integrate separate government communication systems into a single entity. The president responded by establishing the National Communications System (NCS) in August.[70] The NCS not only facilitated worldwide U.S. military communications, but also provided "24-hour, seven-days-a-week communications response capability" at key diplomatic posts, particularly in Latin America.[71]

Government officials involved in organizing the NCS viewed communication satellites as a new technology that would supplement or provide redundancy to existing networks, mainly international radio and undersea cables. Satellite communications was especially important because of its potential ability to operate, unlike international radio networks, even in the event of a nuclear attack on ground installations. The organizers of the NCS hoped that they would be able to lease channels from the planned INTELSAT system.[72]

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68. "Department of Defense/Communications Satellite Corporation Agreement," June 29, 1964, folder "Defense-COMSAT Corp. Negotiations," box 8, Directors COMSAT Records 1962-66," Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

69. Schwoch, *Global TV*, 124.

70. House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, 88th Cong., 2nd Sess., March 19 and April 15, 1964, 63, 353. The Orrick Committee was officially the Subcommittee on Communications of the Executive Committee of the National Security Council. On the establishment of the Orrick Committee, also see McGeorge Bundy to Vice President, et al., October 26, 1962, Subject: "Establishment of Subcommittee on Communications," S/S-NSC Files, Lot 72 D 316, NSAM 201, General Records of the Department of State, Record Group 59. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, Communication Satellites, # 438.

71. "Memorandum from the Chairman of the Subcommittee on Communications of the National Security Council (Orrick) to the Executive Committee of the National Security Council," May 21, 1963, NSAM No. 201, Meetings and Memoranda Series, National Security Files, box 339, John F. Kennedy Library. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, Communication Satellites, # 442.

72. A special subcommittee of the Orrick Committee was established on January 28, 1963 to evaluate the role of satellite communications in the proposed National Communications System. W. Michael Blumenthal, was appointed chairman. See Memorandum from Orrick to Department of State Principals, January 28, 1963, IO Files, Lot 67 D 378, ITU, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, Communication Satellites, Editorial Note, #433. Other important material on the Orrick Committee is located in box 441, National Security Files, John F. Kennedy Library. On the advantages of satellite communications in the event of a nuclear attack,

As the major users of government communication networks, the Department of Defense and the military agencies played a central role in the organization of all aspects of the NCS, including the possible use of communication satellites.[73] Well before the establishment of the system, the military had become deeply interested in communication satellites. The Defense Department was committed not only to developing separate military systems for classified communications, but also in influencing the character of the planned commercial system. The military's interest in satellite communications thus became an important factor driving U.S. planning for the 1963 Space Radio Conference. The importance of the military for space radio frequency planning in general should not be surprising given that "substantially more than half of the 90 payloads successfully put into earth orbit in 1962 were military satellites" and that "at least two-thirds" of the launchings during that year were classified as "secret."[74]

The military was especially interested in communication satellites for their ability to facilitate access to remote areas of the world through the use of mobile earth stations. Because of the central role of the Department of Defense in the organization of the NCS, the use of "mobile stations which could be quickly transported to any part of the world, set up and be in operation with high quality communications in a very short period of time" became one of the system's key requirements.[75] The Department of Defense emphasized that it would "apply the

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see testimony of Lt. Gen. Alfred D. Starbird in House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, March 19, 1964, 77. This was the only time that the National Security Council dealt with satellite communications. During this period, the National Security Council did not deal with outer space policy. President Kennedy delegated space policy to the National Aeronautics and Space Council. See Memorandum from the Counselor of the Department of State and Chairman of the Policy Planning Council (McGhee) to the President's Special Assistant for National Security Affairs (Bundy), March 28, 1961, Policy Planning, 2/11/61-5/61, Subject Series, National Security Files, John F. Kennedy Library. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, Organization and Administration of Foreign Policy, White House and Interdepartmental Coordination, #10.

73. House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, April 15, 1964, 354.

74. For "90 payloads" quotation, see E. C. Welsh, Memorandum to the Vice President, Subject: "Military vs Non-Military Space Activities," January 19, 1963, folder "DEFENSE-1963," box 17, NASC General Correspondence, 1961-69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland. For "two-thirds" quotation, see "National Aeronautics and Space Council Meeting—September 28, 1962," box 3, NASC General Correspondence, 1961–69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland.

75. Testimony of Joseph V. Charyk in House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, March 24, 1964, 109.

same policy to satellite communications as to other long-line communications," that is, it expected military departments to "use U.S. commercial facilities and provide exclusive military facilities only when required to meet those military needs that cannot be satisfied by commercial facilities."[76] But the Department of Defense was not simply interested in passively using commercial communication systems, it also sought to actively influence their technical development to make sure they would be militarily useful. In September 1961, the department announced that it wanted the proposed commercial global communication satellite system (the system that became known as INTELSAT) to "be capable of providing sufficient flexibility to provide for the wide support of military force deployment including certain forces under mobile conditions," especially in "those portions of the world having non-existent or primitive communications."[77] This was justified, according to Harold Brown, the Director of Defense Research and Engineering in the Office of the Secretary of Defense, because of the critical demands of the Cold War. "[O]ur domestic and international telecommunication systems are critical factors both in our military posture and in the Cold War struggle," he argued, "and, indeed, throughout the whole spectrum of conflict. We cannot today consider our communication systems solely as civil activities merely to be regulated as such, but we must consider them as essential instruments of national policy in our struggle for survival."[78]

The Department of Defense was also interested in building separate military systems for classified communications that could not go over commercial facilities. Military officials liked the prospect of geosynchronous satellites rather than lower-orbiting medium-altitude satellites because they seemed to fit better with the military goal of providing communications to remote regions.[79] Beginning in 1960, military agencies (mainly the Army and the Air Force) spent over 160 million dollars on a sophisticated geosynchronous system called ADVENT before the Department of Defense cancelled the project two years later when it became clear that the complex technology was not yet available and that Congress was

76. Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 24, 1961, 183.

77. "Industry-Department of Defense Cooperation in Satellite-Based Telecommunications," September 7, 1961, unmarked first folder, box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

78. Brown testimony in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 24, 1961, 184.

79. John H. Rubel (Assistant Secretary of Defense Deputy Director, Defense Research and Engineering), "Gray Paper on the Subject of Advent Communication Satellite System," April 3, 1962, folder "Communications Satellites," box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

not willing to accept further "severe financial overruns."[80] Late in 1962, the department reoriented the program by pursing both geosynchronous and complex nonsynchronous (medium-altitude) designs in the long term but focusing in the short term on the establishment of a simpler and more realistic medium-altitude communication satellite system.[81] But these new plans remained open during the period leading up to the November 1963 ITU Space Radio Conference. Another complication was that as early as May 1963, the Department of Defense and other government agencies considered the possibility of working with COMSAT in designing the planned global communications satellite system (either geosynchronous or medium altitude), which the U.S. military agencies and the planned international satellite consortium could jointly use.[82]

The fact that the Department of Defense and the Communication Satellite Corporation were pursuing different systems simultaneously during 1962 and 1963 and that neither institution had finalized plans for primary working systems had important implications for U.S. radio spectrum planning before the 1963 ITU conference. To cover all contingencies, the United States proposed very large blocks of frequencies. The planned commercial system being organized by COMSAT was especially useful in providing cover for military frequency needs. The ITU did not distinguish between military and nonmilitary users of the spectrum. Thus, the United States did not have to explicitly state that its frequency proposals covered military needs.[83]

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80. Testimony of Eugene G. Fubini in House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, March 18, 1964, 42. For "overruns" quotation, see "Draft from Pentagon Internal Paper" [White paper on the DOD Communications Satellite Program], January 1963, folder "Communications Satellite Program (DOD)," box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

81. "Draft from Pentagon Internal Paper" [White paper on the DOD Communications Satellite Program], January 1963, folder "Communications Satellite Program (DOD)," box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4]. Also see editorial by Victor de Biasi titled "Another Go-Around," *Space/Astronautics*, October 1964, copy in folder "COMSAT–Miscellaneous," box 7, Directors COMSAT Records 1962-66," Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland and Irvin Stewart to Oren Harris, March 15, 1963, unmarked first folder, box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

82. Nicholas deB. Katzenbach, Memorandum for the President, May 6, 1963, folder "UT1: Communications—Telecommunications," box 96, White House Central Files Confidential File, Lyndon Johnson Library. This was part of an effort by McNamara during this period to eliminate "duplicative and wasteful programs." See Dwayne A. Day, "Invitation to Struggle: The History of Civilian-Military Relations in Space" in *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships*, ed. John M. Logsdon (Washington, DC, 1996), 260.

83. Harold Brown to Nicholas de B. Katzenbach, April 23, 1963, folder 3, box 35, MS2137, Joseph Charyk Papers, George Washington University Special Collections, Washington, DC.

PLANNING IN THE UNITED STATES FOR THE 1963 SPACE RADIO CONFERENCE

As the institution responsible for IRAC, the Office of Civil and Defense Mobilization took the lead in 1960 in preparing the official U.S. proposal for the 1963 Space Radio Conference. In August, Fred Alexander, the Deputy Assistant Director for Telecommunications, instructed all government agencies to submit anticipated space communication requirements through the year 1970.[84] This extended period of time was chosen to maximize use and to cover all contingencies. Government officials at the mobilization office discovered that the government needs for space frequencies were "substantial."[85] Especially important were the formal proposals by the military agencies in January 1961, which were based on "comprehensive studies" during the previous year.[86] Altogether, the total requests of government agencies added up to a staggering block of frequencies 25,000 MHz wide. IRAC worked with its FCC representative to consolidate the total requests of government users and then submitted a formal report to the FCC in May 1961. After consulting industry, the FCC worked with the Office of Civil and Defense Mobilization to arrive at a tentative final position. This government agency and the agency that succeeded it in 1962, the Office of Emergency Planning, which also had authority over IRAC, thus played dominant roles in determining the official U.S. position on space frequency needs.[87]

Key individuals at the mobilization agencies involved in preparing for the 1963 Space Radio Conference included Fred Alexander, who became Director of the Telecommunications Office in late 1961; Irvin Stewart, the first Director of Telecommunications Management in the mobilization agency when President Kennedy created the post in February 1962; Ralph L. Clark, an expert appointed to assist Stewart after the Cuban Missile Crisis; and the longtime Executive Secretary of IRAC, Paul D. Miles.[88] Clark's background underscores the

84. Memorandum, Fred C. Alexander to all federal agencies, August 1, 1960, reprinted in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, 136–37.

85. Letter from Fred Alexander to Paul D. Miles, Executive Secretary of the IRAC, November 10, 1960, reprinted in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, 139.

86. Curts testimony in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 24, 1961, 185.

87. Alexander testimony in Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 23, 1961, pp. 153, 155.

88. The President established the position of Director of Telecommunications Management with Executive Order 10995. The Director of Telecommunications Management also served as one of the Assistant Directors of the Office of Emergency Planning. See National Security Action Memorandum No. 252/1/, n.d., S/S-NSC Files, Lot 72 D 316, General Records of the Department of State, RG 59, National Archives and Records Administration. Reprinted in U.S. Department of State, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, volume 25,

importance of national security considerations in the development of radio allocation policy in the United States. After earning a Bachelor of Science degree in electrical engineering at Michigan State University, Clark worked for twelve years as an engineer with the radio and communication regulatory commissions in the Department of Commerce. During World War II, he conducted communications-related research for the Navy, first as a lieutenant and later as a commander. He continued to work with defense interests after the war as a civilian. From 1946 to 1949, he served as the Director of the Programs Division of the Research and Development Board in Washington, responsible for collecting information about research and development being conducted by the military agencies. He then spent six years at the Central Intelligence Agency as the Deputy Assistant Director for Scientific Intelligence; one year as the staff director for the President's Committee on Telecommunications Policy and Organization; two years as the Special Assistant to the Deputy Director of the CIA; three years as the manager of the Washington office of the Stanford Research Institute, responsible for coordinating research programs conducted by the Institute for government agencies; and four years as the Assistant Director of Defense Research and Engineering for the Communications and Data Processing Division in the Department of Defense, which included work with the defense communication satellite programs.[89] In April 1961, Robert Nunn, Jr., Special Assistant to the NASA Administrator, described Clark and one of his colleagues, John Rubel, as the two "most knowledgeable people in the Pentagon" with respect to communication satellites.[90] Clark's appointment to the mobilization agency thus reflected the need for someone with a strong national security and intelligence background to help the federal government respond especially to the crisis in electronic communications identified with the Cuban Missile Crisis and to help coordinate military and civilian planning for satellite communications.

Although officials connected with the mobilization agencies played a dominant role in preparations for the 1963 Space Radio Conference, key officials at the State Department were also important. Especially significant were staff in the Bureau of Economic Affairs during the early 1960s, including G. Griffith Johnson, the Assistant Secretary; W. Michael Blumenthal, the Deputy Assistant Secretary; Francis Colt de Wolf, Chief of the Telecommunications Division; Arthur L. Lebel, who succeeded de Wolf as division chief in 1962; and William Carter, Special Assistant for International Space Communications, who had a special

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Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, Communication Satellites, #444.

89. House Subcommittee of the Committee on Government Operations, *Satellite Communications—1964 (Part I): Hearings*, April 9, 1964, 291–92.

90. Robert G. Nunn, Jr. to Edward Welsh, April 11, 1961, box 22, folder "National Aeronautics and Space Administration," NASC General Correspondence, 1961–69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland.

interest in overseeing the organization of the global satellite communication system. State Department staff in the Bureau of International Organization Affairs also helped prepare for the 1963 Space Radio Conference. The key individuals in this bureau involved with spectrum policy during the early 1960s were the two leaders, Assistant Secretary Harland Cleveland and Deputy Assistant Secretary Richard W. Gardner. Finally, coordination between the State Department and the agencies involved with national security was the responsibility of U. Alexis Johnson, Deputy Under Secretary of State for Political Affairs. He played an important role preparing for the 1963 Space Radio Conference by also taking into account the needs of the Department of Defense and the intelligence agencies.

In May 1961, The Office of Civil and Defense Mobilization submitted preliminary recommendations for the 1963 Space Radio Conference to the State Department, which then sent them in the fall to select U.S. embassies for overseas consultation.[91] These views were incorporated into a new proposal completed one year later; further consultations were subsequently conducted with other countries, especially in Europe. As envisioned by the United States, the satellite communication service would require "considerably more spectrum space than all of the other space services."[92] Because it was the biggest request (equivalent to a band of frequencies 2975 MHz wide), it was also the most controversial. In response to resistance from countries interested in taking advantage of the same frequencies for other uses, the United States first extended the period of time in which all anticipated needs would be taken into account from 1970 to 1975 and then after further consultations, decided to extend the time period to 1980 and increase the frequency proposal for satellite communications to 3000 MHz. In January 1963, the United States emphasized that the estimate of 3000 MHz was "based on the total world traffic requirements up to at least 1980 regardless of the number of systems which may develop ultimately." The proposal would also cover all potential users of satellite communications, including "government, commercial, and private users."[93] And it would take into account satellites using "wide-band and narrow-band channels; in polar, inclined, and equatorial orbits." Wide-band

91. Senate Committee on Aeronautical and Space Sciences, Staff Report, *Communication Satellites: Technical, Economic, and International Developments*, report prepared by Donald R. MacQuivey, 87th Cong., 2nd Sess., 1962, Committee Print (CIS-NO: S0525), 84; "Preliminary Views of the United States of America: Frequency Allocations for Space Radiocommunications," May 17, 1961, box 821, docket 13522, docket files, Records of the Federal Communications Commission, Record Group 173, National Archives and Records Administration, College Park, Maryland.

92. "Draft Proposals of the United States of America for the Extraordinary Administrative Radio Conference for Space RadioCommunication (Geneva, 1963)," October 5, 1962, 9, folder 399.40-GE/8-962, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

93. G. Griffith Johnson to Edward A. Bolster, January 4, 1963, folder 399.40-GE/11-2062, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

channels would embrace "telephone, telegraph, television relay, facsimile, and data transmission services," including the global distribution of meteorological data. By emphasizing that they were looking out for the world's needs through the next two decades, U.S. government officials believed they would be able to "overcome any uncertainty" that 3000 MHz was "desirable."[94] By setting aside generous blocks of frequencies for satellite communications, they hoped to avoid past problems when allocations for new radio services had "rarely been adequate."[95]

State Department officers and officials with the mobilization agency recognized that to influence the 1963 Space Radio Conference they first needed to gain influence over Study Group IV of the International Radio Consultative Committee (known by its French acronym, CCIR). The CCIR was established in 1932 to give the ITU technical advice. The United States took the lead in establishing Study Group IV in 1959. Study Group IV had a specific mandate to investigate the frequency needs of space communication systems and to develop technical recommendations for the 1963 conference. The ITU encouraged the CCIR study groups to hold meetings away from the headquarters in Geneva, Switzerland "to give engineers and experts the opportunity to observe at first hand the technical advances and developments in other countries." State Department officials took advantage of this policy when they invited Study Group IV to meet in Washington, DC during the spring of 1962. Normally, study groups met in the home countries of the chairman or vice-chairman. The chairman of Study Group IV was from Italy and the vice-chairman from Switzerland. Charles Bohlen in the State Department's Bureau of International Organization Affairs argued that if the group met in either of these countries "there would be very little to see regarding developments in space communications." He emphasized that, by contrast, "the United States is the leading country in the development of technical radio facilities and has made more advances in the communication phases of space studies than any other country." To convince other U.S. government officials to agree to sponsor and fund the meeting, Bohlen reminded them that the country would "gain

94. "Summary Outline of U.S. Frequency Allocation Proposals and Limitations for Space Users," October 1, 1962, folder "COMSATS–Miscellaneous," box 7, Directors COMSAT Records 1962-66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

95. G. Griffith Johnson to Edward A. Bolster, January 4, 1963, folder 399.40-GE/11-2062, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Frequencies for space technology included in early U.S. proposals included the following: 136–174 MHz and 406–470 MHz for earth-to-space satellite command purposes; 1435–1660 MHz for telemetry and command purposes; 1660–1700 MHz for meteorological satellites; 1700–2300 MHz for deep space research and command; 3.7–4.2 GHz and 5.925–8.4 for communication satellites; 8.4–8.5 GHz for space research; 9.8–10.0 GHz for radiolocation; 15.15–15.25 GHz and 31.5–31.8 GHz for space research; and 33.4–36.0 GHz for radiolocation. See "Preliminary Views of the United States of America: Frequency Allocations for Space Radiocommunication," May 17, 1961.

considerable prestige if Study Group IV could hold its first meeting in this country."[96]

All parties agreed to meet in Washington, DC. The chairman of Study Group IV, Ivo Ransi of the Institute of the Ministry of Communications of Italy, visited Washington prior to the meeting to gain further information about U.S. activities and to begin planning separate committees to study specific problems.[97] The State Department made many of the arrangements for the meeting. To develop an "appropriate program of technical field trips, lectures, and social entertainment for the visiting foreign delegates," the department established an "ad hoc government-industry committee" under the leadership of Andrew Haley, the general counsel for the American Rocket Society. Industry involvement was essential, according to the State Department, in order to demonstrate to the world "the effectiveness of the United States free enterprise system."[98] Participation by industry would also help pay conference expenses. The department requested all participating companies to pay for "the official and non-official activities for which government funds were not available."[99]

Over 200 individuals from 28 countries participated in the Washington meeting of Study Group IV during March 1962. These included representatives of thirteen private companies, seven international organizations, six scientific and industrial groups, two other specialized agencies of the UN, and three separate groups within the ITU. The United States had the largest national delegation—over forty individuals. The United Kingdom sent fourteen representatives; the Soviet Union, ten; and France, eight. Of U.S. companies, GTE sent three representatives, AT&T sent five, and RCA sent two.[100]

The official report by the U.S. delegation judged the Washington meeting a success mainly because the other delegates tacitly accepted the U.S. report on "feasibility of sharing between communications satellite relays and terrestrial microwave relays." If the ITU rejected the proposal for sharing, then the 1963 Space Radio Conference would need to find a way to massively reorganize the

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96. Memo, Charles E. Bohlen to Mr. Hare, November 22, 1960, folder "399.40/10-360," box 841, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

97. Report by John P. Hagen (chairman of U.S. delegation), Meeting of CCIR Study Group IV-Space Systems, May 23, 1962, folder 399.40/5-362, box 841, Central Decimal File 1960-63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

98. Draft of letter by Edwin M. Martin to industry, September 15, 1962, folder 399.20-ITU/9-161, box 838, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

99. Summary record, "Washington Arrangements Committee for CCIR Study Groups IV and VIII," September 19, 1961, folder 399.20-ITU/9-161, box 838, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

100. Report by John Hagen, meeting of CCIR Study Group IV, May 23, 1962, folder 399.40/5-362, box 841, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

allocation of a large section of the radio spectrum. The Americans decided it would be very difficult—if not impossible—to get member countries to agree to a new arrangement of this magnitude. As long as the radio conference agreed to the recommendation for sharing, then experts could try to develop specific regulations to limit interference, such as stipulating the geographical separation between satellite earth stations and other radio transmitters on the ground. The United States also succeeded in convincing many of the foreign delegates at the Washington meeting of the CCIR Study Group, "not so advanced in space communications technology," how space exploration would "be of assistance to them."[101]

A contributing factor in the CCIR's support of the official position of the U.S. government was a change that occurred in the role of U.S. delegates following the 1959 ITU meeting. Traditionally, the U.S. government gave its CCIR delegates the freedom to pursue technical studies independent of government influence. They were expected to pursue "frontier studies" that government officials would adapt as necessary to the national policy goals of the United States.[102] But starting in 1960, during the period of increased tensions with the Soviet Union following the downing of Gary Power's U-2, U.S. government officials involved in frequency planning "made arrangements for the regular participation of the Executive Secretary of the IRAC in the meetings of the Executive Committee responsible for U.S. participation in CCIR activities."[103] Reflecting the global Cold War concerns of the early Kennedy Administration, government pressure intensified on American CCIR participants during 1961. In January, Francis Colt de Wolf, chief of the Telecommunications Division at the State Department, agreed to a request from Fred Alexander, the Deputy Director for Telecommunications in the mobilization agency, to have "United States nationals participating in various international telecommunications meetings . . . speak with the same voice in seeking [a] common objective."[104] The State Department agreed in February to first consult with IRAC about U.S. CCIR Study Group reports "before such reports are approved by the CCIR Executive Committee as a contribution to the U.S."[105] Thus, because IRAC largely served the Cold War interests of the United States, American delegates to the CCIR also increasingly became tied to the national security state.

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101. Ibid.

102. Senate Committee on Aeronautical and Space Sciences, Staff Report, *Communication Satellites: Technical, Economic, and International Developments*, 126.

103. Ibid., 150.

104. Francis Colt de Wolf to Fred C. Alexander, January 19, 1961, folder 399.40/8-361, box 841, Central Decimal File 1960-63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

105. Paul D. Miles to Francis Colt de Wolf, February 13, 1961, folder 399.40/8-361, box 841, Central Decimal File 1960-63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

GLOBAL CAMPAIGN FOR SPACE FREQUENCIES

To show Third World countries that they could benefit from the space race, U.S. officials sought ways to promote technical assistance programs linking ITU member nations to the planned global satellite communications system. Starting in 1961, the United States encouraged the adoption and implementation of a resolution instructing the UN "in consultation with the ITU . . . to give sympathetic consideration to requests from member states" for assistance in surveying "their communication needs . . . so that they may make effective use of space communication."[106] Even before the establishment of COMSAT, the United States had recognized the importance of communications for Cold War foreign policy. Following the Gagarin flight in May 1961, the government committee organized by the State Department to make recommendations on issues involving international telecommunications, the Telecommunications Coordinating Committee (TCC), recommended that the federal government should initiate "a program of technical assistance directed to the special needs of the less developed countries of the world for more adequate communication facilities." "The extent to which these nations will gravitate toward the influence of the free world," according to the committee, "will be determined largely in terms of their ability to utilize the new technologies of communication so essential to their social, economic, and general well being." This aid might come in different forms, from "education in modern telecommunication theory and practice" to "financial aid for the construction of facilities."[107]

This view of the importance of foreign aid to the Cold War especially reflected the dominant influence of Walt Rostow on U.S. foreign policy during the early 1960s. Rostow, who served first as the White House national security advisor and then as chairman of the State Department's Policy Planning Council, believed the Cold War would mainly be fought in the Third World using development tools and theories. Communications would play an especially important role not only because of the connection to propaganda, but especially because Rostow and other theorists in the Kennedy Administration believed the promotion of modern communications would play an important role in the process of modernization. To support the battle against communism, according to David Halberstam, Rostow wanted to see "television sets in the thatch huts of the world."[108]

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106. Instruction to embassies, Department of State, April 17, 1962, folder 399.40/3-262, box 841, Central Decimal File 1960-63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

107. Memorandum, chairman of TCC Ad Hoc Working Group to principal and alternate members, May 1, 1961, microfilm roll 1, Records of the Federal Communications Commission, John F. Kennedy Library.

108. Walt Whitman Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto* (Cambridge, UK, 1960). David Halberstam, *The Best and the Brightest* (New York, 1992), 123; Michael E. Latham, *Modernization as Ideology: American Social Science and 'Nation Building' in the Kennedy Era* (Chicago, IL, 2000).

The United States not only used the newly formed Agency for International Development (AID) and other federal programs to provide direct aid to Third World countries but also encouraged the ITU and the UN to develop technical assistance programs serving Cold War ends. In some cases, the need to provide technical assistance for communication systems in order for the United States and its allies to compete globally with the Soviet Union was immediate. During 1960, the United States encouraged the ITU to increase its technical assistance to the Congolese civil communications system to prevent the Soviets from gaining influence through their use of similar programs. In August the U.S. embassy in the capitol, Leopoldville, informed Washington of the poor shape of the country's communications and warned of continued deterioration that would provide the Soviet Union, which had already sent experts to the Congo, with an opportunity "to move in" to support civil telecommunications. "If ITU can get funds to furnish necessary technicians soon," the embassy advised, "the likelihood of Soviet infiltration will be greatly reduced, if not eliminated." By the end of the month, the ITU had authorized technical assistance funds for thirty-nine communication experts. Thirty-two were already in the country.[109]

The Washington meeting of CCIR Study Group IV had provided U.S. government officials with an important opportunity to contact twenty-seven countries that belonged to the ITU. After the meeting, they realized they ideally needed to contact nearly all of the approximately 120 members, especially less developed countries such as the Congo, in order to gain support for U.S. space needs at the 1963 Space Radio Conference. C. W. Loeber in the Telecommunications Division of the State Department warned that "unless the allocations adopted at the Radio Conference are supported by essentially all the members of the union there is danger that space communications may be interfered with seriously by many countries which do not accept the allocations adopted by the Conference."[110] During the summer of 1962, government officials began formulating plans to send small teams of experts to member countries of the ITU, not only to nations active in the CCIR but also to "the remaining country members."[111] Reflecting the dominant role of Cold War concerns, the Office of

109. Department of State, Leopoldville (Congo) to Washington, DC, August 23, 1960, folder 399.20-ITU/9-160, box 817, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Soviet involvement in UN assistance programs did increase during the 1950s, but even in the early 1960s it was still limited. See Weston, "The United Nations in the World Outlook of the Soviet Union and the United States," 15.

110. C. W. Loeber to William G. Carter, August 15, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

111. John Hagen to Irvin Stewart, July 18, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

Emergency Planning initially played a more important role than the State Department in formulating these early plans.[112]

Officials believed this "missionary" work was particularly important for the case of Third World countries because many had shown "indifference" to the needs of space communications. The teams of experts would explain the importance of the conference, convince each nation to participate, explain to small countries how to participate, and—most important—"sell" the U.S. proposals. Irvin Stewart, director of Telecommunications Management in the Office of Emergency Planning, recommended having teams of two or three experts (approximately thirty-five individuals altogether) visit seventy-four different countries.[113]

The United States did send teams of experts from various government agencies to the major countries in Latin America. American communication companies traditionally had played an important role developing communication systems in Latin America. Even before the Cuban Missile Crisis and the establishment of the National Communication System, U.S. officials were particularly concerned about enhancing the quality of communication networks in the Americas for both economic and national security reasons. The U.S. government also sent teams of experts to major countries in Asia, but Africa was different. In general, the State Department decided to concentrate attention "in those areas where the greatest good is likely to be produced." Special U.S. teams were not sent to most African countries partly because, according G. Griffith Johnson, Assistant Secretary of State for Economic Affairs, "relatively few" had "experts who could understand the technical and scientific aspects of frequency allocations for space activities." But Johnson did believe in impressing African countries "with the great importance to them of space communications and with the need for representation from their governments at the 1963 EARC." He also decided to defer to the governments of the United Kingdom, France, and Belgium, because "these former metropoles" were "still quite influential in matters of telecommunications in the African territories which were formerly their colonies." From past experience with telecommunication negotiations, the State Department had learned that "more resentment . . . than support for the United States could be expected from visits of United States teams" to British Commonwealth countries and Francophone countries in Africa. This was another reason why the United States focused more efforts on Latin America than Africa. Two important exceptions in Africa were Liberia

112. Irvin Stewart to G. Griffith Johnson, August 13, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

113. For quotations and discussion of Stewart's recommendations, see C. W. Loeber to William G. Carter, August 15, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Also see Irvin Stewart to G. Griffith Johnson, August 13, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

and South Africa. Because Liberia was established by ex-slaves from the United States, the relationship between the two countries was close. The United States did not need to send teams to South Africa because as early as August 1962, the country had already informed the United States that it did not have any objections to the preliminary U.S. proposals for space frequencies.[114]

Teams of U.S. experts were especially active overseas beginning in the summer and fall of 1962. In November, the month following the Cuban Missile Crisis, experts from different government agencies attended a conference in Bogota, Columbia discussing the development of a Latin American telecommunications network. During another meeting in Bogota four months later, U.S. representatives set up demonstrations and exhibitions using photographs, slides, and models of satellite components to educate delegates attending the conference about the planned global satellite communication system.[115] Because these Latin American countries also largely did not have experts "with the necessary technical background to make discussions with the United States teams very promising," the United States relied especially on spectacular demonstrations to emphasize the benefits of space communications. During this same period, experts from the United States met with telecommunication officials in some of the smaller European countries, including Spain, Switzerland, Sweden, Norway, and Denmark.[116] In both Europe and Latin America, officials reported that "the governments contacted intend to be represented at the EARC [Space Radio Conference] and that they were sympathetic to the United States proposals."[117] The State Department also instructed its embassies around the world, including missions located in Asian and African countries, to inform appropriate foreign government officials about the frequency proposals the United States planned to submit at the conference and to keep the department informed about their responses.[118]

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114. G. Griffith Johnson to Irvin Stewart, August 24, 1962, folder 399.20-ITU/7-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

115. Department of State to Bogota embassy, April 26, 1963, folder "TEL 10 Telegraph 2/1/263," box 3656, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland; Fred C. Alexander to G. Griffith Johnson, August 2, 1963, folder "TEL 8, Radio, 2/1/63," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

116. C. R. Kirkevold to Fred C. Alexander, February 28, 1963, folder 399.20-ITU/5-162, box 839, Central Decimal File, 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

117. Department of State to European embassies, January 15, 1963, folder 399.20-ITU/11-162, box 838, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

118. For State Department instructions to embassies, see "Participation in the ITU Space Radio Communication Conference," September 3, 1963, folder "TEL-6-1, Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland; "Composition of United States Delegation to the Space

The United States conducted more formal planning with its major NATO allies in preparation for the radio conference in a series of meetings beginning in the summer of 1962. A delegation en route to a NATO meeting in Rome stopped off in London in June to consult with United Kingdom civil and military representatives to "reconcile, insofar as possible, conflicting views in the subject . . . in order to avoid unnecessary USA/UK disagreements on the floor of the conference."[119] In November, State Department officials invited communication officials from Canada, the United Kingdom, France, Italy, and Germany to a "six nation" meeting in Washington to discuss frequency allocations for space communications.[120] Two other important meetings were held in Europe during March 1963: a meeting in Paris of the European Radio Frequency Agency and a "seven country" conference in London.[121]

According to U.S. plans, the global communication satellite service would require "considerably more spectrum space than all of the other space services"; however, these other general uses of communications for space needs, including military uses, had to be taken into account in negotiations with other countries, especially the Soviet Union.[122] The only information the Americans had about Soviet views derived from discussions at the Washington meeting of the CCIR

Radio Conference," September 9, 1963, folder "TEL-6-1, Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. For examples of embassies informing the State Department about the responses of foreign governments to their inquiries, see incoming telegrams in boxes 3654 and 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. For State Department instructions to embassies, see "Participation in the ITU Space Radio Communication Conference," September 3, 1963, folder "TEL-6-1, Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland; "Composition of United States Delegation to the Space Radio Conference," September 9, 1963, folder "TEL-6-1, Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

119. William H. Watkins to Dean Rusk, August 9, 1962, folder 399.40-GE/8-962, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

120. William G. Carter to Max Isenbergh, January 8, 1963, folder 399.40-GE/11-2062, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

121. C. R. Kirkevold to Fred C. Alexander, February 28, 1963, folder 399.20-ITU/5-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. On seven country conference, see memo, "Proposed United States Delegations to the . . . Meeting of Experts . . . ," February 26, 1963, folder "TEL 6-1, Space Communication Frequencies, 2/1/63, Frequencies," box 3654, Central Foreign Policy File, 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

122. "Proposals for the United States of America for the Extraordinary Administrative Radio Conference for Space Radiocommunication and Radio Astronomy," folder 399.20-ITU/5-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

study group in March 1962. The State Department rejected Soviet proposals for space frequency allocations presented at this conference "because of their inadequacy and their conflicts with important military frequency needs." While the United States had requested the equivalent of a block of frequencies 3000 MHz wide, the Soviet Union had proposed only 900 MHz. Officials suspected that the Soviets had made this proposal "in full knowledge of these conflicts." Griffith Johnson cautioned State Department representative Edward A. Bolster against giving any indication about which frequencies the military required. If the Soviets asked "whether the United States expects to utilize a global satellite communication system for the movement of its military traffic," he instructed Bolster to "indicate that the United States regards its military traffic as a form of government traffic. As such, it will be passed over all available communication modes, including cables, radio, and satellite relay systems."[123] During the discussions with the Soviet Union prior to the Space Radio Conference, the Soviets continued to make the same requests for space frequency allocations that they had made during the Washington meeting of CCIR Study Group IV.[124]

As we have seen, in general the Soviets had less need for space radio frequencies compared to the United States. But it is important to realize more specifically that the Soviet Union was less interested in global satellite communications because the country only had about 5 percent of global communications traffic.[125] Although the Soviets could have used communication satellites to serve remote areas of the vast country, the government was already committed to completing an extensive terrestrial microwave relay system that would provide television coverage and other forms of electronic communications to most of the country.[126] The Soviet Union did build a limited communications satellite system called Intersputnik

123. G. Griffith Johnson to Edward A. Bolster, January 4, 1963, folder 399.40/ITU/11-2062, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. For frequency comparison, see Department of State to Austrian embassy, March 18, 1963, folder "TEL 8, Radio, 7/1/63," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

124. Department of State to Austrian embassy, March 18, 1963, folder "TEL 8, Radio, 7/1/63," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Relevant details involving the Soviet space program remain classified in closed archives. See Asif A. Siddiqi, *Sputnik and the Soviet Space Challenge* (Gainesville, FL, 2000), 517.

125. "Telegram from the Embassy in Austria to the Department of State," August 16, 1968, SP 6 UN, Central Files, 1967–69, General Records of the Department of State, Record Group 59, National Archives and Records Administration. Reprinted in U.S. State Department, *Foreign Relations of the United States*, 1964–68, Lyndon B. Johnson, vol. 34, Energy, Diplomacy, and Global Issues, Communication Satellites, #104.

126. Burton I. Edelson, Memorandum for the Record, Subject: Soviet Communications Satellite Effort, November 19, 1962, folder "COMSAT International Agreement," box 8, Directors COMSAT Records 1962-66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

during the 1970s, but because it mainly served countries in the Soviet bloc, its global impact was limited.

NEGOTIATING TECHNICAL BOUNDARIES

Especially when U.S. representatives negotiated with the Soviet Union over space frequency allocations, they tended to emphasize that the ITU and its subsidiary organizations primarily dealt with technical or scientific issues divorced from social, economic, or political factors. When the Soviets raised a controversial issue, U.S. negotiators complained that they were injecting "a political question into our technical proceedings."[127] This form of boundary work proved to be a useful strategy for managing conference proceedings. When a proposal was circulated one month before the Space Radio Conference dictating that any country launching a communications satellite had to make such facilities available to other countries "on an equitable basis," Richard Gardner, Deputy Assistant Secretary of State for International Organization Affairs, complained that "the injection of these major political and institutional questions could not fail to provoke serious controversy and prejudice the successful conclusion of the technical business of the conference." He claimed issues such as these were inappropriate because the members had reached an agreement that the ITU would confine the conference proceedings "solely to technical questions relating to frequency allocation."[128] One U.S. official encouraged representatives attending CCIR and ITU meetings to provide "thoroughly engineered reasons" for requesting space frequencies.[129]

This strategy of trying to limit evaluations of frequency allocations to technical issues helped the United States contain the involvement of communist countries in the activities of the ITU. The State Department instructed the U.S. representative to the Washington meeting of CCIR Study Group IV to oppose "any attempt to seat a delegation from Communist China in any capacity and/or to invite representatives from Outer Mongolia, North Korea, North Vietnam or East Germany to attend the meeting." He was to oppose their participation "on the grounds that

127. Untitled document, n.d., folder 399.20-ITU/5-162, box 839, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

128. Richard N. Gardner to assistant secretary of the Department of State, September 19, 1963, folder "Telecommunications: TEL 3, Organizations and Conferences, 9/1/63, ITU," box 3652, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. On boundary work, see especially Hugh R. Slotten, *Radio and Television Regulation: Broadcast Technology in the United States, 1920-1960* (Baltimore, MD, 2000).

129. Lyle Moore to Pierre Salinger, January 16, 1962, folder 399.40-GE/8-962, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

it is completely out of order for a technical group such as this to involve itself with such questions."[130]

But communist countries also used this strategy of technical legitimation to avoid political controversy. Soviet and Cuban delegates to a meeting in Columbia of an ITU organization involved in planning improvements for telecommunications in Latin America argued that their mission was purely a "technical one." The U.S. embassy in Bogota reported to Washington that "the Soviets shied away from making predictions or discussing political subjects. . . . They were technicians and would not say whether or not they were Communist Party members."[131]

Despite the attempt by participants in ITU meetings to limit proceedings to technical issues, both sides recognized privately that the technical problem of determining frequency allocations inevitably involved political considerations. The Assistant Secretary of State for International Organization Affairs, Harland Cleveland, acknowledged that ITU staff members should have the highest scientific or professional credentials but he also emphasized the "desirability of assuring that more United States nationals are employed by international organizations."[132] As we have seen, during the early 1960s, U.S. officials did not expect technical experts to set aside national interests when evaluating frequency allocations. In July 1963, an AT&T employee wrote a State Department official involved in organizing the U.S. delegation to a future meeting of the CCIR that "we strongly support your desire to establish a delegation which will be able to protect and advance United States interests in this important field."[133]

The United States attempted to directly influence the appointment of ITU officials. The State Department recognized especially the importance of a U.S. citizen serving as Secretary General of the organization. The fact that this post was held by an American during the period leading up to the Space Radio Conference undoubtedly strengthened the U.S. position. The congratulatory letter sent by Assistant Secretary of State Francis Wilcox to Gerald Gross after ITU members elected him to head the organization in January 1960 stressed that "it is heartening

130. Richard S. Wheeler to Thomas N. Gautier, April 3, 1961, folder 399.20-ITU/4-161, box 838, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

131. Bogata embassy to Department of State, June 10, 1963, folder "Telecommunications: TEL 3, Organizations and Conferences, 4/1/63," ITU, box 3653, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

132. Harlan Cleveland to J. Herbert Holloman, May 27, 1963, folder "Telecommunications: TEL 3. Organizations and Conferences, 4/1/63, ITU," box 3653, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

133. R. R. Hough to Francis Cunningham, July 3, 1963, folder "TEL 8-1, Radio Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

to know that we have an American at the helm."[134] When it seemed that the leadership role would become vacant during the summer of 1963, the State Department lobbied other countries to support the appointment of another U.S. citizen, John H. Gayer. U.S. officials argued that "if possible the U.S. should continue to hold the post in view of our vital concern in ITU work on communications developments around the world, particularly in space communications."[135]

The tension between wanting to treat the ITU as a technical organization using professional experts to objectively evaluate scientific problems and recognizing that the organization was inextricably bound up with geopolitical considerations was especially clear in the hiring of staff. For example, in May 1963, a Czech engineer, Miroslav Joachim, became the leading contender for the post of Assistant to the Director in the CCIR Secretariat. But the United States believed Joachim had been using his position as Head of the ITU Staff Association, which was in charge of advising top officials about hiring employees, as a means for the "Soviet bloc to infiltrate the ITU staff." A classified report by the U.S. representative of the Administrative Council of the ITU warned that under Joachim's leadership, "the Association had become a force to be reckoned with by the Administrative Council, the Secretary General, and the other elected officials in charge of specific activities of the Union."[136]

Although State Department officials believed Joachim was an "avowed Communist," they admitted that his professional qualifications were "excellent." He was a Ph.D. engineer who had studied at MIT and had "extensive experience as a representative of Czechoslovakia at conferences and as a member of the staff of the ITU." "Refusal to give him the appointment," the Department of State agreed privately, "would be most awkward, unless other equally well qualified applicants appear."[137] The United States thus worked with other Western governments to find another well-qualified candidate who did not have a "demonstrated bias towards Soviet Bloc interests."[138] Having argued that the ITU should decide

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134. Francis O. Wilcox to Gerald C. Gross, January 6, 1960, folder 399.20-ITU/1-160, box 837, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

135. Roger W. Tubby to Dean Rusk, July 22, 1963, folder "Telecommunications: TEL 3, Organizations and Conferences, 4/1/63, ITU," box 3652, Central Foreign Policy File 1963, General Records of the Department of State, National Archives and Records Administration, Record Group 59, College Park, Maryland.

136. "Classified Report of the U.S. Representative on the Administrative Council of the ITU," 18th Sess., Geneva, March 23 to April 26, 1963, 2, folder "Telecommunications: TEL 3, Organizations and Conferences, 4/1/63, ITU," box 3653, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

137. Department of State to foreign embassies, May 24, 1963, folder "TEL 8, Radio, 7/1/63," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

138. Harlan Cleveland to J. Herbert Holloman, May 27, 1963, folder "Telecommunications: TEL 3. Organizations and Conferences, 4/1/63, ITU," box 3653, Central Foreign Policy File

such issues as the allocation of space frequencies solely on technical considerations in order to contain the influence of communist countries in the ITU, the United States could not easily disregard "technical" or "scientific" qualifications when trying to influence the hiring of ITU personnel.

We have seen how the tension over the political nature of ITU decision-making was an important factor in the way the United States dealt with the CCIR. This theme was also apparent when U.S. officials interacted with other groups of scientists and engineers advising the ITU, such as a panel of experts organized to study "ways and means" of relieving congestion in the use of the band of frequencies from 4 to 27.4 MHz. The chief of the Telecommunications Division of the Department of State, Francis Colt de Wolf, recognized that the members of the panel would not "be representing any particular country or administration." They would make judgments based on their "personal capacities" as technical experts.[139] However, officials successfully worked to appoint a U.S. national to the panel, Paul D. Miles of the Office of Civil and Defense Mobilization, with the understanding that he would not only take into account narrow technical considerations but also "the economics of telecommunications systems" and the needs of "military communications."[140]

Whereas both this panel and the CCIR committees had a formal relationship with the ITU, another important advisory body, the International Scientific Radio Union (URSI), was formally independent of either the ITU or any official government body. But in the context of the Cold War, this independence was by no means definitive. Francis Colt de Wolf acknowledged that "as a non-government group," the members were "not . . . required to seek Government approval of the technical views which they express." At the same time, he also emphasized that without government or "intergovernmental" support, the recommendations of URSI and other nongovernment organizations would lack authority internationally. The State Department applied subtle pressure to convince these groups to take into account U.S. interests by stressing how their position would be strengthened "if they could accompany" their views "with an indication that they are not only believed to be technically sound but also are supported administratively by responsible government bodies."[141]

But somewhat inconsistently officials also valued the independent role of these groups. They recognized that in some ways the scientific authority these groups

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1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

139. Francis Colt de Wolf to F. R. Cappel, September 6, 1960, folder 399.40-GE/3-260, box 842, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

140. Frank B. Ellis to Chester Bowles, June 5, 1961, folder 399.40-GE/3-260, box 842, Central Decimal File 1960–63, General Records of the Department of State, National Archives and Records Administration, Record Group 59, College Park, Maryland.

141. Francis Colt de Wolf to Fred C. Alexander, January 19, 1961, folder 399.40-ITU/1-161, box 838, Central Decimal File 1960–63, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

could wield might be just as powerful as the political authority resulting from a governmental connection. This became particularly obvious early in 1963 when officials revised their earlier view that had played down the need for exclusive frequencies for space communications. They now believed that they had to convince other members of the ITU of the importance of setting aside exclusive bands of frequencies for space communications, especially in connection with scientific research but also for satellite communications. One reason for the new view was the realization that the large geographical separations required for sharing with terrestrial fixed and mobile services would be beyond the extent of most countries. But the main reason for the change was the realization following the Cuban Missile Crisis of the importance of mobile satellite earth stations for the U.S. military and the NCS. Exclusive frequencies, as we have seen, were especially important for these planned mobile earth stations. When officials realized the importance of exclusive frequencies, they also recognized that scientists and engineers would necessarily play a crucial role convincing other countries to agree by providing powerful technical justifications.

Nearly one-half of the countries contacted by the United States before the Space Radio Conference insisted "upon some form of sharing with the fixed and mobile services." Several large countries wanted sharing to be "on an equal basis." Irvin Stewart, the Director of Telecommunications Management at the Office of Emergency Planning, convinced the National Academy of Sciences to assist in the effort to convince other countries to adopt exclusive allocations for space communications by emphasizing that it was a technical necessity based on "engineering facts."[142] The State Department asked U.S. scientists to contact "appropriate officials of any scientific research organizations" in other countries and "endeavor to persuade them to try to convince the telecommunication authorities (whose responsibility it is to negotiate for frequency allocations) that exclusive use of frequency bands allocated to space research is essential." Officials stressed a connection between frequency needs for radio astronomy and for general space communications in order to get scientists to lobby for exclusive allocations. They argued on technical grounds that sharing with terrestrial radio sources would not in all cases be possible for either use of space frequencies. In the case of radio astronomy or other uses of radio frequencies for space research, interference would make accurate scientific observations impossible. But interference could also create safety concerns for both manned and unmanned missions and could disrupt a global satellite communications system.[143]

142. Irvin Stewart to John A. Morrison, March 6, 1963, folder "TEL 6-1, Space Communication Frequencies, 2/1/63, Frequencies," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

143. Department of State to foreign embassies, March 10, 1963, folder "TEL 6-1, Space Communication Frequencies, 2/1/63, Frequencies," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

Irrespective of the problems related to obtaining exclusive bands, convincing other countries to agree to closely circumscribed sharing with space communications was a problem in itself. All the study groups of the CCIR met before the Space Radio Conference in a general meeting in Geneva (the Tenth Plenary Assembly) from January 16 to February 15, 1963 to discuss, among other issues, the stringent technical requirements that would need to be implemented in order to prevent terrestrial radio transmitters from interfering with satellite earth stations operating on the same frequencies. They reached agreement on "basic sharing criteria," including such issues as "the limitations on the radiated power from line-of-sight radio relay systems to avoid serious interference to the proposed satellite systems" and "minimum separations . . . between earth stations of the communication satellite service and stations of the line-of-sight relay services." The final conclusions of this conference, according to the official report of the U.S. delegation, "were compatible with the interests of this country."[144]

1963 SPACE RADIO CONFERENCE

Despite the pleasure expressed by U.S. officials in the results of the CCIR and the preliminary "missionary" work before the opening of the Space Radio Conference in Geneva, during the meeting—which lasted from October 7 to November 8, 1963—a number of countries opposed U.S. frequency allocation proposals for space communications, not only the Soviet Union but also other nations. As late as the beginning of the third week of the conference, the chairman of the U.S. delegation—Joseph H. McConnell, the president of Reynolds Metals, who was given the title of U.S. Ambassador when he was appointed to head the delegation—wrote in frustration to the Secretary of State that "although the Conference is half-way through the allotted five weeks, there is no evidence that the USSR, or many of the smaller countries, will accept our frequency proposals."[145] The Soviets, together with some of the less developed countries, initially argued that the meeting "should be provisional pending a future planning conference," but the United States eventually managed to convince the Soviet Union and other countries to compromise.[146] A classified report on the conference by U.S. delegates argued that "in a situation wherein the latent suspicion of the Conference body was directed against the United States, it would have required little impetus to produce

144. "Report of the United States Delegation to the Tenth Plenary Assembly of the ITU International Radio Consultative Committee," March 15, 1963, 20, 28, 37, folder "TEL 6, 3/1/73(sic)," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

145. Joseph H. McConnell to George W. Ball, October 23, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

146. Geneva to Secretary of State, November 6, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

a result adverse to U.S. policy and productive of ruptures that would be far-reaching."[147] The Soviet Union could have undermined U.S. efforts by championing the cause of developing nations who feared "a spectrum grab" at their expense.[148] But, as the classified report related, the Soviet Union "had sufficient to gain from the outcome of the Conference that it refused to avail itself of an obvious opportunity to create a breach between the U.S. and the developing nations, or to render the Conference a nullity."[149]

Although a detailed analysis is necessary to understand Soviet–American relations at the conference, in general terms it is especially important to understand that the conference took place during a period of détente following the Cuban Missile Crisis in October 1962. After taking the two countries to the brink of war, Khrushchev abandoned his policy of brinkmanship to seek better relations with the United States.[150] The spring of 1963 proved to be a "turning point in the Cold War."[151] Facing new evidence of economic difficulties, Krushchev was desperate for a disarmament agreement with the United States to halt the escalating costs of the Cold War.[152] By April he was willing to consider a compromise on the status of Berlin and a less than complete ban on nuclear tests.[153] The two sides agreed on concrete actions after Kennedy gave a highly conciliatory speech on the topic of world peace in June. Separate efforts by the German government to compromise with Khrushchev and the breakdown in relations between China and the Soviet Union helped pave the way for a relaxation of Cold War tensions.[154] The United States and the Soviet Union negotiated a ban on aboveground nuclear tests in July.[155] They also signed an agreement establishing a "hot-line" linking the respective capitals for urgent communications through

147. "Classified Report of the United States Territories Delegation to the EARC," November 20, 1963, 3, folder "Telecommunications, TEL 8-1, Radio Frequencies, 8/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. The United States Territories delegation was separate from the main U.S. delegation but still under McConnell's authority.

148. W. Dean to Capt. Raish, October 25, 1963, folder "TEL 6, 6/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

149. "Classified Report of the United States Territories Delegation to the EARC," November 20, 1963, 3.

150. Taubman, *Khrushchev*, 583; Tal, *American Nuclear Disarmament Dilemma*, 229; Zubok, *A Failed Empire*, 150.

151. Fursenko and Naftali, *Khrushchev's Cold War*, 520.

152. Taubman, *Krushchev*, 585, 607; Fursenko and Naftali, *Khrushchev's Cold War*, 513.

153. Von Bencke, *The Politics of Space*, 71; Fursenko and Naftali, *Khrushchev's Cold War*, 520–21.

154. Gordon S. Barrass, *The Great Cold War: A Journey Through the Hall of Mirrors* (Stanford, CA: Stanford University Press, 2009), 145; Von Bencke, *The Politics of Space*, 71; Fursenko and Naftali, *Khrushchev's Cold War*, 525; Zubok, *A Failed Empire*, 152.

155. Walter LaFeber, *America, Russia, and the Cold War, 1945-2006* (New York, 2008), 237; Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test-Ban Debate, 1945-1963* (Stanford, CA, 2007), 239.

telex and radio links.[156] Even before Kennedy's June speech, NASA and the Soviet Academy of Sciences agreed on a Memorandum of Understanding establishing cooperative space programs, including experiments with communication and meteorological satellites.[157] This tentative agreement was based on a series of talks at the UN between Professor Anatoli Blagonravov of the Soviet Academy and NASA Deputy Administrator Hugh L. Dryden.[158] Krushchev's son recalled that his father had been in an extremely optimistic mood regarding U.S.–USSR relations during the period before the ITU Space Radio Conference, especially during the late summer of 1963.[159]

In addition to McConnell, the main U.S. delegation to the Space Radio Conference included two vice-chairmen, twenty-three technical advisers, and four members of Congress serving as official delegates. The technical advisers overwhelmingly represented different government agencies. Three were from the FCC. Four government organizations each sent two representatives—the Department of State, the Department of Commerce, the National Aeronautics and Space Administration, and the Office of Emergency Planning. The Army, the Air Force, the Navy, the Defense Communications Agency, and the Federal Aviation Administration each had one employee on the delegation. Only three of the advisers represented commercial companies involved in space research (one each from AT&T, ITT, and RCA); two advisers represented COMSAT and one was a university professor. If more representatives of commercial interests had been included on the delegation, the Soviets could have used this to support propaganda emphasizing continuing concerns of members of Congress who feared that the new satellite corporation would be dominated by commercial interests, especially AT&T. According to the official report of the qualifications of individual members of the delegation, the AT&T employee was included not to represent the company but to "make an important technical contribution."[160]

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156. Wilfried Loth, *Overcoming the Cold War: A History of Détente, 1950-1991* (Palgrave, 2002), 77.

157. Editorial Note on Memorandum of Understanding in U.S. Department of State, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, U.S.-Soviet Space Cooperation, #400.

158. On Dryden-Blagonravov talks, also see documents I-36 through I-40 in John M. Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships* (Washington, DC, 1996), 143–64.

159. Taubman, *Krushchev*, 605.

160. "Qualifications of the Proposed United States Delegation to the Extraordinary Administrative Radio Conference," folder "Telecommunications, TEL 8-1, Radio Frequencies, 8/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, National Archives and Records Administration, College Park, Maryland. On final membership list of delegation, see "Composition of United States Delegation to the Space Radio Conference," October 7, 1963, folder "TEL 6, 6/1/63," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. On involvement of members of Congress, see "Report on Geneva Space Radio Communication Conference and Progress made in Establishing Global Communication Satellite System," *Congressional Record*, 88th Cong., 2nd Sess., vol. 110, January 9, 1964, 181.

The importance of satellite communications to the conference was clear in the proceedings and organization. The United States helped arrange to televise the opening sessions across the Atlantic, using the first active communication satellite, *Telstar*, launched in 1962. On October 9, the Secretary General of the UN exchanged greetings from New York City with the Secretary General of the ITU in Geneva. The geosynchronous satellite *Syncom II*, built by Hughes under a NASA contract and launched in July 1963, was also made available to delegates in Geneva to communicate with various people located at the UN Building in New York and at NASA headquarters in Washington, DC. During the last evening of this demonstration, the United States invited members of the press in Washington to interview McConnell and other U.S. officials using the Syncom satellite.[161] U.S. officials based their use of spectacular demonstrations to gain the support of conference participants on similar practices in a number of countries during the lead up to the conference. Fred Alexander, the head of the Telecommunications Division in the Office of Emergency Planning, had urged such demonstrations at the Space Radio Conference, arguing that "It was the experience of the U.S. Teams of Experts that simple exhibits of pictures, slides and film aroused considerable interest and increased understanding of space radio-communication and its potential."[162]

To ensure that satellite communications received special treatment at the conference, the U.S. delegation was divided into two groups. The first, known informally as the Satellite Communications Policy Group, worked to educate other ITU members about the planned global communications satellite system. The second group included all remaining delegates in charge of the "substantive work of the conference by advocating adoption of U.S. positions, defending such positions when required, and effecting necessary compromises."[163]

During the majority of the Space Radio Conference, the U.S. delegation was unsure about Soviet motives for initially refusing to agree to U.S. frequency proposals. Because they knew very little about Soviet space needs and capabilities, they had to speculate based on a limited amount of information. Recently declassified documents indicate that, in 1962, U.S. intelligence agencies concluded the Soviets were not working on their own global system or "any other satellite communications system."[164] The Soviet delegation showed little interest in accepting an offer

161. Interview with William Gilbert Carter [COMSAT History Project], July 15, 1985, 46, COMSAT Collection, Johns Hopkins University Special Collections, Baltimore, Maryland.

162. Fred C. Alexander to G. Griffith Johnson, August 2, 1963, folder "TEL 8, Radio, 2/1/63," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

163. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 182.

164. Burton I. Edelson (NASC staff), memorandum, "Soviet Communications Satellite Effort," November 19, 1962, folder "Communications Satellites," box 7, Directors COMSAT Records, 1962-66, Records of the Office of Emergency Planning, Records Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

to participate in the global system the United States was organizing. Based especially on statements from the Soviets about the need for further experiments, U.S. delegates assumed that they were "not as advanced as we are in satellite communication, and would like to delay until they can catch up." McConnell complained to the Secretary of State about the Soviets using "various ploys" to delay U.S. efforts, including calling for a future ITU conference on space frequency allocations and treating any recommendations resulting from the 1963 conference as provisional.[165] U.S. officials insisted that "the use of the frequencies had to be sufficiently definitive to permit long-range planning and major investments in a global communications satellite system."[166]

During most of the conference, the Soviets continued to call for a block of frequencies for satellite communications much smaller than the U.S. proposal—1600 MHz as opposed to 2725 MHz. Especially troubling from the U.S. perspective was that only about 800 MHz was common to both proposals. As we have seen, U.S. officials based their large proposal on the "best estimates of what would be required to handle satellite traffic through 1980."[167] Although this estimate also took into account Defense Department planning for a separate communications satellite system, officials with the State Department, the mobilization agency, and the National Aeronautics and Space Council pressured the Department of Defense both immediately before and during the conference to avoid publicizing the connection.[168] Before the conference, military officials made sure that their discussions with NATO allies about specific frequencies planned for the military system would not become public.[169] A specific event involving the military three days into the conference also raised concerns about the danger of acknowledging the military use of space frequencies. On October 10, McConnell sent an urgent telegram back to the Department of State in Washington warning of the consequences of the "imminent public announcement on the letting of contracts for a military space communications system." Assistant Secretary of State Griffith Johnson responded by warning the Secretary of Defense that "Any public announcement during the course of the Conference which would convey the impression that the United States is giving priority to military space communication systems, is likely to

165. Joseph H. McConnell to George Ball, October 23, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

166. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 174.

167. From speech in Congress by Congressman Oren Harris in ibid., 178.

168. During the press conference using the *Syncom* satellite, a State Department official did indicate that "some" of the frequencies set aside for satellite communications would be used by the military system being developed. See ibid., 179.

169. Deputy Secretary of Defense to U. Alexis Johnson, 16 April 1963, folder "DEFENSE—1963," box 17, NASC General Correspondence, 1961–69, Records of the National Aeronautics and Space Council (NASC) within Record Group 220 [Temporary Committees, Commissions, and Boards], National Archives and Records Administration, College Park, Maryland.

generate a political debate on military usage of radio spectrum and would weaken seriously the chances of the United States obtaining agreement to United States proposals."[170] Any acknowledgement that the United States planned to use space frequencies for military communications would have jeopardized the support of nonaligned countries that were willing to support space frequencies because of the promised connection to the civilian global satellite communication system.

An especially important disagreement between the United States and the Soviet Union involved the issue of exclusive frequency allocations for both space research and general space communications.[171] The Soviets opposed all talk of exclusive allocations "as a matter of principle." The United States and most other countries in Western Europe favored setting aside exclusive bands for different uses of space radio frequencies. Soviet opposition to a U.S. sponsored proposal calling for 100 MHz of exclusive spectrum for communication-satellite service in the bands located at 7250–7300 MHz and 7975–8025 MHZ (for "mobile and transportable earth terminals") contributed to a major impasse at the Space Radio Conference.[172] By the beginning of the third week of the conference, McConnell realized that if the United States was "going to reach an accommodation" with the Soviet Union there would "have to be some give on both sides."[173]

The Soviets specifically opposed the U.S. proposal for exclusive frequencies because they understood this was particularly important to the U.S. military and the NCS. A separate military satellite communications system using mobile stations in remote areas of the world would need exclusive frequencies to avoid interference from local transmitters.[174] When interviewed in 1985 about his

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170. G. Griffith Johnson to Harold Brown, October 10, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

171. Telegram, Geneva to Secretary of State, October 23, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

172. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 183. For second quotation, see "Additional Position Papers for the United States Delegation to the Extraordinary Administrative Radio Conference for Space Radiocommunication and Radio Astronomy (Geneva, 1963)," August 23, 1963, agenda item 12a, p. 1, folder "TEL 6-1, Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

173. Joseph H. McConnell to George Ball, October 23, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

174. "Department of Defense/Communications Satellite Corporation Agreement," June 29, 1964, folder "Defense-COMSAT Corp. Negotiations," box 8, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

work at the 1963 Space Radio Conference, Joseph McConnell argued that U.S. military representatives on his delegation had caused him more difficulty than the Soviets. According to McConnell, the Soviets were "difficult on occasion, but not really, they never did go back on anything."[175] McConnell relied on Joseph Charyk, the recently appointed head of COMSAT, for advice about dealing with military demands for space frequencies. McConnell specifically requested Charyk's attendance during the final crucial week of the conference.[176] Charyk had the necessary expertise because he had previously served as the Under Secretary of the Air Force, responsible for "most of the Department of Defense's satellite programs," especially the highly classified reconnaissance satellites.[177] According to McConnell, Charyk "was wonderfully helpful because he knew so much about what the military was demanding."[178] During the conference, McConnell had felt that the Army's demands were excessive but he did not have the technical expertise to understand which demands "were valid."[179] Charyk advised McConnell "confidentially" about how the military "was over grasping." McConnell boasted that he then "cut them off at the knees."[180]

Undersecretary of State George Ball had chosen McConnell in response to pressure from a number of sources to get "some pretty high powered talent on the delegation."[181] Key members of Congress, especially Senator Pastor, chairman of the Communications Subcommittee of the Committee on Commerce, had been particularly critical of the State Department for relying too heavily on technical experts from the Telecommunications Division during previous international conferences, in particular the longtime chief, Francis Colt de Wolf. "By downgrading" policy "in our own State Department" in this way, Pastore had worried that the government was not "giving sufficient importance in the way of prestige for the purpose of formulating policy that will be respected and recognized abroad." During committee hearings in 1961, Pastore had insisted that the head of the delegation to the 1963 Space Radio Conference should be a high-power personality with prestige, importance, and political clout; preferably with the title of

175. Interview with Joseph McConnell [COMSAT History Project], July 18, 1985, 4, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

176. Joseph Charyk, Daily Log, October 24, 1963, folder 9, box 25, Joseph Charyk Papers, George Washington University Special Collections, Washington, DC.

177. Interview with Joseph Charyk [COMSAT History Project], April 1, 1986, vol. 1, p. 5, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

178. Interview with Joseph McConnell [COMSAT History Project], July 18, 1985, 4, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

179. Interview with Joseph McConnell [COMSAT History Project], October 17, 1985, 3, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

180. Interview with Joseph McConnell [COMSAT History Project], July 18, 1985, 6, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

181. Interview with William Gilbert Carter [COMSAT History Project], July 15, 1985, 43, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

Ambassador.[182] Before his appointment to head Reynolds, McConnell had served as President of the National Broadcasting Company and had had extensive experience as a tough Wall Street lawyer.[183] McConnell's close work with Charyk at the conference led to his appointment as the Chairman of COMSAT. A former COMSAT employee who worked for McConnell recalled how he intimidated everyone because he was "so strong and dynamic and so forceful and tough and frightening. . . . He took people apart."[184]

Despite the "missionary work" undertaken before the conference to educate countries about the benefits of the planned global satellite communication system, a number of Third World countries opposed U.S. efforts to set aside exclusive space frequencies or allow a large amount of sharing. Complicating U.S. efforts was the fact that most countries from sub-Saharan Africa and some of the countries in Latin America failed to attend the conference. The U.S. delegation worked to educate delegates from less developed countries in attendance "in every way possible," but recognized that little could be accomplished "in such a short time." A major issue not foreseen by the United States during pre-conference planning was that "many of the delegates" attending the meeting did not have "all the authority that we would wish." McConnell wrote George Ball and Assistant Secretary of State Harlan Cleveland that "if we had known all this three months ago perhaps we could have educated them to better effect, but of course no one could have known." McConnell also informed the State Department that a number of small developing countries were "fearful that if our proposals are adopted, we will usurp so much of the spectrum that they will be foreclosed from taking advantage of it later." In a revealing passage, he pointed out that "the history of frequency allocations, up to now, gives them no cause for any contrary conclusion."[185]

McConnell believed the United States could get a majority vote at the Space Radio Conference even without the support of a number of developing countries (or even without the support of the Soviet Union), but he feared this "might not be a real victory" because countries voting against allocation proposals still had the right to count themselves out of specific requirements through the use of "country

182. Senate Communications Subcommittee of the Committee on Commerce, *Space Communications and Allocation of Radio Spectrum: Hearings on Space Communications and S.J. Res.* 32, August 24, 1961, 192, 194, quotation on 194.

183. Interview with William Gilbert Carter [COMSAT History Project], July 15, 1985, 43, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

184. Interview with William Berman [COMSAT History Project], December 10, 1984, 56, COMSAT Collection, Johns Hopkins University Special Collection, Baltimore, Maryland.

185. Joseph H. McConnell to George Ball, October 23, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland. Also see "Summary Outline of U.S. Frequency Allocation Proposals and Limitations for Space Users," October 1, 1962, folder "COMSAT–Miscellaneous," box 7, Directors COMSAT Records 1962–66, Records of the Office of Emergency Planning, Record Group 396, National Archives and Records Administration, College Park, Maryland [this box can be found at the following stack location: 650/86/08/4].

footnotes" to frequency allocation tables.[186] U.S. delegates worried especially about Cuba exempting itself from provisions of international allocations. "With Cuba only 90 miles from the United States," one official warned, "Cuban footnotes could adversely affect present and future U.S. operations such as the Atlantic missile range and radio astronomy." The use of footnotes would also set a bad precedent, especially for the Western Hemisphere. No country in this region had ever requested footnotes for exemption from international allocation tables.[187]

A number of countries offered proposals or resolutions at the conference aimed at preventing "presently space-oriented countries" from gaining exclusive use of large blocks of the radio spectrum, but the United States managed to control major opposition to U.S. allocation proposals. The classified report by U.S. delegates reported that an "undercurrent of suspicion . . . surfaced in either speeches or resolutions by Israel, Morocco, Algeria, Cuba, Kuwait, United Arab Emirates, Ethiopia, Pakistan, the Soviet bloc, and others."[188] American representatives were particularly baffled by Israel's important role in stirring up opposition to setting aside large blocks of exclusive frequencies for space communications. They complained that the resolutions Israel offered would "cause major difficulties and delay" by vitiating allocation agreements and undermining much of the work already undertaken by the United States and its allies.[189] The representatives from Israel at the conference gave U.S. delegates the impression that the country was trying "to be the spokesman for the black African countries in defending the interests of the under-developed countries who must receive their fair share of frequencies and communication channels."[190] A telegram to the State Department argued that Israel was "playing politics [with] African countries to appear [the] champion of small powers."[191]

The State Department enlisted the assistance of its embassy in Tel Aviv to pressure the Israelis to modify or withdraw the major resolution that opposed

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186. Ibid.

187. Telegram, Geneva to Secretary of State, October 22, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

188. "Classified Report of the United States Territories Delegation to the EARC," November 20, 1963, 2.

189. Telegram, Geneva to Department of State, November 4, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State Record Group 59, National Archives and Records Administration, College Park, Maryland.

190. C. W. Loeber to Thomas E. Nelson, October 17, 1963, folder "Telecommunications: TEL 8-1, Radio Frequencies, 8/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

191. Telegram, Geneva to Department of State, November 4, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

U.S. space policy.[192] The resolution complained that space radio communication was being treated as "both the privilege and the exclusive possibility of great countries only." It requested the Space Radio Conference to "abandon or at least modify the present practice of first come first served" and to establish "some form of Space Communication Administration . . . entrusted with the responsibility for insuring the global interests . . . of all member states" of the ITU.[193] The comments early in 1963 of the director of communications systems at NASA may have provided Third World countries with a reason for suspecting U.S. intentions. The director questioned to what extent "less developed" countries would participate in a global system. "All nations," he believed, "will not benefit equally from participation in a world-wide communications satellite system; indeed, some nations perhaps should not participate at all. Clearly, only a small number of countries should have satellite ground stations."[194] After they received assurances from the United States that its proposed global satellite communications system would benefit developing countries, the Israelis agreed to U.S. demands. A U.S. delegate in Geneva reported to the State Department that the "Israelis appeared surprised and reassured to learn that [the] U.S. envisaged [a] single, global commercial system."[195] The American delegates at the conference helped the Israelis redraft the key resolution "so as to be acceptable to [the] U.S. and at [the] same time offer them means to save face and maintain influence with the developing countries to which they had made commitments—including Ghana, Ethiopia, Liberia, and Iran."[196]

U.S. efforts also faced difficulties when the International Frequency Registration Board (IFRB)—a permanent part of the ITU responsible for keeping track of the international use of the radio spectrum and for advising countries about actual or potential interference—supported developing countries and the Soviet Union in their attempt to delay the establishment of a permanent allocation for space communications and research. The United States organized a vote of 18 to 4 to defeat the IFRB resolution in one of the seven committees organized at the Space Radio Conference. The four votes in favor came from delegates representing the Soviet Union and three countries from its East European bloc. A compromise satisfying the Soviets was reached through the introduction of vague language

192. "Classified Report of the United States Territories Delegation to the EARC," November 20, 1963, 6.

193. Quoted in "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 186.

194. Quoted in Galloway, *The Politics and Technology of Satellite Communications*, 76.

195. Telegram, Geneva to Department of State, October 9, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

196. Telegram, Geneva to Department of State, November 5, 1963, folder "TEL 6-1, Space Communication Frequencies, 10/1/63, ITU," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

in a recommendation calling on the Administrative Council of the ITU to continuously evaluate whether conditions warranted the convening of another conference.[197] A similar method was used to convince the Soviets to modify another proposal requiring that all ITU members coordinate their space activities with any other member also planning to use space radio communication. The United States considered this unacceptable because it "would have permitted an administration to effectively block the space plans of another administration."[198]

COMPROMISE AND CLOSURE

All the major countries with an immediate interest in space exploration had to make concessions to reach a final agreement on frequency allocations when they realized this was necessary during the third week of the conference. The heads of the delegations representing the United States, the Soviet Union, and France held separate talks during the fourth week of the conference to reach agreement on the most controversial negotiations of the meeting relating to the allocation of different blocks of space frequencies. Although the final negotiations involved the allocation of relatively small blocks of frequencies throughout a major portion of the higher frequencies in the radio spectrum for such services as tracking, telemetry, space research, meteorological satellites, and navigational satellites, the main focus of the final negotiations was the allocation of large blocks of frequencies for satellite communications.[199] In a "joint compromise proposal," the Soviets agreed to allow the use of satellite communications in a larger band of shared frequencies than they initially believed was necessary. The United States and the other Western countries agreed to "reduce the amount of readily useful spectrum space in their proposals from 2725 MHz or more to 2000 MHz" and to relax some of the technical requirements for sharing. The final agreement actually authorized 2800 MHz for satellite communications, but only 2000 MHz of this included bands originally requested by the United States. This block of 2000 MHz was divided into four bands each 500 MHz wide. Two of these bands (3700 to 4200 MHz and 7250 to 7750 MHz) were for communication uplinks (satellite to earth); the other two (5925 to 6425 MHz and 7900 to 8400 MHz) were for downlinks.[200]

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197. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 174, 186.

198. Ibid., 186.

199. W. Dean to Captain Raish, October 25, 1963, folder "TEL 6, 6/1/63," box 3654, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

200. The overall authorization for satellite communications differed slightly in different regions of the globe. Of the three regions officially identified by the ITU, the block of 2800 MHz was for one of the regions in the Eastern Hemisphere; the other region in the east would have 2675 MHz for satellite-communications service; the separate region of the Western Hemisphere had an authorization of 2600 MHz. See "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 178–79, 183.

The joint talks did not result in agreement about whether to allow exclusive spectrum space for satellite communications. The three countries authorized one of the major committees of the conference to vote on this issue. A majority of the members of committee 5, which dealt with decisions about allocations, decided through a secret ballot to "accept" the U.S. proposal for 100 MHz of exclusive frequencies, but this did not represent complete acceptance because they also decided to allow existing operations to continue until January 1, 1969.[201] McConnell was then able to get the military representatives on his delegation to agree to accept the limitations on these exclusive frequencies, which, as we have seen, they planned to use for mobile satellite earth stations. Because of the efforts by the United States to avoid publicizing potential military frequencies, most representatives at the conference, especially from smaller countries outside of Europe, would not have understood this connection.

McConnell's official report argued that "the overall objectives of the United States were approved by the Conference which adopted the majority of the U.S. proposals in substance." He expressed confidence that "U.S. programs in the various areas of space radiocommunication," especially satellite communications, "could proceed satisfactorily." They would not have to worry about interference in the bands shared with terrestrial radio sources, according to McConnell, because "the Conference largely succeeded in accomplishing the difficult task of superimposing the allocations for the communication-satellite service on those already made to terrestrial fixed and mobile services by prescribing technical criteria essential to the avoidance of mutually harmful interference." The official report specifically praised the extensive preparatory work undertaken well before the opening of the Space Radio Conference. Although a number of countries continued to suspect U.S. promises to develop a system benefitting all nations, the pre-conference coordination did result in crucial support during the conference of "at least 19 European countries" as well as Japan, Canada, and a number of Latin American nations. McConnell strongly urged the Department of State to support "such pre-Conference coordination" with future international telecommunications meetings.[202]

Despite McConnell's judgment that the conference successfully met U.S. interests in space, his delegation also had to accept compromise in order to reach a useful agreement. The Americans not only had to agree to reduce their request for the amount of "readily useful spectrum space" for space radio communications but sharing criteria with existing terrestrial services would not be as rigorous as the United States originally proposed. And of the relatively large number of regions in the spectrum the United States wanted to keep strictly exclusive for use by space services, the conference only accepted—with absolutely no exemptions—two narrow bands (one for radio astronomy and the other for radionavigation

201. Ibid., 183.
202. Ibid., 187.

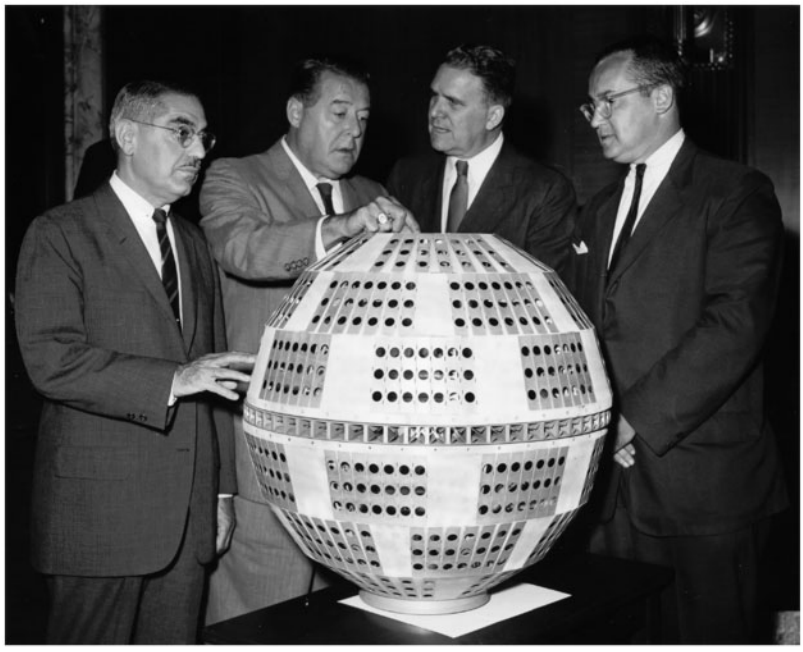

Photo 1: (From left to right) Senator John Pastore (D-RI), chair of the Communications Subcommittee; Senator Warren G. Magnuson (D-WA), Chair of the commerce Committee; NASA Administrator James Webb; and FCC Chairman Newton Minor inspecting part of AT&T's Telstar Communication Satellite. (Courtesy of Providence College).

satellites). The other requests were essentially rejected, including—as we have seen—the proposal for 100 MHz of completely exclusive frequencies for satellite communications.[203]

The Kennedy Administration was open to compromise during this period because it was serious about improving relations with the Soviet Union. During the late fall of 1963, this objective was especially important because Kennedy was under political pressure to find ways to reduce the escalating costs of the Apollo moon program.[204] He was willing to consider the possibility of cooperating with

203. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 184.

204. On financial pressures on the United States as a motivation, see discussion with document I-41 in Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships*, 165. On Soviet financial problems as motivation, see "Memorandum from the Deputy Director (Intelligence), Central Intelligence Agency (Cline) to the President's Special Assistant for National Security Affairs (Bundy), October 29, 1963, box 308, General, 10/63-11/63, Space Activities, Departments and Agencies Series, National Security Files, John F. Kennedy Library. Reprinted in U.S. Department of State, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, vol. 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, U.S.-Soviet Space Cooperation, #407.

Photo 2: An early photograph of a U.S. satellite communication earth station in Puerto Rico. (Courtesy of George Washington University).

the Soviet Union in manned space operations, including a joint moon program. Soviet representatives first broached the possibility informally.[205] President Kennedy then formally proposed the idea in a dramatic speech at the United Nations General Assembly on September 20. On November 12, he directed the NASA Administrator, James Webb, to assume responsibility for investigating the feasibility of a joint moon program or other substantial cooperative space projects.[206] Both countries were interested in considering cooperative space projects partly as a way to reduce costs but also because of the political advantage each nation would gain by demonstrating leadership to the world in the cooperative and peaceful exploration of space.[207] Kennedy's death on November 22 halted these plans, but the fact that they were taken seriously at the time underscores the

205. "Memorandum Prepared in the Central Intelligence Agency," July 31, 1963, box 308, U.S.-USSR Cooperation 1961-63, Space Activities, Departments and Agencies Series, National Security Files, John F. Kennedy Library. Reprinted in U.S. Department of State, *Foreign Relations of the United States*, 1961–63, John F. Kennedy, volume 25, Organization of Foreign Policy, Information Policy, United Nations, Scientific Matters, U.S.-Soviet Space Cooperation, #401.

206. See especially documents I-41 through I-43 in Logsdon, ed., *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships*, 165–82.

207. For an excellent overview of cooperative space activities between the United States and the Soviet Union during this period, see John M. Logsdon, "The Development of International Space Cooperation" in *Exploring the Unknown: Selected Documents in the History of the U.S. Civilian Space Program, Volume 2: External Relationships*, 11–13.

Photo 3: Visitors in Lahore, Pakistan at the "Into Outer Space, USA" exhibit on the campus of the University of Punjab. The United States Information Agency organized and presented the exhibit. (Courtesy of the National Archives).

general climate of cooperation and compromise during the period of the Space Radio Conference.[208]

One result of U.S. willingness to compromise was that some countries did decide to include footnote exemptions in the international frequency tables. McConnell was particularly unhappy because for the "first time in the history of international radio regulation," a delegation from a country in the Western Hemisphere, Cuba, "deviated from the radio frequency allocations agreed to by all other . . . delegates" in the region. Cuba indicated it would use footnotes exempting participation in most of the agreements involving space frequencies, including the use of specific bands for satellite communications. Because of worries that Cuban radio sources might interfere with important U.S. space and radio

208. On November 15, Robert Kennedy anticipated another meeting between Krushchev and the U.S. president. The Soviets also anticipated better relations, had Kennedy lived. See Taubman, *Krushchev*, 604.

operations in the Caribbean, the United States declined to honor Cuban footnotes. McConnell believed this represented the "first time" the United States had to take such a position "on decisions of any world-wide international conference."[209]

For the specific case of frequencies allocated almost "exclusively" for satellite communications, the twenty countries allowed to continue operations until 1969 added footnotes indicating that "in their countries the fixed and mobile services would continue to have primary status, sharing the bands 7250–7300 and 7975–8025 MHz coequally with the communication-satellite service." This action underscored the fact that a number of developing countries still were not convinced they would benefit from the planned global system, especially in comparison to terrestrial services using the same frequencies.[210] In achieving closure, the United States had conducted most of its high-level negotiations at the conference with the Soviet Union. The classified report by U.S. delegates pointed out that "in accomplishing this necessary result the delegations were unable to allay the fears of the developing countries that their rights and future interests were being jeopardized." "Unfortunately," the report pointed out, "the time and tempo of a conference militates against the intimate contacts necessary to convert the suspicions of the smaller and developing countries into more than a reluctant acquiescence."[211]

Despite the shortcomings of the allocation proposal, in general the concessions made by the Soviets were more substantial than the compromises made by the United States. Officials acknowledged that the total authorization of 2800 MHz for satellite communications could theoretically handle 8,000 to 9,000 telephone circuits and many television channels. Since the government's official projected estimate for 1980 of the total number of voice channels required "to and from the United States to Latin America and to Europe, the Near East, and Africa" and for "all other telecommunications requirements" was approximately 13,500, the final spectrum authorization of the Space Radio Conference would provide adequate service for many years. Cables and conventional radio circuits would continue to accommodate some of this future demand, but the government forecast that a satellite system using 2800 MHz would be capable of satisfying approximately two-thirds of this predicted need.[212] The United States also hoped that lingering

209. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 183–84, 186–87.

210. Ibid., 183–84, 186–87.

211. "Classified Report of the United States Territories Delegation to the EARC," November 20, 1963, 6.

212. "Report on Geneva Space Radio Communication Conference," *Congressional Record*, 178. For 1980 predictions, see "Proposals of the United States of America for the Extraordinary Administrative Radio Conference for Space Radiocommunication and Radio Astronomy (Geneva, 1963)," 13–14, June 1, 1963, box 821, docket 13522, docket files, Records of the Federal Communications Commission, National Archives and Records Administration, College Park, Maryland. For quotations, see "Additional Position Papers for the United States Delegation to the Extraordinary Administrative Radio Conference for Space Radiocommunication and Radio Astronomy (Geneva, 1963)," August 23, 1963, agenda item 1b, supplement p. 1, folder "TEL 6-1,

suspicions about the need for special space radio frequencies would disappear when ITU countries became involved in the global satellite communications system. Developing countries, in particular, would get a better sense of how they would benefit from the new technology and would be more likely to accept stricter regulation of bands used by the new service to prevent interference. Although the new satellite system would especially benefit the United States economically by linking the country to new markets around the globe, documentary evidence does not support an assertion that U.S. government officials were motivated to build the largely American-controlled satellite system as a way to take over the traditional role of many of the European-controlled undersea cables. As we have seen, the major motivation for the United States was to use the satellite system as part of a Cold War struggle to strengthen ties with Europeans as well as with other regions of the world.

The 1963 Space Radio Conference thus played an especially important role in helping the United States solidify alliances with Europeans and other allies while also providing valuable lessons for dealing with less developed countries. Although the willingness of the Soviets to compromise partly reflected a new period of détente in 1963 following the Cuban Missile Crisis, the ability of the United States to convince the Soviet Union to compromise at the 1963 Space Radio Conference was also made possible by the specific strategies employed by the United States and key European allies at the conference. Particularly important in the development of spectrum policy was the strategy involving boundary work. Technical issues and technical experts were central to the work of the ITU, but because the organization was organized on an intergovernmental basis, political factors always had to be taken into account.

Although the United States was not entirely successful in gaining the support of less developed countries, U.S. diplomats learned from the experience that they needed to follow up with more extensive "missionary" activity in Africa and other regions. The 1963 conference also underscored the importance of technical assistance and technical education to poorer countries. The fact that many of these countries did not have experts who understood the technical issues involved in spectrum policy hampered diplomatic efforts. Spectacular demonstrations did help demonstrate the broader significance of space exploration and research but specific decisions involving frequency allocations demanded advanced technical training. The efforts to develop international frequency allocation policies for space communications during the late 1950s and early 1960s reflected the beginnings of a new era in the history of the ITU. No longer would the East-West conflict dominate conferences. During this new era of global Cold War, the United States also had to deal with the growing importance of nonaligned countries and a new "North–South" conflict.

Space Communication Frequencies, 2/1/63, ITU," box 3655, Central Foreign Policy File 1963, General Records of the Department of State, Record Group 59, National Archives and Records Administration, College Park, Maryland.

This study of the initial attempts to allocate frequencies for a new radio communication "service" is especially important for providing a deeper understanding of the relationship between national security and communication policy during a crucial period of the Cold War. Although the radio spectrum has traditionally been treated as a common resource, it has also been the focus of intense conflict. U.S. communication policy became increasingly driven by national security concerns during the 1950s and early 1960s, especially during the Cuban crises in 1961 and 1962. Military and mobilization agencies played a crucial role in determining the official U.S. position on space frequency needs for the 1963 ITU Space Radio Conference. The Cold War radio spectrum reflected a fundamental tension between cooperation and conflict. The United States and the Soviet Union competed on a global scale not only for military dominance but also to win over hearts and minds by demonstrating both materially and symbolically which country had the superior system and which country was more committed to world peace and understanding.

Despite the link between U.S. spectrum proposals and military needs, this connection could not be publicized because it would alienate the many nonaligned and poorer countries whose support was desired. To convince these countries to agree to set aside valuable frequencies for space, the United States had to convince them that they could also benefit from space exploration and research. This was a major motivation for the establishment by the U.S. government of the first global satellite communication system. By emphasizing that all countries were eligible to join, the global system would not only demonstrate the practical side of space technology but also win over hearts and minds to the U.S. position by showing in a spectacular way the country's superior ability to promote science and technology. Although the 1963 space radio conference set aside a number of blocks of frequencies for many different uses for space communications, satellite communications played a central role at the conference. The commercial global system was especially useful in justifying the need to set aside large blocks of frequencies for all uses of space, including a separate satellite communication system being developed by the U.S. military. Thus, for the United States, management of the Cold War radio spectrum involved national security considerations based not only on the needs of global military preparedness but also on the need to wage a symbolic and material struggle for hearts and minds around the world.