JUDICIAL PROTECTION OF INTELLECTUAL PROPERTY: HUGHES AIRCRAFT VS. USA

by

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Abstract

Hughes Aircraft Company is the owner of a patent controlling the attitude of spin-stabilized space objects. Hughes sued the United States government for infringement after NASA had used the patented device without its consent and because NASA had authorized use by foreign governments and the European Space Research Organization, also without the owner's consent. The Court of Federal Claims held that the government was liable for having infringed the patent through manufacturing and contracting for the manufacture of satellites using the patent, for having used the patent through launch of satellites employing the patent, and for allowing private firms, foreign governments, and an international intergovernmental organization to use the patented device. The measure of damage has not been resolved. Outer space was characterized as an area beyond the territory of the United States.

Introduction

Rarely has outer space litigation addressed both private and public issues having substantial national and international ramifications. The case of *Hughes Aircraft Company versus the United States of America* involving patent rights, is one such case.[1] In an opinion running to 46 pages, substantive rules applicable to the use of private patents dealing with controlling the attitude of the spin axis of a spin-stabilized spacecraft were promulgated. One hundred and eight spacecraft launches, involving three countries (the United States, Germany, and the United Kingdom) and the European Space Research Organization (later European Space Agency) made use of the patent.

The court upheld the validity of a patent dating from 1959 granted to Donald T. Williams, a Hughes Aircraft scientist. The patent, entitled "Velocity Control and Orientation of a Spin-Stabilized Body," was used on every geosynchronous orbit satellite, employing a solid fuel motor in its transfer to geosynchronous orbit, constructed between 1963 and 1982.

Statutory Basis for Plaintif's Claim

Section 1498(a) of title 28, United States Code, provides in part:

> Whenever an invention described 2in and covered by a patent of the United

States is used or manufacutred by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States . . . for the recovery of his reasonable and entire compensation for such use and manufacture.

For the purposes of this section the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

The court rejected the argument made by the United States that the spacecraft were not manufactured or used during the term of the patent. The government had urged, for example, that fourteen Global Positioning System (GPS) satellites manufactured or used by Rockwell International Corporation, which designed and built the GPS spacecraft under a procurement contract with the government, were not manufactured or used during the patent term. The court concluded that the GPS spacecraft had been manufactured or used with the authorization or consent of the government. This constituted an infringement of the Williams patent under the cited statute.[2]

Theory and Claim of Hughes Aircraft Damages

Hughes Aircraft in its lawsuit had asked for damages of $1.2 billion and had speculated that the award might reach $6 billion. On June 17, 1994 the court awarded the plaintiff $114 million. It received a 1% royalty rate on the $3.5 billion worth of satellites using the patented device rather than at the rate of 15% sought by the plaintiff. In arriving at the smaller amount the court took into account an offer made by Hughes shortly after it had acquired the patent to a competitor to use the patent at a rate of 1.2%. The one percent recovered was not far from the government's original proposal, which was based on the interest paid on 52-week Treasury bills after taxes had been deducted.[3] Hughes has appealed on the grounds that the sum awarded was neither fair nor just compensation.[4]

The award was intended to compensate Hughes for the unauthorized use of the patent by the United States and pursuant to permission granted by the United States to Germany, the United Kingdom, and the European Space Research Organization.

Hughes also asked for "delay compensation" consisting of the loss of the use of the money constituting unpaid royalties. Hughes had urged that the amount owing to it for delay compensation should be based on a "rate equal to the company's historical return on equity, or a rate equal to that paid by the government on overdue income tax refunds."[5]

Hughes had also submitted that it was entitled to compensation for the use by satellites of spin control devices which were the equivalents of the patent owned by Hughes. The court held that the device carried by the Galileo spacecraft launched as an interplanetary explorer with the mission to explore Jupiter was sufficiently different from the Williams patent so as to exclude application of the doctrine of equivalents. The same conclusion was reached respecting three Atmospheric Explorer satellites.[6]

The court did, however, accept the doctrine of equivalents when a so-called "accused," i.e., similar device, in fact performed substantially the same function in substantially the same way to obtain the same result as the patented device.[7]

Judicial Determination and Application of the Terms "Use or Manufacture" in Section 1498(a)

The court determined that "make" and "manufacture" were legal equivalents in patent law. The government endeavored to defend against the charge of patent violation by urging that, between the date when the patent was obtained in 1973 and when the patent expired, namely, September 11, 1990, the GPS satellites "were not physically assembled . . . because certain flight components had not been integrated into the spacecraft either because the details of the spacecraft's design had not been finalized or because the parts were unavailable."[8] Additionally the government contended that, even if the spacecraft has been entirely assembled as of the date the patent had expired, they had not been "manufactured" in the statutory sense "because they had not been completely tested by that date."[9]

The government also urged that manufacture had not occurred "because the fuel and flight batteries were added at later stages, and because the thrusters were not wired until later stages. . . ."[10] In rejecting these arguments the courts concluded that by the time the patent had expired "the spacecraft with test components had become bodies adapted to spin about axes that satisfied all the claims of the Williams patent."[11]

In addition to the contention by the government that the GPS satellite had not been completely assembled prior to the expiration of the patent was the argument that the complete testing process, consisting of a series of five tests designed to insure that the vehicle was ready for the space environment, had not been completed by the patent expiration date. One of the five tests was to determine if the vehicle would spin about an axis.

The court agreed to the importance of post-assembly and post-inspecting testing. In rejecting the government's argument respecting the duration of the manufacturing process it observed: "The tests at issue here are part of a later process for perfecting the ability of the object to perform its intended use. Those tests simply do not fall within any fair usage of the term 'manufacture.'"[12]

Hughes Aircraft also urged that such testing constituted a "use" within the terms of the statute. To this the court observed "any testing that occurred after the spacecraft was 'manufactured' constituted 'use.'"[13]

Judicial Determination and Application of the Terms "Authorized" or "Consented" of Section 1498(a)

The government in its 1983 contract with Rockwell International Corporation, which designed, built, and tested 14 Global Positioning System spacecraft, authorized and consented to the use of the Williams patent. Seeking to avoid liability the government urged that the contract with Rockwell prevented such "authorization" or "consent" from occurring until the government "accepted" the spacecraft.[14] To this Hughes responded that the government had authorized or consented to the "manufacture" upon the execution of a contract that "required Rockwell to infringe the Williams patent."[15]

Hughes also urged that there was governmental authorization for use of the patent when the government accepted and launched the first spacecraft manufactured under the patent.[16] The court adopted the Hughes contention. The opinion stated "it is clear that the government 'authorized' the manufacture of the accused spacecraft when Rockwell became contractually bound to build spacecraft embodying the Williams patent. . . . Even if the terms

'authorization' and 'consent' had a particular contractual meaning between Rockwell and the government, it is the statutory meaning of those terms that controls this case under #1498, between a patentee and the government."[17]

Following further controversy over what constituted the "acceptance" by the government of spacecraft from the manufacturer the court held that following testing the government had issued a statement, known as a "DD 250" indicating compliance with provisions respecting manufacture and its satisfaction that requirements had been met, and that the spacecraft had then been launched. In the words of the court: "The significance of the final DD 250 was that it indicated that Rockwell had satisfactorily performed the testing component of its contract with the government for that particular spacecraft."[18] It was evident to the court that when the assembly of the craft had been completed, when the government had completed its inspection (with the issuance of the DD 250), and when the craft had thereby become government ("government-furnished") property that the United States had done all that was required to constitute an acceptance of the property containing the patented device.

International Ramifications: Manufacture of Spacecraft in Foreign Countries Using the Williams Patent as a Result of International Agreements

A stated objective of the U.S. space program is to cooperate "with other nations and groups of nations."[19] Four international agreements allowed foreign spacecraft to use the Williams patent.

Memorandums of Understanding facilitated the use of the Williams patent. On June 10, 1969 NASA and the German Ministry for Scientific Research made provisions for the launch of *HELIOS A* and *HELIOS B*. They were launched in 1974 and in 1976. March 17, 1975, with a modification on December 17, 1976, NASA and the European Space Research Organization made provision for the International Sun-Earth Explorer Program (ISEE-A and ISEE-B). Both were launched in 1977. In 1970 NASA and the Science Research Council of the United Kingdom agreed to develop the *ARIEL 5* spacecraft. The agreement, which was revised on December 27, 1973 and on January 28, 1974 led to the launch of *ARIEL 5*. *ARIEL*'s mission was the identification and examination of cosmic x-ray sources other than the sun.

Additionally arrangements were made respecting the Active Magnetospheric Particle Trace Explorer (AMPTE). This program involved two international agreements. One of October 15, 1981 between the United States and Germany called for the United States to provide the Charge Composition Explorer (CCE). The second agreement was between Germany and the United Kingdom. It dealt with the Ion Release Module (IRM) and made provision for the United Kingdom Subsatellite (UKS).

The MOU between the United States and Germany respecting AMPTE called for the United States to launch the spacecraft on a Delta launch vehicle. The United States was to design, fabricate, test, integrate, and prepare for launching a complete CCE satellite, including its apogee kick stage. Germany was to perform the same functions for a complete IRM spacecraft, including the chemical release canisters and a magnetometer. The MOU contained provisions of a detailed technical and operational nature designed to assure the success of the cooperative endeavor.[20] Included were tracking responsibilities and the processing of data.

The MOU between Germany and the United Kingdom called for the subsatellite

to be constructed in the United Kingdom. Following launch of the CCE, the IRM and the UKS in the United States by NASA on a Delta-Thor vehicle on August 16, 1984, they separated and arrived at different orbital positions. The UKS was registered with the United Nations as a U.K. satellite.[21]

The Court's Reliance on the Memorandums of Understanding and Patent Law

The court examined the terms of the MOUs for all of the projects. Each dealt with different scientific and technical criteria and objectives. All of the projects used the Williams patent. A common provision in all of the agreements was the requirement that the United States provide the launch vehicle and engage in the launch of the spacecraft. Other common terms related to the provision of instrumentation and for the design, fabrication, testing, integration, and preparation of the spacecraft for launching.

After providing the basic facts recited above the court, in the context of a patent "use" which "use" had to be "by or for" the benefit of the U.S. government, if the plaintiff were to prevail, went on to observe that the respective undertakings were cooperative programs and that the United States had embarked on a "joint venture" project in its launching operations. The court stated: "Under these circumstances, we conclude that the [U.S.] government's actions were not that of a disinterested party providing launch services, but rather those of a member of a joint venture launching a spacecraft in connection with a joint project resulting in considerable benefit."[22]

Returning to U.S. patent law, and in particular the availability of statutory exemptions where infringements have occurred outside the United States,[23] the court concluded that Hughes Aircraft could not recover for the use of the Williams patent on the UKS. The five statutory provisions which excused liability were: (1) the invention was a part of a foreign "vehicle," with a satellite falling within the definition of "vehicle;"[24] (2) the UKS was temporarily (rather than permanently) in the United States pending launch; (3) the United Kingdom provided a similar privilege to vehicles temporarily within its territory; (4) the patented invention was being used exclusively for the needs of the space vehicle; and (5) the invention was not to be "sold in or used for the manufacture of anything to be sold and/or exported from the United States."[25] The court did not comment on the possibility that the launch of the satellite from the United States might have been considered to be an "export" from the United States. This has been dealt with in other federal legislation, including the proposition that a return to the United States of a space object and its contents is not an importation.

The MOU between the United States and the Science Research Council of the United Kingdom for the *ARIEL 5* contained standard provisions. Among the obligations of the United States was to provide a Scout launch vehicle and conduct the launching. It was to provide tracking, engage in data acquisition, and was to be generally supportive of cooperative research activities. The Science Research Council was to design, fabricate, integrate, test and transport to the launch site a flight-qualified spacecraft and to supplement NASA's tracking and data acquisition services.

Both countries were to analyze cooperatively the data returned by the on-board sensors, with a final analysis of total results.[26] In subsequent letters between NASA and the Council it was agreed that NASA would be responsible for "directing" the launch rather than "conducting" the

launch.[27] The space object was subsequently registered by the United Kingdom with the U.N.

Pursuant to the revised MOU the satellite was launched by a team of Italian engineers on a Scout launch vehicle from the San Marco launch platform off the coast of Kenya. NASA supplied the launch vehicle. It also "provided some assistance in training the Italian personnel and directed the launch of the *ARIEL 5* spacecraft. After launch, the United Kingdom assumed responsibility for controlling the spacecraft, and NASA's role was limited to providing a data communications link. . . .[28]

Under the foregoing circumstances the court was obliged to determine if the patented invention had been used within the territory of the United States. It concluded that it had not been used in the United States even though representatives of the U.S. had "directed" but had not "conducted" the launch, the last function having been that of the Italian launch team. The court observed that the only "nexus" between the launch site and the United States was the Spaceflight Tracking and Data Network, headquartered at the Goddard Space Center, Greenbelt, Maryland, but with facilities located around the world. This contact, according to the court, was insufficient to establish liability "for use within the United States."[29]

The court emphasized that the concept of "use" was that of "use" within U.S. territory. The *ARIEL 5* never entered the United States and its "home territory" or "master station" was not in the U.S. Only if there has been a "control point" in the United States could the "use" be deemed to have occurred in the U.S. The court illustrated by saying "If the United States government had actually originated the commands within the United States and then transmitted those commands within the United States and then transmitted those commands through its Spaceflight Tracking and Date Network, we would find 'use' within the United States."[30] Since whatever use by or for the United States occurred outside of U.S. territory the patent laws were inapplicable, and no recovery for the admitted use was accorded the plaintiff.

Space Law Considerations in the Case

The MOUs made specific references to launch vehicles and the place where launches were to occur. They did not incorporate within their terms the international legal principles and rules applicable to the identified scientific and technologically oriented space activities. Thus, the court's opinion, with its emphasis on the application of U.S. patent laws applied that law to events occurring within the territory of the United States. It did not provide guidance having long-term significance to space law.

Of further interest was the holding that U.S. patent laws then in force could not be applied beyond the territory of the United States, e.g., in outer space, until specific legislation was adopted to obtain that result.

Although the decision focused on patents it of necessity made reference to the respective national obligations assumed in the MOUs. Note was taken of the fact that the United Kingdom registered the *AMPTE UKS* in accordance with the 1975 Convention on Registration of Objects Launched into Outer Space.[31] The United Kingdom also registered the *ARIEL 5* which was built in England, with the UN as a national spacecraft.[32]

Except for taking note of the fact that the MOUs called for the launches to take place in the United States, other than for *ARIEL 5*, the decision did not attach legal

significance to the place of launch. However, with respect to the *HELIOS A* and *B* launches, and in the context of "use" in patent law, the court observed that the "use was within the territorial borders of the United States because it (sic) was launched from Cape Canaveral, Florida."[33] It was also noted that the *AMPTE UKS* "entered the United States one time for the sole purpose of being launched into outer space."[34] As such it was "temporarily" in the United States. Its temporary status absolved it from plaintiff's claims for patent infringement pursuant to the provisions of Section 272 of title 35 of the United States Code.[35] Note was taken that *ARIEL 5* never entered the United States. Nonetheless, the master radio station employed to maintain contact with the satellite was located within the United States. Since the "use by or for the United States occurred beyond the boundaries of the United States [this] rendered the patent laws inapplicable and thus obviates any liability under #1498."[36]

The government urged that because of the 1967 Principles Treaty section 1498 did not apply to "claims arising in outer space relating to non-United States registered spacecraft."[37] At issue was the application of U.S. patent law to non-national space objects in an area beyond the territorial limits of the United States. To this the court responded:

> We do not decide whether international law prohibits the extension of our patent laws to activities in outer space on foreign spacecraft because we conclude that Congress has not extended #1498 to cover those activities."[38]

This observation, of course, overlooks the well-established principle in American jurisprudence that international law is a part of U.S. law and is to be applied in appropriate circumstances, perhaps including the transborder movement of intellectual property.[39]

Support for the court's conclusion came from the presumption that Acts of Congress do not ordinarily apply beyond U.S. territory and because the patent statute was not applicable to any claim arising in a foreign country. To this the court added "outer space is not a 'foreign country' in the ordinary meaning of that phrase."[40]

Further, it was noted that not until 1990 did Congress adopt a statute extending the protection of "U.S. patent law to applicable activities conducted in outer space," and that the statute had no application to identified events occurring with respect to launches prior to the enactment of the statute.[41]

While the 1990 statute applied U.S. patent law to events under the jurisdiction and control of the United States in outer space, it excluded "any space object or component thereof that is specifically identified and otherwise provided for by an international agreement to which the United States is a party, or with respect to any space object or component thereof that is carried on the registry of a foreign state in accordance with the Convention on Registration of Objects Launched into Outer Space."[42]

In the *AMPTE* program (USA and Germany, USA and the United Kingdom) the United States was the launching State. Germany and the United Kingdom in seeking a cooperative arrangement in which their projects could be launched from a launching site in Florida were procuring States with their own foundations for liability.[43] The registration by the United Kingdom of the *AMPTE UKS* with the United Nations of the satellite fabricated in the UK but launched in the United States supports the view that the UK was a procuring State respecting launch services.

Although the opinion in the case identified the role of the United States as a "member of a joint venture launching a spacecraft in connection with a joint project . . .[44] this must be considered to be a practical observation because of the "considerable benefit" to be realized from its launching operations. These words in the opinion should not be construed as setting forth, contrary to the space law treaties, a third category of space actors. The categories of "launching" and "procuring" States remain valid. Procuring States and launching States remain obliged to conform to international norms.

Conclusion

The central quality of space activity is that it is international. The intellectual property created through space activity is entitled to the protection of international law and national laws.

In the Hughes case the rights of a patent holder were protected within the circumscribed limits of U.S. patent law. Such law was inadequate in many respects. Since the occurrence of the factual events set forth in the case the law has been modified.

The court, not surprisingly, agreed that space activity, following the achievement of orbit, takes place beyond the territory of the launching State. The case indirectly raised the important question of what country or international organization is the launching entity. It also raised the question of what country or international organization is the procuring entity. The fact that the United Kingdom registered space objects not launched by it within its territory reflects the view that a procuring state not only continues to exercise jurisdiction and control over the satellite following launch but also assumes responsibility and liability for the space object during its operational and post-operational presence in outer space, in air space, and on the ground.

The MOUs of the future should make specific reference to the respective rights and duties of the parties including in particular the identification of which party is to be the launching entity, which is to be the procuring entity, and which of the parties is to be responsible for registering the object with the United Nations.

NOTES

1. 29 Fed. Cl. 197 (1993). Another recent case involving intellectual property is *Avtec System, Inc. v. Peiffer*, 805 F. Supp. 1312 (1992). A commentary on the latter appears in 21 *Journal of Space Law* 60 (1993).

2. *Supra*, note 1 at 217. The court held that "Rockwell was obligated by its contracts with the government to construct spacecraft using the Williams design. . . . [Moreover] it is clear that the government 'authorized' the manufacture of the accused spacecraft when Rockwell became contractually bound to build spacecraft embodying the Williams patent." *Supra*, note 1 at 223.

3. *Los Angeles Times*, D1, June 18, 1994.

4. *Los Angeles Times*, D2, August 4, 1994.

5. *Hughesnews*, August 27, 1993, p. 5.

6. *Supra*, note 1 at 204-208.

7. *Id.* at 203.

8. *Id.* at 219.

9. *Id.*

10. *Id.* at 220.

11. *Id.*

12. *Id.* at 222.

13. *Id.* at 222, fn. 25.

14. *Id.* at 222.

15. *Id.*

16. *Id.* at 223.

17. *Id.* at 223.

18. *Id.* at 224.

19. 42 U.S.C. #2451(d)(7).

20. *Supra*, note 1 at 238, fns. 62 and 63.

21. *Id.* at 239.

22. *Id.* at 240.

23. 35 U.S. Code section 273, 35 U.S.C. #272.

24. 42 U.S.C. #2457(k) stipulates that "any object intended for launch, launched, or assembled in outer space shall be considered a vehicle for purposes of section 272."

25. *Supra*, note 23.

26. *Supra*, note 1, ad 241, fns. 69 and 70.

27. *Id.* at 242.

28. *Ibid.*

29. *Ibid.*

30. *Ibid.*

31. 28 UST 695, TIAS 8480. *Supra*, note 1 at 239.

32. *Id.* at 242. The court noted that "the record does not disclose the state of registry of the other spacecraft in issue." *Id.* at 229.

33. *Id.* at 235.

34. *Id.* at 240.

35. *Id.* at 240.

36. *Id.* at 243.

37. *Id.* at 229.

38. *Id.* at 229-230.

39. *The Paquette Habana*; *The Lola*;, 175 U.S. 677 (1900).

40. *Supra*, note 1 at 230.

41. The Inventions in Outer Space Act, P.L. No. 101-580, 104 Stat. 2863, 35 U.S.C. #105 (1990). These events, as enumerated in the statute, are "any process, machine, article of manufacture, or composition of matter, an embodiment of which was launched prior to the date of enactment of this Act."

42. *Supra*, note 1 at 230, note 41.

43. See C.Q. Christol, "The 'Launching State' in International Space Law," 14 *Annuaire de Droit Maritime et Aero-spatial* 363 (1993) and "Nuclear Power Sources (NPS) for Space Objects: A New Challenge for International Law," *Proceedings of the 36th Colloquium on the Law of Outer Space* 247-251 (1994).

44. *Supra*, note 1, at 240.