MARTIN R. GLICK
H. JOSEPH ESCHER III
MARLA J. MILLER
HOWARD, RICE, NEMEROVSKI, CANADY,
ROBERTSON & FALK
A Professional Corporation
Three Embarcadero Center, 7th Floor
San Francisco, California 94111
Telephone: 415/434-1600

OF COUNSEL:
SCOTT HOVER-SMOOT
Four Embarcadero Center, Suite 3400
San Francisco, California 94111

Attorneys for Defendant and
Counterclaimant Activision, Inc.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

THE MAGNAVOX COMPANY, a corporation, and SANDERS ASSOCIATES, INC., a corporation, Plaintiffs, vs. ACTIVISION, INC., a corporation, Defendant. AND RELATED CROSS-ACTION.	No. C 82 5270 CAL ACTIVISION, INC.'S PROPOSED FINDINGS OF FACT

I.

THE PARTIES AND THE LAWSUIT.

1. Activision is a California corporation based in Mountain View, California, that designs and manufactures a wide variety of video game cartridges and disks.

2. Activision was founded in 1979 for the specific purpose of designing copyrighted video games which are ultimately sold to owners of master video game consoles, primarily the Atari Video Computer System 2600 ("2600"). Activision currently employs approximately 100 individuals.

3. Activision has designed and manufactured 42 video game cartridges to be played on the user's television set in connection with a master console and a hand-held control known as a "joystick". A video game cartridge is a small plastic box, the size of a tape cassette, which contains a computer program encoded in a "read only memory" (ROM) semiconductor, and placed on a very small printed circuit board. Activision does not manufacture master consoles or joysticks. The master console is a computer; an Activision video game cartridge is one of many programs which may make use of that computer. The player inserts into the master console the video game cartridge which contains the program for the Activision game of his or her choice, turns on the television set, and the television set then displays the computer-generated images. The player uses a hand-held control or "joystick" to move the player-controlled object on the display.

4. Activision designs and manufactures cartridges and disks ~~to~~ be played on home or personal computers. To date, Activision has designed and manufactured 20 such games. The video game cartridge or disk is the program for the computer. The player inserts into the computer or disk drive the cartridge or disk which contains the program for the Activision game of his or her choice,

allegedly infringing the Rusch-2 patent. However, both the Baer-1 patent and the Rusch-2 patent describe circuitry for playing games on a television display by generating dots, getting the dots to move and "hit" each other, detecting coincidence of the dots, and altering one of the dots in response to coincidence.

10. On October 25, 1984, Magnavox covenanted that it would never sue Activision for infringement of the Baer-1 patent or identical subject matter in any reissue application for Baer-1, to the extent the claimed subject matter of such reissue application is identical to the claimed subject matter of Baer-1. Magnavox' covenant not to sue on the Baer-1 patent is essentially an admission by Magnavox that it could never prove in a court of law that the Baer-1 patent was both valid and infringed by Activision.

11. The Rusch-2 patent at issue here has 64 claims. Before trial, Magnavox stated that it would only assert that Activision infringed claims 25, 26, 51, 52, 60, 61 and 62 of the Rusch-2.

12. Before trial, Magnavox stated that it would only assert that 13 of Activision's video game cartridges infringed the Rusch-2 patent. These 13 Activision video game cartridges are manufactured and sold to be played on Atari, Coleco, and Mattel master consoles as follows:

	Atari	Coleco	Mattel
Boxing	x		
Fishing Derby	x		
Tennis	x		
Stampede	x		x
Ice Hockey	x		

	Atari	Coleco	Mattel
Barnstorming	x		
Grand Prix	x		
Sky Jinks	x		
Keystone Kapers	x	x	
Dolphin	x		
Enduro	x		
Decathlon	x	x	
Pressure Cooker	x		

The Atari, Coleco and Mattel master consoles which play the 13 games are sublicensed by Magnavox under the '507 patent.

13. Before trial, Magnavox stated that each of the 13 Activision video games infringed the particular claims of the Rusch-2 patent as follows:

Game	Claim
Tennis	25, 26, 51, 52, 60, 61, 62
Ice Hockey	25, 26, 51, 52, 60, 61, 62
Boxing	25, 26, 51, 52, 60
Fishing Derby	25, 26, 51, 52, 60, 61
Stampede	25, 51, 60
Pressure Cooker	25, 26, 51, 52, 60
Dolphin	25, 51, 60
Grand Prix	60
Barnstorming	60
Sky Jinks	60
Enduro	60
Keystone Kapers	60
Decathlon	60

14. The manufacture, use, sale, or offer for sale of the Activision video game cartridges and disks listed below does not directly or contributorily infringe or induce infringement of any claim of the patent:

	Title	Shipment Date	System
1.	Dragster	July, 1980	Atari
2.	Checkers	July, 1980	Atari

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3.	Skiing	July, 1980	Atari
4.	Bridge	December, 1980	Atari
5.	Laser Blast	March, 1981	Atari
6.	Freeway	July, 1981	Atari
7.	Kaboom!	July, 1981 September, 1983	Atari Atari Home Computer ("HC")
8.	Chopper Command	May, 1982	Atari
9.	Starmaster	May, 1982	Atari
10.	Pitfall!	August, 1982 November, 1982 May, 1984 August, 1984	Atari Mattel Commodore disk Commodore cartridge, Atari HC, Coleco
11.	MegaMania	September, 1982 December, 1983	Atari Atari HC
12.	River Raid	December, 1982 September, 1983 October, 1983 November, 1983 September, 1984 October, 1984	Atari Atari HC IBM Mattel Commodore disk Commodore cartridge
13.	Spider Fighter	January, 1983	Atari
14.	Seaquest	February, 1983	Atari
15.	Oink!	March, 1983	Atari
16.	Happy Trails	April, 1983	Mattel
17.	Plaque Attack	May, 1983	Atari
18.	Crackpots	July, 1983	Atari
19.	Dreadnaught Factor	July, 1983 May, 1984	Mattel Atari; Atari HC

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20.	Pitfall II	August, 1983	Atari
		May, 1984	Commodore disk
		August, 1984	Commodore cartridge, Coleco, Commodore disk Atari HC
		August, 1984	
		October, 1984	IBM
		December, 1984	Apple
21.	Beamrider	August, 1983	Mattel
		April, 1984	Coleco
		May, 1984	Atari
		May, 1984	Commodore disk
		July, 1984	Atari HC, Commodore cartridge
22.	Worm Whomper	September, 1983	Mattel
23.	Frostbite	September, 1983	Atari
24.	Space Shuttle	November, 1983	Atari
		October, 1984	Commodore disk, Atari HC, Commodore cartridge
25.	Private Eye	February, 1984	Atari
26.	H.E.R.O.	March, 1984	Atari
		June 1984	Atari HC
		June, 1984	Commodore disk
		June, 1984	Coleco
		August, 1984	Commodore cartridge
		December, 1984	Apple
27.	Decathlon	May, 1984	IBM
		June, 1984	Atari HC
		June, 1984	Commodore disk
		June, 1984	Commodore cartridge Coleco
28.	Robot Tank	June, 1984	Atari
29.	Toy Bizarre	June, 1984	Commodore disk Commodore cartridge
30.	Zenji	July, 1984	Commodore disk
		August, 1984	Atari HC, Atari, Coleco
		September, 1984	Commodore cartridge

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31.	Zone Ranger	September, 1984	Atari HC, Commodore cartridge, Atari, Commodore disk
32.	Keystone Kapers	May, 1984	Atari HC
33.	Park Patrol	September, 1984	Commodore disk
34.	River Raid	December, 1982 September, 1983 October, 1983 November, 1983 September, 1984 October, 1984	Atari Atari HC IBM Mattel Commodore disk Commodore cartridge
35.	Designer's Pencil	September, 1984 December, 1984 January, 1985	Commodore disk, Commodore cartridge Atari HC, Apple IBM
36.	Space Shuttle	November, 1983 October, 1984	Atari Commodore disk, Atari HC, Commodore cartridge
37.	Pitfall II	August, 1983 May, 1984 August, 1984 October, 1984 December, 1984	Atari Commodore disk Coleco, Commodore cartridge, Atari, Atari HC IBM Apple
38.	Ghostbusters	October, 1984 December, 1984	Commodore disk Apple, Atari HC
39.	Past Finder	November, 1984	Atari HC, Commodore disk, Commodore cartridge

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III.

THE PRIOR ART BEFORE SANDERS ASSOCIATES' VIDEO GAME EFFORT.

15. "Ball" games including tennis, ping-pong, handball, billiards (pool), and hockey pre-date the 20th century and, more

specifically, were not devised or invented by any plaintiff in this action.

A. Michigan Pool Game

16. In 1954, a video pool game was developed at the University of Michigan ("Michigan pool game"). In October, 1954 the Michigan pool game was described in a printed publication in this country and thus is prior art with respect to the Baer-1 and Rusch-2 patents. The Michigan pool game could be played by two persons using a cathode ray tube display. The view on the screen was that of a pool table, seen from the top down: there was a circular figure representing a cue ball at one end of the display, and 15 "balls" in a triangular "rack" at the other. When the ball hit the "pocket," the ball disappeared. When the cue ball hit an object ball, the object ball would move in a direction and with a speed proportional to the speed and direction of the cue ball. When any ball hit the side of the pool table, the ball would bounce off in a realistic fashion. The Michigan pool game generated a player controlled cue stick, the cue ball, and the 15 object balls. In addition, it ascertained coincidence between the balls, and imparted a distinct motion to them upon coincidence. The Michigan pool game provided horizontal and vertical control signals for varying the horizontal and vertical positions of the balls as they moved.

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B. Higinbotham Tennis Game

17. In 1957, Dr. William A. Higinbotham developed a video tennis game for open house at the Brookhaven National Laboratories in Upton, New York ("Higinbotham tennis game"). Thousands of people, including school children, visited Brookhaven and saw the game being played. Some actually played the game. Because the Higinbotham tennis game was publicly used in 1957, it is prior art with respect to the Baer-1 and Rusch-2 patents.

18. Dr. Higinbotham's video tennis game was played on a cathode ray tube display. The tennis game could be played by two persons, each of whom controlled an invisible "racket" by means of a hand control. The view on the screen was that of a tennis court, seen from the perspective of one standing on the sidelines. The "net" was a vertical line in the middle of the screen, and a horizontal baseline was also generated. When a player "hit" the "ball," the ball would appear to move in a realistic fashion, depending upon how it was "hit." Thus, the ball would appear to bounce off the baseline, bounce off the net (if the net were hit) or move beyond the baseline. When the ball was hit by the invisible racket, the ball would reverse direction and move with a velocity controlled by the player. The manner in which each player aimed determined the velocity and angle with which the ball would move. The tennis game contained electronic analog circuitry which generated voltages which controlled the position of the ball. When the ball bounced or reversed direction, a flip-flop automatically changed the voltages controlling the ball's position.

C. Space War

19. In 1961-1962, a video game called "Space War" was developed by Stephen Russell and Alan Kotok at the Massachusetts Institute of Technology. Russell was employed by and Kotok was a student at MIT at the time. Space War could be played by two persons, each of whom controlled his or her own spaceship. The view on the screen was that of outer space; there was a sun in the center and a moving star field surrounding it in the background. The object of the game was for each player to destroy the other's spaceship by firing torpedoes, before his or her own spaceship was destroyed. The visible torpedo would be launched in the direction the spaceship was pointing. When a player piloted a spaceship, the spaceship would move in a realistic fashion. If a torpedo or spaceship hit the other player's spaceship, the hit spaceship would explode. The game provided player controlled symbols (spaceships), non-player controlled moving symbols (torpedoes), detected coincidence between the two types of symbols and altered the player controlled symbol as a result.

20. Space War received substantial publicity and achieved substantial popularity during the 1960's. It was promoted in demonstrations and open houses around the United States by the makers of the equipment on which it could be played and was played on college campuses from Cambridge to Palo Alto. Space War was played at Sanders Associates by its employees at least as early as February, 1968. Because of this public use Space War is prior art with respect to the Baer-1 and Rusch-2 patents.

21. In one version of Space War, if a spaceship hit the sun, the spaceship would stop and explode. As more skilled persons played Space War, modified versions of this video game appeared. At least as early as 1964, a version of Space War was played in which if a spaceship or torpedo hit the edge of the display screen, it would "bounce" off the edge, and rebound in a realistic fashion. In another version, the spaceship would disappear at one edge of the screen and then reappear at an opposite edge.

D. The Althouse Patent.

22. On August 12, 1958, United States Patent No. 2,847,661 was issued to Charles F. Althouse. Althouse invented a device for displaying dots on a television screen or other display, which dots (symbols) could be moved by the user realistically to approximate the location of aircraft, helicopters or ships. The Althouse invention comprised an apparatus which was used in combination with a cathode ray tube or standard television receiver to generate at least one symbol upon the television screen. The location of this symbol could be altered by the user of the device. The Althouse patent is prior art with respect to the '507 patent.

E. The Spiegel Patent.

23. On June 2, 1964, U.S. Patent No. 3,135,815 was issued to Fritz Spiegel while employed at Messerschmidt, a German company.

The patent was later sold to APF Electronics. Spiegel discloses a device to be connected to the antenna terminals of a standard television set to simulate target shooting with guided missiles. The goal of the exercise was for the player to manipulate a symbol which represented a guided missile to "hit" the target that was displayed on the screen, at which point the missile and the target appeared to explode. The device was used in several ways: the target could be kept stationary, the target could move randomly in response to the electronic circuitry in the device, or a second person could move the "target" while the first person was trying to steer the "guided missile" to "hit" the target. The Spiegel invention disclosed the electronic analog circuitry to generate moveable symbols upon the screen of the television receiver including the necessary synchronization signals. The Spiegel patent is prior art with respect to the '507 patent.

24. In 1977 Magnavox brought suit against APF Electronics and several other entities for infringement of the '507 patent. The suit against APF was dismissed for lack of venue. In November 1980 APF acquired the Spiegel patent; in January 1981 APF intervened in litigation between Magnavox and APF customers Sears, Roebuck and Montgomery Ward and counter-claimed against Magnavox for infringement of the Spiegel patent. Magnavox realized that the Spiegel patent together with the prior art taught most if not all of the claims of their video game patents, and thus acquired all right, title and interest to the Spiegel patent. The case was ultimately settled; as part of the settlement, APF conveyed the Spiegel patent

(which by then had expired) to Magnavox.

F. The G.E./NASA Scene Generator.

25. In 1964, the National Aeronautics and Space Administration (NASA) purchased a system from General Electric Co. ("G.E.") which, with NASA equipment, portrayed computer generated scenes on a raster scan television screen for design engineers to simulate astronaut docking and landing maneuvers in outer space ("the G.E./NASA scene generator").

26. In 1967, NASA purchased from General Electric equipment and software for the NASA scene generator, which allowed the generation of three-dimensional objects on a television screen. This purchase and subsequent use by NASA makes the G.E./NASA scene generator prior art with respect to the Rusch-2 patent. The G.E./NASA scene generator was used to simulate a lunar excursion module landing on the moon, a rendezvous in outer space in which the lunar excursion module docks with the command module, a tank game, and aircraft carrier and airport landings. The G.E./NASA scene generator also provided the synchronization signals necessary to use a television set as the display.

27. In the lunar landing simulation, the view on the television set was of the surface of the moon (with a target area on which to land), and outer space in the background. The object of the simulation was to move the user controlled symbol--the lunar module--so that it would touch down on the moon. The G.E./NASA

scene generator ascertained coincidence between the lunar module and the moon's surface and automatically stopped the lunar module's motion.

28. In the docking simulation, the view on the user's television set was of the command spaceship the user was to dock with in outer space. The engineer or astronaut controlling the lunar excursion module used a device similar to a joystick to maneuver the lunar module until it docked successfully with the command ship. The simulation was programmed to provide, upon docking, a transfer of momentum from the lunar module to the command ship, although the resulting motion was slight inasmuch as significant motion could only result from velocities which would cause the ships to crash. Once the ships were docked they moved together. NASA personnel monitored the simulation in a control room. The view on their screen was the command spaceship, the lunar module controlled by the user, and outer space in the background. NASA personnel could see on their television set when the docking maneuver was successfully completed and the two spaceships coincided.

29. In the tank game, the view on the television set was a battlefield seen from the perspective of an airplane. The player-controlled airplane fired bullets at a moving tank. The NASA computer controlled movement of the tank. The object of the game was for the bullets to hit the moving tanks on the screen. In the tank game, coincidence was ascertained between the bullets and the tank. Upon coincidence, depending upon the number of bullets that hit the tank, the tank would change shape and the "explosion" would

grow in size in proportion to the size of the hit.

30. In the aircraft carrier landing simulation, the view on the screen was an aircraft carrier from the perspective of a pilot in an airplane. The pilot controlling the airplane, using a device similar to a joystick, landed the airplane on the deck of the carrier. The simulator detected coincidence between the airplane and the aircraft carrier.

31. In the airport landing simulation, the view on the screen was an airport from the perspective of a pilot in an airplane. The pilot controlling the airplane, using a device similar to a joystick, landed the airplane on the runway. The simulator detected coincidence between the airplane and the ground and stopped the airplane.

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G. Drumheller Pool Game.

32. In San Francisco, California at the Fall 1966 Joint Computer Conference sponsored by the American Federation of Information Processing Societies and the Association of Computing Machineries, a video game for playing pool, written by John Drumheller, was publicly demonstrated and played. ("Drumheller pool game"). Because of this public use the Drumheller pool game is prior art with respect to the '507 patent.

33. The Drumheller pool game was similar in appearance to the Michigan pool game. In Drumheller's version, the player controlled the cue stick, and the motion imparted to the cue ball, when

hit by the cue stick, was proportional to the velocity with which the cue stick was moved. In 1967 Patrick Mullarky and Drumheller collaborated to produce a similar pool game for demonstration at the Spring 1967 Joint Computer Conference. Both of these Drumheller pool games are prior art with respect to the '507 patent.

H. RCA Pool Game.

34. From September 28 through October 1, 1967, RCA held an open house for the 25th anniversary of the David Sarnoff Research Center in Princeton, New Jersey. A pool game similar to Drumheller's pool game was demonstrated to and played by visitors at the open house. Because of this public use, the RCA pool game is prior art with respect to the '507 patent.

I. The '480 Patent.

35. The '480 patent is prior art with respect to the '507 patent, as is shown more fully below.

IV.

THE BAER PRIOR ART--WORK AT SANDERS ASSOCIATES.

A. Ralph Baer and the '480 Patent.

36. From 1961 through the early 1970's, Ralph Baer was the Division Manager for the Equipment Design Division of Sanders

Associates. As part of his job, Ralph Baer oversaw the development of electronic display systems that Sanders designed for the military.

37. In September of 1966, Baer wrote a memorandum indicating he was considering the development of video games. The memorandum describes no circuitry or other means for implementing Baer's video game. A basic electronics technician would have been able to develop the circuitry to implement Baer's memorandum.

38. In early 1967, Baer gave his memorandum to his technician William Harrison, and told Harrison to make some electronic circuitry to implement the memorandum. Harrison constructed this circuitry in part by using a "Heathkit" Baer had purchased. Baer's Heathkit was a commercially available piece of equipment which was used to check the horizontal and vertical signals on a standard television set.

39. The simple electronic analog circuitry Harrison designed to implement Baer's memorandum generated two moveable spots on a television screen and ascertained coincidence between the two spots. This circuitry is prior art with respect to the '507 patent.

40. By June of 1967 Baer had constructed and tested his device which used a television set to play games. The control box was attached to the antenna terminals of his television set, and included means for generating dots on the screen of a television receiver to be manipulated by the participant, means for generating vertical and horizontal synchronization signals, means for the player to move the dot the player controls, means for generating

Michigan pool game, Higinbotham tennis game, Space War, Spiegel patent, G.E./NASA scene generator, Drumheller pool game, and the RCA pool game. Moreover, none of this prior art was considered by the Patent Office prior to the issuance of the '480 patent.

B. William Rusch Assigned To Work For Baer.

42. William Rusch, an engineer at Sanders Associates, was formally assigned to work for Ralph Baer on the video game effort in July of 1967. Rusch's notebooks reflect the fact that his first work on video games began toward the end of September, 1967.

43. Prior to the time Rusch actually began work on Sanders Associates' video game, Baer already had, with Harrison's help, constructed and tested the circuitry (reduced it to practice) that would generate two moveable spots and ascertain coincidence between the spots, as set forth more fully in Paragraph 39, supra.

44. Before Rusch began any work on Sanders Associates' video game project, Rusch became thoroughly familiar with all of Baer's and Harrison's ideas, designs, circuits and working models.

45. Prior to Rusch's formal assignment to Baer's group, Rusch attended an informal meeting with Harrison and Baer at which the three discussed possible game ideas. After the meeting Rusch wrote a memorandum summarizing their discussion. Of the twenty-one games listed, only two had a "bounce" feature.

46. Rusch was assigned to develop improvements to Baer's

already designed video game. Less than two months after he began work, Rusch had reduced his "improvement" to practice.

47. On or about February 2, 1968, Rusch filled out a "Patent Disclosure Sheet" (an in-house form) and sent it to Sanders Associates' patent counsel. The purpose of the form was to set out for counsel the important innovation(s) worthy of consideration for patent. In his Patent Disclosure Sheet, Rusch informed patent counsel at Sanders Associates that he wanted to patent some circuitry that would "provide[] another positioning method for spots on TV screen." He informed patent counsel that the idea for his circuitry was suggested by the "desire to have voltage control and spot shapes other than rectangular. (Round spot for example.)" By way of his patent disclosure, Rusch further informed Sanders Associates that the "basic theory" of his circuits was similar to Baer's. As Rusch described the connection, Baer had "thought of generating spots and patterns" on television sets for various games, and Rusch had drawn circuits that used a different method of generating spots and patterns. Rusch did not use the term "imparting a distinct motion" in describing the function of his circuits, nor did he identify this element of his circuitry in the sections on the form where he was to identify "Problem solved," "Idea of the invention was suggested by the following factors," "Disadvantages of old apparatus or method," "Advantages of new apparatus or method," or "Features believed to be new."

48. The only features Rusch thought were new were those of "Simple voltage control of spot positioning. Price per spot

less; Round spots, hollow 'ring' spots, etc., generated easily."

49. Rusch's work was only an attempted "improvement" to that completed earlier by Baer. Counsel for Sanders conceded this to the U.S. Patent and Trademark Office.

50. William Harrison constructed the circuits for Rusch, as he had for Baer. Rusch's circuits were tested by Harrison, Baer and Rusch.

51. On May 27, 1969, Rusch applied for a patent entitled "Television Gaming Apparatus." The Patent and Trademark Office assigned Rusch's application Serial No. 828,154. The application was eventually issued as U.S. Patent No. 3,659,284 and later reissued as U.S. Patent Re. No. 28,507. This patent purports to describe circuitry for playing games on a television display by generating dots, getting the hitting dot(s) to move and "hit" the other(s), detecting coincidence of the dots, and "imparting a distinct motion" to the hit dot upon coincidence. The Michigan pool game, Higinbotham tennis game, Space War, Spiegel patent, G.E./NASA scene generator, Drumheller pool game, and the RCA pool game were not disclosed to nor considered by the Patent Office prior to the issuance of U.S. Patent No. 3,659,284. Baer's pending application for what was to become the '480 or Baer-1 patent was not cited to the Patent Office as prior art, but only cross-referenced as a related application. The Patent Office examiner did not consider the impact of the '480 patent on the validity of U.S. Patent No. 3,659,284.

52. The '507 or Rusch-2 patent describes a set of simple

electronic analog circuits which are soldered together ("hard-wired"). The '507 patent discloses a box which could be used only to play a discrete number of games whose circuits were actually built into the box.

53. Rusch's method for generating spots, with a synchronizing generator which drives the sawtooth wave, is as old as the television set itself.

54. Sawtooth wave forms are old in the art, and circuits for their generation would have been available to one ordinarily skilled in the art at the time in standard electrical engineering texts.

55. Rusch's patent application, for what eventually issued as the '507 patent, did not use the words "imparting a distinct motion" to describe Rusch's invention. Neither Rusch's patent application, nor his patent when it issued included any detailed description of specific "flip-flop" circuitry to be used to impart a distinct motion upon detection of coincidence. Rusch used a flip-flop in its intended, expected manner to reverse the motion of the hit symbol (ball) in exactly the same fashion as disclosed by the Higinbotham tennis game.

C. The Baer-Rusch-Harrison Patent.

56. On August 21, 1969, Baer, Rusch and Harrison together applied for a patent entitled "Television Gaming Apparatus and Method." The Patent and Trademark Office assigned this application

Serial No. 851,865. The application was eventually issued as U.S. Patent Number 3,659,285 (the "'285" or "BRH-3" patent). This patent purports to describe circuitry for playing games on a television display by generating dots, getting the hitting dot(s) to move and "hit" the hit dot(s), detecting coincidence of the dots, and "imparting a distinct motion" or "altering the motion upon coincidence" of the hit dot(s). The Michigan pool game, Higinbotham tennis game, Space War, Spiegel patent, NASA scene generator, Drumheller pool game, and the RCA pool game were not disclosed to nor considered by the Patent Office prior to the issuance of the '285 patent. Baer's pending application for what was to become the '480 or Baer 1 patent was not cited to the Patent Office as prior art, but only cross-referenced as a related application. The Patent Office examiner did not consider the impact of the '480 patent on the validity of the '285.

57. The BRH-3 patent disclosed and claimed digital circuits for generating spots on the screen, i.e., spot generators. The BRH-3 patent disclosed circuitry which could generate screen-width walls off of which spots could bounce. The Rusch-2 patent neither disclosed nor claimed wall generator circuitry or digital spot generators.

58. The relevant claims of the BRH-3 patent alleged to be infringed in Magnavox v. Chicago Dynamics Industries, 201 U.S.P.Q. 25 (N.D. Ill. 1977) were found by the court to be invalid by reason of anticipation by the Rusch-2 patent, or, in the alternative, invalid by reason of obviousness in light of the Rusch-2 patent.

D. The Patents Issue.

59. On April 25, 1972, the '284 patent (Rusch-2) was issued to Sanders Associates as assignee of Rusch.

60. On April 25, 1972, the '285 patent (BRH-3) was issued to Sanders Associates as assignee of Baer, Harrison and Rusch.

61. On April 17, 1973, the '480 patent (Baer-1) was issued to Sanders Associates as assignee of Baer, although its application was the first of the three patents to be filed.

E. Reissue Applications Are Filed Shortly Thereafter.

62. On April 25, 1974, Rusch filed an application for reissue of the '284 patent (Rusch-2) with the U.S. Patent and Trademark Office. Pursuant to the terms of 35 U.S.C. §251, a patent holder may file an application for reissue when the patent is "deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent. . . ." The Michigan pool game, Higinbotham tennis game, Space War, Spiegel patent, G.E./NASA scene generator, Drumheller pool game, and the RCA pool game were not disclosed to nor considered by the Patent Office prior to the re-issuance of the '284 patent as U.S. Patent Re. 28,507. The '480 patent was not cited to the patent office as prior art, but only cross-referenced as a related patent.

63. Rusch's application for reissue of the '284 patent stated that as the patent then read, it was "partly inoperative by reason of a defective specification." Sanders Associates sought to have the patent reissued to cover displays on all cathode ray tubes, so that it would cover coin-operated video games in arcades. This was the sole reason reissue was sought. To this end, claims 60 through 64 were added to the patent that was reissued as the '507 patent. Nothing in the reissue application changes the definition of "imparting a distinct motion."

64. The '284 reissue application was allowed by the Commissioner. Sanders Associates surrendered the '284 patent. The reissue patent was issued on August 5, 1975, and was given the number U.S. Patent Re. 28,507 (the "'507" or "Rusch-2" patent). The Patent Office examiner did not consider the impact of the '480 patent on the validity of the '507 patent.

65. On April 25, 1974, Baer, Harrison and Rusch filed an application for reissue of the '285 patent (BRH-3) with the U.S. Patent and Trademark Office. Baer, Rusch and Harrison gave the same reasons for seeking reissue of the '285 patent that Rusch gave in seeking reissue of the '284 patent. The Michigan pool game, Higinbotham tennis game, Space War, Spiegel patent, G.E./NASA scene generator, Drumheller pool game, and the RCA pool game were not disclosed to nor considered by the Patent Office prior to the issuance of the '285 patent as U.S. Patent Re. 28,598. The '480 or Baer-1 patent was not cited to the patent office as prior art, but only cross-referenced as a related patent.

66. The '285 reissue application was allowed by the Commissioner. Sanders Associates surrendered the '285 patent. The reissue patent was issued on October 28, 1975, and was given the number U.S. Patent Re. 28,598 (the "'598" or "BRH-3" patent). The Patent Office examiner did not consider the impact of the '480 patent on the validity of the '598 patent.

67. On June 27, 1977, Baer filed an application for reissue of the '480 patent with the U.S. Patent and Trademark Office, stating that as the '480 read, it was "partly inoperative or invalid" because Baer had claimed more than he had a right to claim in the patent. Baer's "error" was to include claims in the '480 patent that "appear to be too broad" in light of the invention described by Fritz Spiegel in U.S. Patent 3,135,815. (See paragraph 23, supra.)

68. During the more than 7½ years that the Baer-1 reissue application has been sought, the Patent Office, on five separate occasions, has rejected various of Sanders Associates' claims, and Sanders has filed at least five amendments to its application. Baer has submitted 96 claims which purport to set out the meets and bounds of his "invention." On April 23, 1982, the Patent Office Primary Examiner finally rejected substantially all of the submitted claims. Specifically, 78 of the claims were rejected, primarily because the teachings of the Spiegel patent, combined with the teachings of the video game Space War, made the '480 patent obvious to one skilled in the art. The 18 remaining claims relate primarily to very specific circuitry and to a light detecting target shooting

game unrelated to Activision's video games here in suit.

69. In 1982, Baer appealed the Final Rejection of the '480 reissue application to the U.S. Patent Office Board of Appeals. The Primary Patent Examiner filed its Answer to Baer's appeal in October, 1983. The matter is still pending before the Patent Board of Appeals.

V.

THE MAGNAVOX "ODYSSEY" GAME UNIT.

70. For the four years between January, 1968 and January 1972, Sanders tried without success to sell or license the circuitry described in the Baer-1, Rusch-2 and BRH-3 patents. The alleged invention described in the Rusch-2 patent did not meet a long felt need, nor was it the culmination of failed attempts by other to improve Baer's video game.

71. On January 27, 1972, Magnavox became the exclusive licensee of the Baer-1, Rusch-2 and BRH-3 patents. Magnavox also acquired the right to sub-license these three patents.

72. In 1972, Magnavox manufactured and sold a game marketed in the United States under the trademark "Odyssey." "Odyssey" was a battery-operated unit which generated signals, producing images on a television screen. There were two player controlled spots, one ball spot and walls. The ball spot would "bounce" off the walls and player spots. Because the Odyssey game unit had very limited capacity to play different games, the game unit came with

transparent plastic overlays with different backgrounds printed on each, which the user would tape to the face of the television screen depending upon which game was to be played.

73. The first model Odyssey game unit commercially introduced by Magnavox was the Model ITL200, which was first placed on sale by Magnavox in 1972.

74. Magnavox' Odyssey game was based on the circuitry described in the BRH-3 patent. The Rusch-2 patent was never embodied in a commercial product marketed by Magnavox or its sublicensees. The commercial success of the video game industry was not caused by the Rusch-2 patent.

75. No software-only manufacturer of video game programs has purchased a license from Magnavox under the Rusch-2 patent. Unlicensed program manufacturers include Imagic, Parker Brothers, Broderbund, Synapse, Epyx, Sierra, Electronic Arts, Spinnaker, and CBS. Also unlicensed are most manufacturers of home computers which play video games, including IBM, Apple and Commodore.

VI.

THE '507 PATENT (RUSCH-2) IS INVALID.

76. Rusch was faced with the problem of improving Baer's original video game, which consisted of moving dots on a television screen, detecting coincidence, and altering one of the dots. A person in Rusch's position could be expected to look at textbooks on television circuitry, including synchronizing and pulse circuits, at

games already played on video display screens, at other devices which generate dots on a cathode ray screen, and at gaming devices and related subjects such as training and simulation systems. All of these are relevant fields of prior art.

77. The scope of the art relevant to the validity of Rusch-2 is the use of video displays to play games, the use of video displays to simulate and train, and the television sciences, i.e., the electronics of generating pictures composed of myriad dots for the enjoyment of viewers.

78. The United States Patent Office sorts the patent applications it receives into subject matter groupings called "art units". Since it is impossible to compartmentalize the breadth of subjects which are potentially patentable, the Patent Office art units cross-reference related classes. The classes which are concerned with amusement games such as video games cross-reference educational and training devices which include flight trainers and simulators.

79. The ordinary skill in the art is the skill possessed by those whose careers in 1969 would have involved them in the tools and study of video display and simulation and whose background and/or expertise included electrical engineering and computer applications.

80. A flip-flop circuit, such as the one used by Rusch in the Rusch-2 patent, is a simple circuit which could automatically change voltage. Flip-flop circuits substantially identical to the one used by Rusch was well known at least as early as 1960, and in

fact appear in an electrical engineering textbook as early as 1960.

81. Sawtooth wave forms, such as the one drawn in the Rusch-2 patent, were well known in connection with generating symbols on a television screen and in fact appear in a standard television engineering handbook as early as 1951. Every television set uses a sawtooth wave to generate the picture on the screen and thus the use of a sawtooth wave to control spots on a screen is inherent from the nature of television itself.

82. The teachings of the '507 patent would have been obvious to one skilled in the art and having knowledge of the prior art.

VII.

ACTIVISION DOES NOT INFRINGE THE '507 PATENT.

A. No Literal Infringement, Direct Infringement Or Infringement Under Doctrine of Equivalents.

83. Activision game cartridges are computer software. The cartridge itself does not generate dots, detect coincidence, or provide a means for imparting a distinct motion. Each Activision cartridge, depending upon the theme of the particular video game, contains a computer program which instructs the microprocessor in the master console to perform certain functions. Each Activision game cartridge is programmed to instruct the microprocessor in the master console to generate colorful and realistic backgrounds and sound effects.

84. The Rusch-2 patent is an improvement combination patent expressed as a means plus function in the patent claims. The Rusch-2 patent is therefore limited to the circuitry disclosed in the specifications and its equivalents.

85. Activision does not directly infringe any claim of the '507 patent.

86. Activision video game designers did not use and had no use for the '507 patent in designing Activision video games, since there was no connection between the microprocessor-based computer programs written by Activision game designers and the circuits in the '507 patent.

87. The '507 patent does not describe or disclose the use of video game cartridges such as those made, designed and sold by Activision and there is nothing in any of the language of the patent to indicate that use of interchangeable cartridges was contemplated to be a part of the '507 device.

88. No Activision game cartridge embodies the elements of the '507 patent.

89. The Atari 2600 is a microprocessor-based special purpose computer system which generates and displays games on a TV set. A program cartridge (ROM chip) supplies instructions to the microprocessor, which performs calculations on a line-by-line basis using its memory to hold the results of its calculations. The microprocessor then sends coded messages to another integrated circuit (STIC chip) to display certain images on the TV. Motion is reversed by instructing the microprocessor to increment a register;

no flip-flop or voltage reversal occurs. Momentum is imparted by a series of program instructions; no resistor/capacitor differentiator/integrator is used, as in the Rusch-2 circuitry.

90. The Atari 2600 is an integrated stored program digital computer. The Rusch-2 technology is a set of discrete analog hard-wired circuits. The Atari 2600 calculates positions by use of a microprocessor. The Rusch-2 technology cannot perform any computations. The Atari 2600 utilizes a read only memory (ROM) chip to instruct the microprocessor as to the nature of the game to be played. The Rusch-2 technology has no memory device. The Atari 2600 also uses a random access memory contained in the central processing unit (CPU) to store computations and positions. The Rusch-2 technology has no equivalent memory. The Atari 2600 uses a central processing unit (the microprocessor). The Rusch-2 technology has no CPU or microprocessor. The Atari 2600 utilizes external contacts to receive ROM chips (e.g., Activision cartridges), but the Rusch-2 has no external contacts, but is self-contained. The Atari 2600 can display a great variety of video games on interchangeable ROM chips with complex backgrounds, action and scoring.

91. Activision video game cartridges and disks are not identical to the circuits in the '507 patent and thus do not literally infringe the '507 patent.

92. Activision's microprocessor based software is not equivalent to the analog circuitry in the '507 patent.

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B. Consumer Has Right To Adapt Licensed Master Console.

93. Atari, Coleco, and Mattel have licenses from Magnavox, including the right to sell master consoles and video game cartridges to consumers. The purchaser of any one of these master consoles receives the rights that the licensed manufacturer of its master console possesses.

94. When a consumer uses an interchangeable Activision video game cartridge on the consumer's licensed master console, the cartridge simply "adapts" the functioning of the master console to display a different video game. By so doing the consumer does not infringe any claim of the '507 patent, and thus Activision does not induce or contribute to any infringement of any claim of the '507 patent.

C. Magnavox Gave Atari And Its Customers An Express License To Purchase All Compatible Video Game Cartridges.

95. In June 1976, Magnavox and Atari entered into a sweeping settlement agreement and license agreement under the Baer-1 and Rusch-2 patents in which Magnavox specifically released Atari and all of Atari's customers from liability for infringement, and covenanted that it would not sue them, in exchange for a paid-up license (i.e., fixed sum) from Atari to Magnavox.

96. The relevant language from the License Agreement

provides:

> "4.01 Magnavox covenants not to sue Atari or its customers for infringement of any patents presently issued or issued on presently pending applications owned or controlled by Magnavox or Sanders, in the field of video games, during the term of this license [until 1990]." (Emphasis supplied).

97. The relevant language from the Settlement Agreement provides:

> "V. As to games made or sold by Atari, Magnavox and Sanders hereby release and forever discharge Atari and its customers and each of them, from any and all claims, demands, actions or causes of action of any nature whatsoever which Magnavox or Sanders have, shall or may have against Atari and its customers by reason of any act, cause, matter or thing claimed or alleged in any of the pleadings [includes infringement of Rusch-2], records or other papers on file in the Sears case and in the Atari case, or based upon or connected with claims made or filed in the aforesaid actions or in any way related thereto." (Emphasis supplied).

98. This release of Atari customers and covenant not to sue gave Atari customers an express license to purchase Activision video game cartridges for use with their licensed Atari master consoles.

99. In accordance with the terms of the Atari-Magnavox settlement agreement, Atari received a fully paid-up license instead of a running royalty arrangement.

100. At the time of the Atari-Magnavox agreements, the Atari 2600 and Atari 5200 video game master consoles were not yet on the market. Every consumer who subsequently bought an Atari master console received the benefit of Magnavox' release and covenant not to sue, and each was thereby completely free (licensed) to use his

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or her unit to play video games. Nothing in the settlement or license agreements limits either document to situations in which the consumer uses only Atari video game cartridges and joysticks.

101. Atari customers do not infringe any claim of the '507 patent through their purchase or use of any Activision video game cartridge for use with their Atari 2600 master console.

D. Consumers Have Implied License To Use Activision Video Game Cartridges.

102. The consumers of master consoles reasonably believe that they may purchase Activision cartridges or compatible cartridges made by any manufacturer without violating any law or infringing any patent. Thus by 1982 an estimated one-half of the 10 million homes with an Atari master console had at least one Activision cartridge. Magnavox has been well aware of the consumer's expectations and actions and has taken no steps whatever, either directly or through their licensees, to affect either the consumer's expectations or the consumer's resulting actions. Existence of desirable, saleable cartridges enhances the sale of master consoles.

103. Video game cartridges are marketed in toy stores, department stores, video/electronics specialty stores, chain stores and catalogue showrooms. The master consoles with which these video game cartridges are compatible are generally located nearby, the one serving as advertising for the other. Joysticks for use with master

consoles and video game cartridges are located nearby. Each and every Atari, Mattel and Coleco master console is manufactured, offered for sale and sold under a Magnavox patent license which includes the '507 and '480 patents. There are no warnings in the sales area nor on any products or literature which would alert a consumer or the retailer that only Atari cartridges may be used with Atari master consoles, Mattel cartridges with Mattel consoles, or Coleco cartridges with Coleco consoles. The consumer sees only that certain cartridges are compatible with certain master consoles without restrictions.

104. The consumer of an Atari, Mattel or Coleco master console has an implied license for reasonable use of his or her master console, including the purchase and use of compatible game cartridges, and does not infringe any claim of the '507 patent by purchasing or using any Activision video game cartridge.

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E. There Is No "Bounce" Feature In Nine Of The Thirteen Accused Activision Games.

105. The phrase "imparting a distinct motion" is found only in the claims of the Rusch-2 patent, and was inserted by Rusch in response to a Patent Office action which rejected all of the then-pending claims, and required clarification of the words "hit" and "hitting" which Rusch used to describe his two types of spots.

106. During the prosecution of the '284 application (which, upon reissue, became the '507 patent), the Patent Office

Primary Examiner required Rusch to define what he meant by "hit symbol" and "hitting symbol". In the course of his response, Rusch described the only movements that could be imparted to the "hit" spot (e.g., the ball) upon being hit by the "hitting" spot (e.g., the player-controlled symbol). Either the hit spot would reverse direction, or the hit spot would "travel in a direction and with a velocity proportional to the direction and velocity of the 'hitting' spot, causing it to move toward an off-screen position, whereupon it will bounce away from the screen in the same fashion as a ball would." These are the only types of motion disclosed by the '507 patent. The terms "hit symbol," "hitting symbol," and "imparting a distinct motion" in the '284 and '507 patents are limited to situations where either the "hit" spot reverses direction and/or travels in a direction and with a velocity proportional to the direction and velocity of the "hitting" spot. Imparting a distinct motion is thus either a reversal of motion upon coincidence or a transfer of momentum such that the ball acquires a velocity proportional to that of the paddle at the moment of coincidence.

107. In nine of the Activision video games which Magnavox alleges infringe the '507 patent, there is no imparting of a distinct motion to the hit symbol upon coincidence with the hitting symbol ("bounce"), as more fully described below. These games are: Stampede, Barnstorming, Grand Prix, Sky Jinks, Keystone Kapers, Dolphin, Enduro, and Decathlon. This is apparent from simply playing the games and watching what happens on the television

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screen.

108. In Dolphin, the dolphin swims as rapidly as possible away from the squid, or vice versa. The motion of the squid after the "charged" dolphin touches it is alleged to infringe the '507 patent. The squid's motion is not dependent in any way upon the motion of the dolphin and the squid always exits to the lower left hand corner of the screen regardless of the dolphin or squid's previous motion. Further, the motion of the sulking squid after it is caught by the Dolphin is merely an isolated fun feature of the game which has nothing to do with the real action of the game.

109. In Keystone Kapers, Officer Kelly runs as fast as he can to catch a thief who throws obstacles at him. In Keystone Kapers the motion of the beach ball, after hitting Officer Kelly, is alleged to infringe the Rusch-2 patent. The beach ball moves either left to right or right to left, bouncing slowly as it goes. When the ball hits Kelly, its horizontal motion stops and its vertical motion continues unchanged. The beach ball does not bounce backwards off Kelly, nor does it acquire a velocity proportional to Kelly's. The goal is to avoid touching or hitting the ball altogether.

110. In Fishing Derby, the player lowers his line into a group ~~of~~ fish which are swimming left to right and right to left, in an attempt to catch a fish and avoid a shark. The motion of the fish after it is caught is alleged to infringe the Rusch-2 patent. When the player's line touches the nose of a fish, the fish continues to move back and forth, exactly as before. The only change is

that the distance the fish swims is now limited to the slack in the fishing line. As the fish moves toward the surface, the fishing line becomes shorter and the fish swims a shorter distance. The fish does not bounce off the fishing line; the fish does not acquire a velocity proportional to that of the fishing line at the time of contact, nor does it reverse the direction in which it was swimming.

111. In the Activision Decathlon the player "competes" in the ten events which make up the track and field decathalon event. Magnavox concedes that there is no imparting of distinct motion in 9 of the events but asserts that in the 100 meter hurdles event, the motion of the hurdle after being hit by the runner is alleged to infringe the Rusch-2 patent. The player pumps the joy stick back and forth as fast as possible, left to right, to make the hurdler run. The hurdler jumps when the joystick button is pressed. If the hurdler does not jump on time, in one frame the hurdle is vertical, and in the next frame, one sixtieth of a second later, the hurdle is horizontal. The hurdle does not bounce off the hurdler; the hurdle does not move with a velocity proportional to that of the hurdler. The hurdle simply changes position from vertical to horizontal, without an intervening "motion" or even appearance of motion.

112. In Sky Jinks the object is to avoid trees, pylons and balloons randomly placed in the terrain which the player appears to fly over as the background rolls down toward the bottom of the TV screen. The motion of pylons, trees and balloons after being hit by the player controlled airplane is alleged to infringe the Rusch-2 patent. If the player hits any of the objects the scrolling speed