United States District Court,
N.D. California.

SPACE SYSTEMS/LORAL, INC,
Plaintiff.
v.
LOCKHEED MARTIN CORP,
Defendant.

No. C 96-3418 SI

Aug. 5, 1998.

James H. Wallace, Jr., Gregory Lyons, John B. Wyss, Wiley Rein & Fielding, Washington, DC, Edward V. King, Jr., Michael J. Higgins, King & Higgins LLP, San Francisco, for Space Systems/Loral, Plaintiffs.

Edward V. Filardi, Cecilia O. Lofters, Robert B. Smith, White & Case, New York, NY, Mary B. Cranston, Pillsbury Madison & Sutro LLP, Palo Alto, Roger P. Kennedy, Lockheed Martin Missiles and Space, Sunnyvale, for Lockheed Martin Corporation, defendants.

Edward V. Filardi, Cecilia O. Lofters, Robert B. Smith, White & Case, New York, NY, Mary B. Cranston, Pillsbury Madison & Sutro LLP, Palo Alto, Roger P. Kennedy, Lockheed Martin Missiles and Space, Sunnyvale, for Lockheed Martin Corporation, Counter-claimants.

James H. Wallace, Jr., Gregory Lyons, John B. Wyss, Wiley Rein & Fielding, Washington, DC, Edward V. King, Jr., Michael J. Higgins, King & Higgins LLP, San Francisco, for Space Systems/Loral, Counter-defendants.

ORDER RE: MOTIONS FOR SUMMARY JUDGMENT CONCERNING CHAN PATENT; AND ORDER GRANTING PLAINTIFF'S MOTION FOR LEAVE TO AMEND THE COMPLAINT

ILLSTON**, District J.**

The parties in this case have filed the following motions with respect to U.S. patent No. 4,767,084 (the "Chan patent"): (1) defendant's motion for partial summary judgment of non-infringement of the Chan patent and plaintiff's cross-motion that the Chan patent is infringed by defendant's Series 7000 and A2100 satellites; and (2) plaintiff's motion for leave to file an amended complaint to assert an claim of infringement of another patent, U.S. patent No. 5,537,375 (the " '375 patent"). Having considered the arguments of counsel and the papers submitted, and for the reasons set out below, the Court hereby GRANTS defendants' motion for summary judgment on non-infringement, DENIES plaintiff's motion for summary judgment on infringement; and GRANTS plaintiff's motion for leave to amend the complaint.

BACKGROUND

Plaintiff Space Systems/Loral Inc. ("SSL") filed this action alleging patent infringement in violation of 35 U.S.C. s. 271(a) against defendant Lockheed Martin Corporation ("Lockheed"). SSL's complaint alleges that Lockheed is engaged in the "manufacture, shipment, and sale" of satellites that infringe Claim 1 of the Chan patent, entitled "Autonomous Stationkeeping for Three-Axis Stabilized Spacecraft"; and Claim 3 of U.S. Patent No. 5,100,084, the "Rahn patent," entitled "Method and Apparatus for Inclined Orbit Attitude Control for Momentum Biased Spacecraft." Both patents are assigned to SSL.

Most communications satellites operate optimally in a geosynchronous, equatorial orbit, circling the earth once every 24 hours in the equatorial plane and thus remaining in the same position relative to the earth's surface. Such positioning allows for a consistent relationship between the satellite and a transmitter on earth, from which the satellite receives and relays radio signals. It is also essential that the satellite maintain a proper attitude, or orientation, so that the satellite's communication devices (e.g., antennas) are properly directed towards earth. FN1

FN1. *Webster's II New College Dictionary* defines "attitude" as "the orientation of a spacecraft relative to its direction of motion."

A satellite's position and attitude must be adjusted periodically in order to maintain the satellite's ability to receive radio signals from a specific transmitter on earth and relay them to a targeted region on earth, or "pointing accuracy." These adjustments are necessary because while in orbit satellites are subject to various destabilizing forces, such as gravitational effects from the sun and moon, or even the force exerted by light from the sun. Without a way to counteract these forces as they act on the satellite's position (i.e., through its center of mass), the satellite would drift behind or move ahead in its orbit, or drift out of its orbit in the equatorial plane and into an inclined orbit, FN2 creating pointing inaccuracies. Without a way to counteract these forces as they act on the satellite's attitude (i.e ., about its center of mass), the satellite's antennae would twist away from earth, also creating pointing inaccuracies.

FN2. For example, the orbit of a geostationary satellite acquires an inclination at the rate of about .8 degrees a year due to the gravitational forces of the sun and moon.

"Stationkeeping" is the process by which a satellite maintains its designated position in orbit around the earth. It is accomplished with small thrusters located on the surfaces of the satellite. East-west stationkeeping, for example, involves firing the thrusters so as to speed or slow the satellite in its orbit to return it to its proper position. If the satellite has drifted into an inclined orbit, thrusters are fired during north-south stationkeeping to return the satellite to the equatorial plane.

To maintain a proper attitude, most satellites employ at least one momentum wheel powered by an electric motor. A momentum wheel spinning in a satellite creates angular momentum, or "stiffness," which in turn offers resistance to the twisting forces that can change a satellite's attitude. However, the angular momentum created by a spinning momentum wheel does not provide resistance to forces that would twist the satellite around the axis of the wheel. To counteract these forces, the speed of the momentum wheel can be changed. For example, the speed of the momentum wheel can be increased in order to rotate the spacecraft in the opposite direction. Thus, by careful control, a proper attitude for the satellite can be maintained.

These techniques for maintaining satellite position and attitude are limited, however. The use of a satellite's

thrusters requires propellant, which adds to the weight and thus expense of the satellite; therefore propellant is conserved whenever possible. A momentum wheel, employed over time to correct for forces that twist the satellite around the axis of the wheel, will eventually become "saturated" with excess angular momentum. A saturated momentum wheel is one that is spinning either too fast or too slow to control the satellite's attitude. The saturated wheel requires desaturation, or "momentum dumping," to restore the wheel to its nominal spin rate. Desaturation consists of using the satellite's thrusters and/or the wheel's motor to slow or speed the wheel.

Claim 1 of the Chan patent discloses an apparatus which allows a satellite to "perform any desired desaturation of the momentum/reaction wheel" while "automatically and simultaneously" performing a "preselected compensation of the spacecraft's east-west position." Chan patent col. 6:40-44.

Presently before the Court is Lockheed's motion for partial summary judgment that its Series 7000 and A2100 satellites do not infringe, either literally or under the doctrine of equivalents, Claim 1 of the Chan patent or, in the alternative, that the Chan patent is invalid. Plaintiff Space Systems/Loral, Inc. ("SSL") has filed a cross-motion seeking partial summary judgment that Lockheed's Series 7000 and A2100 literally infringe the Chan patent.

LEGAL STANDARDS

A. Patent Claim Construction

Proper construction of patent claims is to be made by the trial court as a matter of law. *See* Markman v. Westview Instruments, Inc ., 52 F.3d 967, 979 (Fed.Cir.1995) (en banc), *aff'd,* 116 S.Ct. 1384 (1996). In determining the proper construction of a claim, the Court has numerous sources, intrinsic and extrinsic, that it may properly look to for guidance.

The Court begins with the intrinsic evidence of record, consisting of the patent itself, the patent specification, and, if in evidence, the prosecution history. *See* Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1561 (Fed.Cir.1991). The Court must examine the words of the claims themselves, both asserted and unasserted, to define the scope of the patented invention. *See* Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed.Cir.1995). Although words in a claim are generally given their ordinary and customary meanings, a patentee is free to act as his own lexicographer provided that the patentee's special definition is clearly stated in the patent specification or prosecution history. *See* Hormone Research Foundation, Inc. v. Genentech, Inc., 904 F.2d 1558, 1563 (Fed.Cir.1990), *cert. dismissed,* 499 U.S. 955 (1991).

To determine whether the patentee has used any claim terms in a manner inconsistent with their ordinary meanings, the Court must in each case review the patent specification. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). The specification is highly relevant to the claim construction analysis. *See id.*

Finally, the Court may consider the prosecution history of the patent, if in evidence. The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution. *See* Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.). *cert. denied,* 116 S.Ct. 515 (1995).

In most situations, an analysis of the intrinsic evidence alone will resolve claim construction disputes. *See*

Vitronics, 90 F.3d at 1583. Reliance on extrinsic evidence is unnecessary and improper when the disputed terms can be understood from a careful reading of the public record. *See* id. at 1584. Nor may such evidence be used to vary the claim terms from how they are defined, even implicitly, in the specification or prosecution history. *See* id. at 1584-85.

B. Summary Judgment

A motion for summary judgment may be granted when "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed.R.Civ.P. 56(c).

The moving party bears the initial burden of "informing the district court of the basis for its motion" and identifying the matter that "it believes demonstrate[s] the absence of a genuine issue of material fact." Celotex Corp. V. Catrett, 477 U.S. 317, 323 (1986). If the moving party meets this burden, the nonmoving party must then set forth "specific facts showing that there is a genuine issue for trial." Fed.R.Civ.P. 56(e); *see also* T.W. Elec. Serv., Inc. V. Pacific Elec. Contractors Ass'n, 809 F.2d 626, 630 (9th Cir.1987).

"[O]nly disputes over facts that might affect the outcome of the suit under the governing law will properly preclude the entry of summary judgment." Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). Conclusory, speculative testimony in affidavits and moving papers is insufficient to raise genuine issues of fact and defeat summary judgment. *See* Falls Riverway Realty, Inc. V. Niagra Falls, 754 F.2d 49 (2d Cir.1985); Thornhill Pub. Co. V. GTE Corp., 594 F.2d 730, 738 (9th Cir.1979).

The evidence presented by the parties in support of or opposition to a motion for summary judgment must be admissible. *See* Fed.R.Civ.P. 56(e). In evaluating this evidence, the Court does not make credibility determinations or weigh conflicting evidence, and draws all inferences in the light most favorable to the nonmoving party. T.W. Elec. Serv., 809 F.2d at 630-31 (citing Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574 (1986)); Ting v. United States, 927 F.2d 1504, 1509 (9th Cir.1991).

DISCUSSION

A determination of infringement requires a two-step analysis. *See* Gentry Gallery, Inc. v. Berkline Corporation, 134 F.3d 1473, 1476 (Fed.Cir.1998). "First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process." Carroll Touch, Inc. v. Electro Mechanical Sys., Inc., 15 F.3d 1573, 1576 (Fed.Cir.1993).

A. Construction of the Chan Patent

The Chan patent is entitled "Autonomous Stationkeeping for Three-Axis Stabilized Spacecraft." FN3 Claim 1 reads:

FN3. The abstract for the Chan patent reads: "Apparatus for autonomously performing stationkeeping maneuvers for three-axis stabilized spacecraft such as geosynchronous satellites. For each of one or more spacecraft axes the invention autonomously performs desaturation of a momentum/reaction wheel associated with that axis, while simultaneously accomplishing the preselected compensation of the spacecraft's east-west position. Thrusters having a polarity corresponding to the desired desaturation polarity are fired in a particular sequence: when a preselected east-west firing bias is present, the thrusters fired are solely from

the face of the spacecraft needed to counteract the east-west deviation. After the bias has been worked down, thrusters are fired from alternating spacecraft faces. An open loop portion of the instant circuit performs or completes working-down of the east-west firing bias once per preselected firing period in those cases where the desaturation maneuvers are not sufficient to perform this function by themselves." (diagram references omitted.)

Apparatus for controlling a 3-axis stabilized spacecraft, comprising:
[a] at least one momentum/reaction wheel mounted on board the spacecraft for maintaining the spacecraft's attitude with respect to an axis;

[b] a set of thrusters mounted about the periphery of the spacecraft for desaturating the momentum/reaction wheel and for accomplishing change in velocity maneuvers;

[c] coupled to the momentum/reaction wheel, means for determining when the momentum/reaction wheel reaches saturation; and

[d] coupled to the determining means, means for performing any desired desaturation of the momentum/reaction wheel while automatically and simultancously accomplishing a preselected compensation of the spacecraft's east-west position.

See Chan patent, Col. 6:28-44. It is undisputed that Lockheed's Series 7000 and A2100 satellites contain elements [a] and [b] of Claim 1. The focus of the Court's claim construction and infringement analysis is therefore on elements [c] and [d].

1. Element [c]: "coupled to the momentum/reaction wheel, means for determining when the momentum/reaction wheel reaches saturation"

Lockheed seeks a construction of the "means for determining when the momentum/reaction wheel reaches saturation" in element [c]. Lockheed argues that the term "saturation" must be interpreted strictly to mean the speed at which a momentum/reaction wheel is "no longer capable of performing attitude control," and, that in order to be "coupled" to both the momentum wheel and the means for desaturation in Claim 1, the means in element [c] cannot include an arrangement whereby the speed of the momentum wheel is relayed to a ground station. *See* Lockheed's Motion at 22, 26.

SSL argues that element [c] includes "conventional wheel speed measurement devices that can be used to determine when the wheel is *near* or at saturation," SSL's Oppo. at 13 (emphasis added), i.e ., the means need not wait until the wheel actually becomes saturated before a determination to slow down or speed up the wheel is made. SSL also asks that the Court construe element [c] to require only that a tachometer or other wheel speed measuring device on-board the satellite "determine" the *speed* of the momentum wheel, and not whether the wheel is in fact saturated.

The Court agrees with SSL on the proper construction of element [c]: that the means determining "saturation" in Claim 1 does not require a means that waits until the momentum wheel has become saturated before signaling: it may determine when the wheel is approaching saturation and fall within element [c]. The Court also finds that a tachometer or other conventional wheel speed measurement device is a means of the type described in element [c]. Such a device provides a means for "determining when the momentum/reaction wheel reaches saturation" within the meaning of the Chan patent.

2. Element [d]: "means for performing any desired desaturation of the momentum/reaction wheel while automatically and simultaneously accomplishing a preselected compensation of the spacecraft's east west position"

Lockheed argues that element [d] of the Chan patent is a "means plus function" claim, governed by 35 U.S.C. s. 112(6), and SSL does not contest this. Pursuant to section 112(6), such a claim is limited to the "structure ... described in the specification and equivalents thereof." 35 U.S.C. s. 112(6).

This structure, Lockheed argues, includes registers and control circuits that (1) store a preselected number of east-west corrections needed over a specified period of time; (2) while the satellite is in orbit, "automatically determines whether east-west correction is needed ... and without any ground intervention selects and fires the appropriate thruster ...."; and (3) operates during normal orbit. Thus, Lockheed argues that element [d], which includes the term "automatically," should "properly be construed to refer to a 'means' that *does not require manually initiated stationkeeping to operate, but rather is one in which a desired amount of east-west correction is loaded into the satellite for future use when the satellite eventually reaches saturation ....*" Lockheed at 24-25 (emphasis added).

SSL seeks a construction that requires only that the means "incorporate[ ] the use of logic to fire thrusters that correct the satellite's east-west position at the same time that thrusters with the proper polarity are fired to accomplish desaturation." SSL's Oppo. at 18. SSL argues that the word "[a]utomatically" in element [d] only "means that there is some processing of information taking place within the spacecraft during the maneuver which allows the spacecraft to perform east-west corrections and desaturation of the momentum/reaction wheel, and that once the maneuver is started, a sequence of events takes place that is controlled within the spacecraft without ground intervention to carry out the maneuver." *Id.*

The Court finds that SSL's proposed construction is too broad. In light of the intrinsic evidence, the Court concludes that the apparatus "automatically and simultaneously accomplishing a preselected compensation of the spacecraft's east-west position" must be capable of more than "some" processing of information on-board the satellite relating to east-west stationkeeping. Rather, the term "automatically" claims an apparatus that allows for autonomous east-west changes in position, i.e. without ground commands concerning the parameters of such movements,FN4 over a substantial length of time. The Court reaches this construction of "automatically" in Claim 1 by taking into account (1) the language of the claim; (2) the Chan patent's stated advantages, particularly that "[a]ll manual east-west stationkeeping maneuvers are eliminated"; (3) the patent's abstract, which provides for an "[a]pparatus for *autonomously* performing stationkeeping maneuvers for three-axis stabilized spacecraft" (emphasis added); and (4) the "best mode" of the invention included in the patent.

FN4. In "parameters," the Court does not include ground commands concerned with the point in orbit at which such stationkeeping should take place, or, in the terms of the Rahn patent, the point at which "housekeeping" occurs.

The patent specifically describes "ground commands" to be transmitted from earth to the satellite. *See* Chan patent col. 3:38-39. There are two elements to these commands: (1) an "east/west firing bias," which is a "binary integer designating the number of times a thruster must be fired over a preselected firing period in order to compensate for the east-west drift"; and (2) a "firing period bias." The specification indicates that

the firing period is typically some number of days, using 30 and 60 day periods as illustrations. Chan patent col. 3:55-65. This description of the apparatus' logic is inconsistent with the notion that east-west stationkeeping be accomplished by daily ground commands containing the operational parameters. The patent's use of the terms "autonomous" and "preselected" to describe the stationkeeping, as well as the patent's stated advantage of eliminating manual east-west stationkeeping, convinces the Court that the means claimed in Claim 1 is one that is capable of performing multiple, autonomous east-west changes in position over a substantial period of time without ground command transmissions concerning the parameters of such movements.FN5

FN5. It is true, as SSL points out, that the structure identified in the Chan patent is enabled only when the satellite's "housekeeping mode" is turned on. *See* Chan patent col. 4:19-22; *id*. col. 4:23-26 ("AND gate 21 [which receives the housekeeping signal] insures that thruster firing will not be done during an operational mode (when the satellite's attitude may be critical), but rather during a housekeeping mode intended for such maneuvers."). Nothing in the Chan patent suggests that this housekeeping mode cannot itself be initiated manually by a ground operator. However, it is clear from the language of the patent itself that the on/off signal for the housekeeping mode is qualitatively different from the data required to perform the automatic and simultaneous stationkeeping functions described by element [d].

B. Literal Infringement by Lockheed's Series 7000 Satellite

Lockheed argues that its Series 7000 satellite does not contain the means claimed by elements [c] and [d] of the Chan patent. First, Lockheed contends that the Series 7000 lacks "means for determining when the momentum/reaction wheel reaches saturation" because the speed of the Series 7000's pivote I mementum wheel is transmitted to the ground, where a *ground operator* selects a "target speed," and that therefore the Series 7000 does not itself possess a "determining means." Second, Lockheed argues that the Series 7000 lacks "means for performing any desired desaturation of the momentum/reaction wheel while automatically and simultaneously accomplishing a preselected compensation of the spacecraft's east-west position" because "the decision of when to initiate east-west stationkeeping, the decision how much east-west correction to perform, the decision whether to perform momentum management at the same time as east-west correction, the selection of thrusters, and preparing the satellite for an east-west stationkeeping maneuver, are *all manually implemented* by a human operator." Def's Motion at 25 (emphasis added). Lockheed states:

In order to prepare for the maneuver, the ground operator must first decide upon the parameters to be used in this particular maneuver, including:

- which thrusters will be used for east-west correction;

- which thrusters will be used to maintain the satellite's pointing direction during the maneuver and perform momentum management (if any is to be done);

- the pulse firing time and interval between pulses;

- the desired speed of the momentum wheel; [and]

- the length of time that east-west thrusters need to continue firing to effect the desired correction;

Id. at 9-10 (citations to Telstar 4 Operations Handbook and User Manual omitted).

SSL argues that Lockheed's Series 7000 satellite contains the means claimed by elements [c] and [d] of the Chan patent. First, SSL argues that the Series 7000 satellite's tachometer, which determines the speed of the satellite's momentum wheel, infringes element [c]. Second, SSL argues that the Series 7000 contains the following four elements, which taken together infringe element [d] of the Chan patent:

(1) onboard computer logic that computes and commands thruster firings that perform desaturation of the momentum wheel and east-west stationkeeping at the same time.

(2) a target wheel speed, which is loaded as a control parameter into the onboard computer logic prior to maneuver initiation.

(3) the amount of east-west stationkeeping that is to be performed is preselected and also loaded as control parameters into the onboard computer logic prior to maneuver initiation.

(4) Once the maneuver is initiated, the onboard computer logic will command the firing of the appropriate thrusters that will perform desaturation of the momentum wheel at the same time east-west stationkeeping is accomplished.

SSL's Oppo. at 22-23.

In light of the Court's construction of element [c]-that a tachometer or other conventional wheel speed measurement device is a means of the type described by that element-the Court agrees with SSL that the Series 7000 contains the determining means described by element [c].

The more difficult question is whether the Series 7000 infringes element [d] of Claim 1. In light of the Court's construction that the claimed means are capable of performing "multiple, autonomous east-west changes in position over a substantial period of time without ground command transmissions concerning the parameters of such movements," the Court finds that the Series 7000 satellites do not infringe element [d].

As Lockheed demonstrates, the Series 7000 satellites' east-west stationkeeping must be implemented by a ground station operator each time east-west stationkeeping is required. The evidence is uncontradicted that the ground operator, rather than any automatic means, makes the selection of which thrusters to fire to simultaneously desaturate the satellite's momentum wheel and perform an east-west change in position. As such, the Series 7000 satellites do not infringe element [d] of Claim 1 of Chan.

Hence, defendant's motion for summary judgment of noninfringement of Claim 1 of the Chan patent by defendant's Series 7000 satellites is GRANTED, and plaintiff's cross-motion for summary judgment of infringement on the same point is DENIED.

C. Literal Infringement by the A2100 Series Satellite

Lockheed's arguments in its motion for summary judgment of non-infringement by its A2100 satellite are substantially similar to arguments concerning the Series 7000:

Initiation of stationkeeping, both north-south and east-west, is not automatic, but rather must be initiated manually by a ground operator in a manner similar to the Series 7000 satellites. In order to prepare for the maneuver, the ground operator must first decide upon the parameters to be used in this particular maneuver, including:

-which thrusters will be used for east-west correction;

-which thrusters will be used to maintain the satellite's pointing direction during the maneuver;

-the thruster pulse width;

-the interval between thruster pulses;

-whether momentum management is to be performed and, if so, select desired wheel angular momentum along each of the three spacecraft axes (roll, pitch, and yaw); and

-the total amount of time that the thrusters will be fired ("orbit adjust jet seconds").

Def's Motion at 14 (citations to GE-1 Spacecraft Operations Manual omitted). Lockheed argues that such manual operations place the A2100 outside of the Chan patent. Lockheed also argues that the A2100 satellite is incapable of performing "any desired desaturation" during east-west stationkeeping because, unlike the Series 7000, momentum adjustment is normally done during north-south stationkeeping due to its longer duration.

SSL argues that Lockheed's A2100 series satellites infringe each element of the Chan patent. Pursuant to the construction of element [c] set out earlier in this order, the Court concludes as a matter of law that infringement of elements [a], [b], and [c] exists. For the same reasons as were discussed with respect to the Series 7000 satellites, however, the Court also finds that the A2100 series satellites do not infringe claim [d].FN6

FN6. Lockheed also argues that the validity of the Chan patent is doubtful "if the Court construes Chan claim 1 for infringement purposes broadly enough so as to cover the Series 7000 and A2100 Series satellites." Def's motion at 32. SSL did not respond to Lockheed's hypothetical and, in light of the disposition set out above, neither will the Court.

Hence, defendant's motion for summary judgment of noninfringement of Claim 1 of the Chan patent by defendant's Series A2100 satellites is GRANTED, and plaintiff's cross-motion for summary judgment of infringement on the same point is DENIED.

D. Doctrine of Equivalents

Lockheed's summary judgment motions also seek a determination that ne ther its Series 7000 nor its Series A2100 satellites infringe Claim 1 of the Chan patent under the doctrine of equivalents. Lockheed asserts that the word "automatically" was added to element [d] of Claim 1 in response to the Patent Office's rejection of the claim as unpatentable under 35 U.S.C. s. 103 over various prior art. This being so, Lockheed argues, SSL is barred by the doctrine of prosecution history estoppel from asserting that Lockheed's satellites, which

do not function "automatically," nonetheless infringe this element through equivalents.

SSL's response to this argument is merely that "the issue of infringement under the doctrine of equivalents is *highly factual* in nature." SSL's Oppo. at 28 (emphasis original). No esponse is provided to the argument concerning prosecution estoppel related to the "automatic" nature of the stationkeeping, nor is any fact evidence presented which would support the contention that equivalent elements are actually employed in defendant's satellites.

Accordingly, defendant's motion for summary judgment of non-infringement of Claim 1 of the Chan patent under the doctrine of equivalents, with respect to defendant's Series 7000 and Series A2100 satellites, is GRANTED.

E. Leave to Amend

SSL also seeks leave to amend its complaint to add an infringement claim based on a third patent, U.S. Patent No. 4,537,376 (the " '375 patent," entitled "Method and Apparatus for Thruster Transient Control").

Federal Rule of Civil Procedure 15 states that once a responsive pleading has been filed, a party may amend its pleading "only by leave of court or by written consent of the adverse party; and leave shall be freely given when justice so requires." Fed.R.Civ.P. 15(a). The rule reflects an underlying policy that disputes should be determined on their merits, and not on the technicalities of pleading rules. *See Foman v. Davis,* 871 U.S. 178, 181-82 (1962). Accordingly, courts are to be generous when deciding whether to grant leave to amend a complaint. *See* Morongo Band of Mission Indians v. Rose, 893 F.2d 1074, 1079 (9th Cir.1990) (leave to amend granted with "extreme liberality"); Ascon Properties, Inc. v. Mobil Oil Co., 866 F.2d 1149, 1160 (9th Cir.1989); Genentech, Inc. v. Abbott Laboratories, 127 F.R.D. 529, 530 (N.D.Cal.1989) (citing DCD Programs, Ltd. v. Leighton, 833 F.2d 183, 186 (9th Cir.1987)).

Once a plaintiff has given a legitimate reason for amending the complaint, the burden shifts to the defendant to demonstrate why leave to amend should not be granted. *See* Genentech, 127 F.R.D. at 530-31 (citing Senze-Gel Corp. v. Sieffhart, 803 F.2d 661, 666 (Fed.Cir.1986). There are several accepted reasons why leave to amend should not be granted, including the presence of bad faith on the part of the plaintiff, undue delay, prejudice to the defendant, futility of the amendment, or that the plaintiff has previously amended the complaint. *See* Ascon Properties, 866 F.2d at 1160; McGlinchy v. Shell Chemical Co., 845 F.2d 802, 809 (9th Cir.1988). The Court has the discretion to determine whether the presence of any of these elements justifies refusal of a request to amend the complaint. *See* Ascon Properties, 866 F.2d at 1160.

Plaintiff alleges that its motion to involve the '375 patent in this case stems from recent depositions of Lockheed witnesses. *See* SSL Memo at 1 ("Lockheed Martin's witnesses admitted facts establishing infringement of a third SSL attitude control patent ..."). Plaintiff contends that its requested amendment would be judicially efficient, because if the Court were to deny the motion to amend, plaintiff would file a separate lawsuit against Lockheed for infringement of the '375 patent. Plaintiff also argues that the infringement claim under the '375 patent does not add significantly to the discovery in this case, since the action will involve the same parties, the same inventor, the same witnesses, and the same documents at issue already.

Lockheed argues that plaintiff shows bad faith in its request to amend the complaint. Lockheed alleges that SSL has "wrongfully" used discovery in this case to obtain information regarding the '375 patent in

violation of the protective order issued in this case. Defendant argues that plaintiff's attorneys asked questions of and requested documents from Lockheed employees that did not relate to either of patents already in the case so that it could evaluate a claim for infringement of the '375 patent.

Lockheed also contends that SSL's motion to amend suggests that SSL's technical expert, Dr. Marshall Kaplan, who formerly consulted on projects for one of Lockheed's predecessors and some of Lockheed's customers, may have breached his confidentiality agreement, Lockheed argues that the issuance date of the '375 patent suggests that it is "likely" that Dr. Kaplan's consulting work on Series 3000, 4000 and 5000 satellites will be involved. Defendant thus contends that plaintiff has improperly received knowledge of alleged infringement of the '375 patent.

Defendant relies on Jackson v. Bank of Hawaii, 902 F.2d 1385 (9th Cir.1990) to support its claim that discovery would be unduly burdensome. In that case, however, the Ninth Circuit based its denial of leave to amend on the fact that it "would require appellees to relitigate a portion of their state action ... on the different theories raised by the [amended] claims." Jackson, 902 F.2d at 1388. Defendant also uses *Jackson* to support its claim of undue delay. The Ninth Circuit, in *Jackson,* rejected appellants' request to add other statutory violations to their complaint because the claims were based upon the same facts originally alleged. That court determined the appellants "I new or should have known the facts and theories raised by the amendment in the original pleading" and they had not "justified their delay in moving to file an amended complaint." Jackson, 902 F.2d at 1388.

SSL's request for leave to amend is premised upon grounds distinguishable from *Jackson*. SSL contends that its knowledge of defendant's infringement of the '375 patent was acquired when one of Lockheed's lawyers made reference to that patent in a deposition of a Lockheed employee during discovery. Plaintiff's Reply Brief at 1. And SSL filed its motion promptly after concluding depositions that created "a good faith evidentiary basis to allege infringement." Id. at 2.

The Court concludes that Lockheed's concerns do not suggest the presence of bad faith, prejudice, or undue delay. Lockheed has presented insufficient evidence that an amendment would lead to burdensome discovery and a significant delay in the resolution of plaintiff's claims. Though not identical, the issues and the parties involved in an infringement action based on the '375 patent are sufficiently similar to the instant case, and the time the Court has spent with the relevant technology is such, that the inclusion of plaintiff's claim under the '375 patent would increase judicial efficiency. Therefore, the Court hereby GRANTS plaintiff's motion.

CONCLUSION

For the above reasons stated and for good cause shown:

1) The Chan patent is construed as stated in this Order;

2) Defendant's motion for partial summary judgment of noninfringement of the Chan patent is GRANTED;

3) Plaintiff's cross-motion for partial summary judgment of literal infringement is DENIED; and

4) Plaintiff's motion for leave to file an amended complaint is GRANTED.

IT IS SO ORDERED.

N.D.Cal.,1998.
Space Systems/Loral, Inc. v. Lockheed Martin Corp.