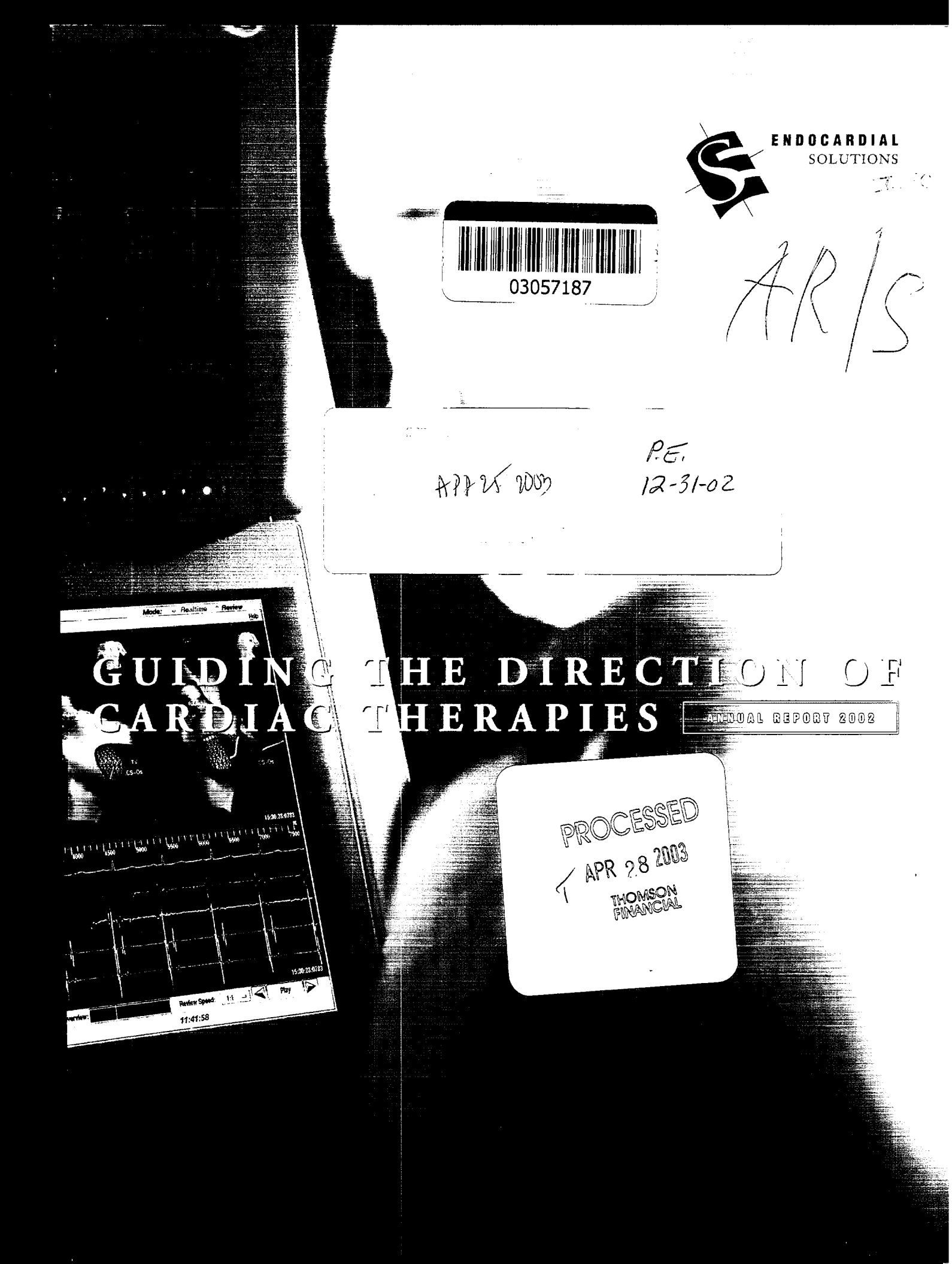
ENDOCARDIAL
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GUIDING THE DIRECTION OF
CARDIAC THERAPIES
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including (a) the ability to navigate catheters without the use of fluoroscopy, (b) dramatically expanding the number of catheters that can be simultaneously displayed in the heart, (c) giving physicians the ability to use any diagnostic or ablation catheter during a procedure, and (d) providing considerable cost advantages over alternative systems. We expect EnSite NavX will be commercially introduced globally in the spring of 2003.

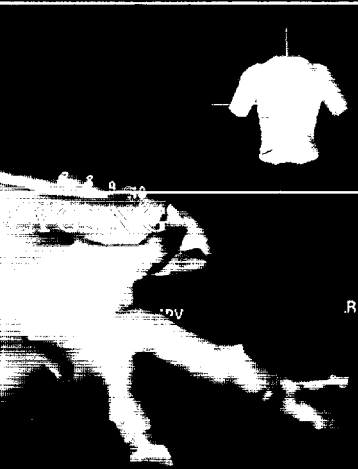
ENSITE DIF: FULL-VISION ELECTROPHYSIOLOGY One of the principal challenges for clinical electrophysiologists is to understand cardiac electrical function in the context of highly variable patient anatomy. In September of 2002, we began clinical testing of another exciting new application for the EnSite System, Digital Image Fusion (DIF). EnSite DIF™ will allow physicians to integrate and register electrical activation images from a patient's EnSite study with three-dimensional CT or MRI anatomical images of the patient's heart, thereby providing physicians with an understanding of integrated patient-specific cardiac anatomy and electrical function. We expect to release EnSite DIF at the end of 2003.

OPTIMIZING THE DELIVERY OF NEW CARDIAC THERAPIES As we prepare to commercially release EnSite NavX globally, we look forward to the North American Society of Pacing and Electrophysiology meeting in May—the largest annual meeting for electrophysiologists. This year's meeting will feature a record number of accepted abstracts and physician presentations on EnSite clinical applications, bringing the total number of published EnSite abstracts and manuscripts to over 300. In addition, we expect some of the most significant and exciting research to-date on new clinical applications for the EnSite system will be presented at this meeting, including the use of EnSite technology to characterize and localize pacing sites for the latest generation of congestive heart failure devices.

GLOBAL EXPANSION We continue to see strong growth in EnSite systems and catheters throughout the Pacific Rim region. We anticipate commercial release of EnSite in Japan in 2003 through our distribution partner, Nihon Kohden, and there appears to be strong clinical interest in EnSite that will enable EnSite to play an important role in this significant market. 2002 was the first full year for our direct sales and clinical support organization in Europe, and EnSite system and catheter sales continued to increase throughout the year.

THE FUTURE I expect 2003 to be a landmark year for Endocardial Solutions. We will continue to make significant investments in the development and clinical study of advanced cardiac mapping and navigation applications designed to expand and improve the delivery of cardiac therapies. On behalf of our entire Endocardial Solutions organization, we appreciate the continued confidence and commitment from our physician customers and shareholders, and we are thankful for the opportunity to play a supporting role in the treatment of patients who benefit from the use of our EnSite products.

James W. Bullock
President, Chief Executive Officer and Director



EnSite NavX: Newly released in Spring 2003, EnSite NavX allows physicians to guide catheters and landmark sites of interest for cardiac ablation procedures with great accuracy and flexibility.

Any diagnostic or therapeutic catheter can be navigated with EnSite NavX, and up to 64 electrodes can be displayed in three dimensions on as many as eight catheters.

EnSite DIF: Expected to be available in late 2003, EnSite DIF (Digital Image Fusion) will integrate three dimensional CT or MRI images of cardiac chamber anatomy with real-time activation maps.

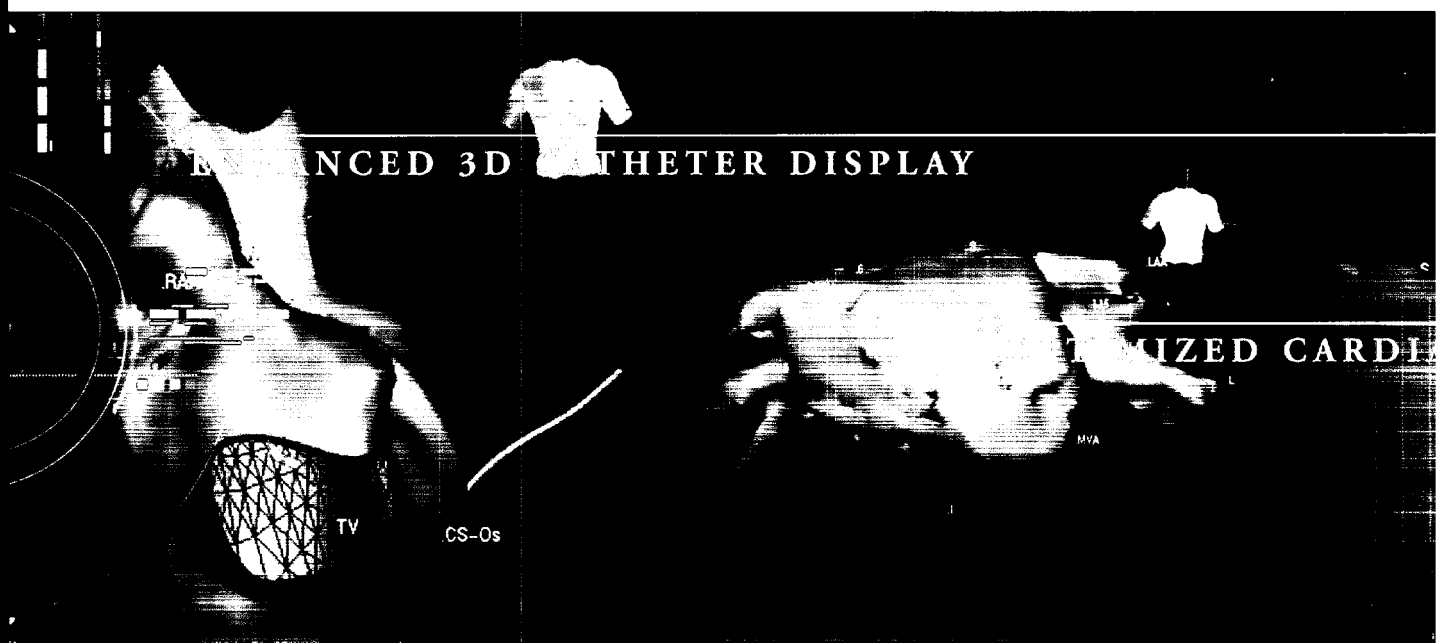
LETTER TO SHAREHOLDERS

As I reflect on the continuing evolution of Endocardial Solutions over the past year, 2002 was one of the most challenging and rewarding years in our company's history. I am especially proud of two major accomplishments. The first was completion of a multi-year development effort for EnSite NavX™, the most advanced non-fluoroscopic cardiac navigation and guidance system available today. The second was a complete realignment and refocus of our field sales and clinical organization which was designed to expand clinical utilization of the EnSite 3000® System (the "EnSite System"), while concurrently reducing the operating costs of our field organization. The implementation of these two initiatives will enable the Company to dramatically improve and expand the navigation and delivery of therapies for the treatment of cardiac arrhythmias and electromechanical disorders in 2003 and beyond.

FINANCIAL RESULTS The Company delivered record revenue during 2002, increasing the number of EnSite Systems installed worldwide to over 300 systems in more than 30 countries, while increasing EnSite catheter sales by nearly 38% over 2001. For the first time in our Company's history, the percentage of revenue from the sale of EnSite catheters exceeded revenue from the sale of EnSite Systems. We expect this trend to continue and accelerate in 2003 with increased EnSite catheter utilization and the introduction of EnSite NavX surface electrodes to navigate and guide catheters during conventional cardiac ablation procedures. In addition, our gross margins of nearly 64% will continue to increase as we implement planned improvements in both components and manufacturing processes for EnSite Systems and catheters throughout 2003.

PREPARING FOR GROWTH In September, we realigned our field sales and clinical organization to drive increased clinical use of EnSite Systems, assign account-specific responsibilities to our clinical support personnel, and dramatically reduce the overall operating costs of our field organization. We improved both the consistency and reliability of our field organization by creating regional teams, with each clinical person assigned to support designated accounts within their respective territories. This realignment not only improved customer satisfaction and increased EnSite catheter sales, but also dramatically reduced the travel costs of our field clinical organization. This reorganization revitalized our field sales and clinical organization, and we are well-positioned to support accelerated growth in EnSite System and catheter sales and the introduction of EnSite NavX in 2003.

ENSITE NAVX: THE FUTURE OF CATHETER NAVIGATION In late summer of 2002, we completed the first human tests of our EnSite NavX navigation system. EnSite NavX is comprised of a system of body surface electrodes that enable the non-fluoroscopic visualization and navigation of up to 64 electrodes on as many as 8 catheters in any chamber of the heart. Based on the extraordinary initial clinical response to this innovative and exciting technology, we expect EnSite NavX to become the system of choice for guiding the delivery of any number of different cardiac therapies to treat a wide variety of clinical indications from simple arrhythmias to more complex arrhythmias such as atrial fibrillation. EnSite NavX has several fundamental advantages over existing navigation technologies,

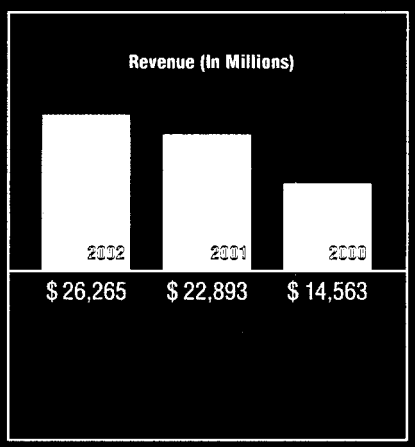


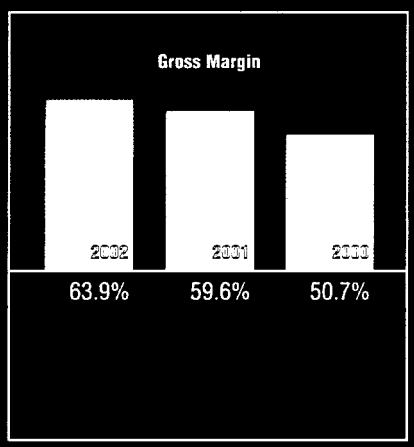
FINANCIAL HIGHLIGHTS

In thousands, except per share amounts

As of December 31,	2002	2001	2000
Statements of Operations			
Net Sales	$ 26,265	$ 22,893	$ 14,563
Net Income (Loss)	$ (9,961)	$ (8,479)	$(10,311)
Net Income (Loss Per Share)-Basic and Diluted	$ (0.61)	$ (0.60)	$ (0.92)
Weighted Average Shares Outstanding	16,324,066	14,211,318	11,212,420

As of December 31,	2002	2001	2000
Balance Sheet			
Cash and Cash Equivalents	$ 1,348	$ 4,550	$ 10,759
Total Assets	$ 17,864	$ 15,797	$ 21,356
Total Liabilities	$ 8,906	$ 7,081	$ 11,492
Stockholder's Equity	$ 8,958	$ 8,716	$ 9,864





ABOUT THE COMPANY Endocardial Solutions develops, manufactures and markets innovative diagnostic technology that is rapidly changing the way patients are treated for cardiac arrhythmias. The EnSite® System allows physicians to map arrhythmias and guide catheter ablation with two different technologies: EnSite® noncontact mapping permits simultaneous recording and 3D display of cardiac electrical activity; EnSite NavX™ technology allows real-time catheter navigation of up to 64 intracardiac electrodes on eight catheters.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K/A

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2002

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number 0-22233

ENDOCARDIAL SOLUTIONS, INC.
(Exact name of registrant as specified in its charter)

Delaware	41-1724963
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1350 Energy Lane, Suite 110, St. Paul, MN	55108
(Address of principal executive offices)	(Zip Code)

(651) 523-6900
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act: None
Securities registered pursuant to Section 12(g) of the Act:
Common Stock, par value $.01 per share
Preferred Share Purchase Rights

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). Yes ☒ No ☐

The aggregate market value of voting stock held by non-affiliates of the registrant as of June 28, 2002 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately $105,965,258 (based on the last sale price of such stock as quoted on The Nasdaq National Market ($7.59) on such date).

As of March 24, 2003 the number of shares outstanding of the registrant's common stock, par value $.01 per share, was 19,664,593.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for its 2003 Annual Meeting of Stockholders to be held on May 21, 2003 are incorporated by reference into Part III of this Annual Report on Form 10-K (the "Form 10-K Report").

EXPLANATORY NOTE

Endocardial Solutions, Inc. hereby files Amendment No. 1 to its Annual Report on Form 10-K for the year ended December 31, 2002.

This Amendment is being filed to correct an error on the cover page. The correct disclosure is contained on the cover page of this Amendment as follows:

> "As of March 24, 2003 the number of shares outstanding of the registrant's common stock, par value $.01 per share, was 19,664,593."

(A number of 16,567,593 shares was originally reported in error).

There are no other changes to the Form 10-K for the year ended December 31, 2002.

SIGNATURE

Pursuant to the requirements of Rule 12b-15 of the Securities Exchange Act of 1934, the registrant has duly caused this Amendment No. 1 to its Form 10-K for the year ended December 31, 2002 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of St. Paul, Minnesota.

Date: April 10, 2003

ENDOCARDIAL SOLUTIONS, INC.

By /s/ J. ROBERT PAULSON, JR.

J. Robert Paulson, Jr.,
Chief Financial Officer
(Principal Financial and Accounting Officer)

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2002

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number
0-22233

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(Exact name of registrant as specified in its charter)

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(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
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Preferred Share Purchase Rights

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). Yes ☒ No ☐

The aggregate market value of voting stock held by non-affiliates of the registrant as of June 28, 2002 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately $105,965,258 (based on the last sale price of such stock as quoted on The Nasdaq National Market ($7.59) on such date).

As of March 24, 2003 the number of shares outstanding of the registrant's common stock, par value $.01 per share, was 16,567,593.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for its 2003 Annual Meeting of Stockholders to be held on May 21, 2003 are incorporated by reference into Part III of this Annual Report on Form 10-K (the "Form 10-K Report").

PART I

ITEM 1. BUSINESS

The Company

Endocardial Solutions, Inc. ("ESI" or the "Company") designs, develops and manufactures a minimally invasive diagnostic system that maps and diagnoses, within the span of a few heartbeats, potentially fatal abnormal heart rhythms known as arrhythmias. Arrhythmias are caused by irregular electrical activity in the heart that disrupts the heart's normal pumping action. Cardiac arrhythmias characterized by an abnormally fast heart rate (more than 100 beats per minute) are known as tachycardias, which can appear in various forms. Ventricular tachycardia ("VT") occurs in the lower two chambers of the heart and frequently leads to serious complications, including sudden cardiac death. Supraventricular tachycardia ("SVT"), including atrial tachycardia, atrial fibrillation and flutter, originates in the upper two chambers of the heart and often results in chest pain, fatigue and dizziness and, while generally not life-threatening, is a leading cause of stroke in the United States.

Historically, electrophysiologists have had difficulty adequately diagnosing complex arrhythmias due to the limited capabilities of cardiac diagnostic technologies. The Company believes that its proprietary EnSite 3000® clinical workstation and EnSite® catheter (together, the "EnSite System") together provide a powerful diagnostic tool that enables electrophysiologists to rapidly and precisely locate the multiple, unpredictable points of origin of complex cardiac arrhythmias, and provide electrophysiologists with important information designed to improve the selection of patient treatment options. The EnSite System applies proprietary mathematical algorithms to compute more than 3,000 points of electrical activity within a heart chamber, producing a high resolution, real-time, three-dimensional color display of the electrical activity in the heart chamber. The "virtual electrogram" function of the EnSite System allows electrophysiologists to instantly view the electrical activity at any of the more than 3,000 points. The EnSite System is also capable of tracking and displaying the location and movements of auxiliary catheters introduced into the chamber for diagnosis and delivering therapy.

In 1998, ESI received regulatory approval to market the EnSite System in the European Community (the "EC") for use in the right atrium and left ventricle of the heart. Distribution of the EnSite System in Europe began in the second quarter of 1998. In 1999, ESI received approval from the U.S. Food and Drug Administration (the "FDA") and regulatory authorities in Canada to market the EnSite System in the U.S. and Canada for the diagnosis of complex arrhythmias in the right atrium of the heart, and the Company continues to work with the FDA to obtain approval to market the use of the EnSite catheter in other chambers of the heart. ESI also received approval in 2000 to market the EnSite System for cardiac mapping in Australia, Korea, Thailand, Malaysia, China and Hong Kong, and approval in 2001 to market the EnSite System in Taiwan. In 2001, ESI entered into an exclusive distribution arrangement with Nihon Kohden, one of Japan's leading manufacturers, developers and distributors of medical electronic products, and distribution of the EnSite System in Japan will commence following receipt of regulatory approval.

The Company's strategy is to establish the EnSite System as the leading diagnostic tool for diagnosing arrhythmias in the more than 1,200 electrophysiology laboratories worldwide. The EnSite System represents a new technology for mapping arrhythmias. The Company believes that the patient population that suffers from complex arrhythmias that are difficult to map using currently available technology presents a significant market opportunity for the Company's EnSite System. The key elements of the Company's strategy are as follows:

- *Increase Clinical Awareness with Electrophysiologists.* The Company has established relationships with leading electrophysiologists at centers throughout the United States, Europe and Asia Pacific. These key opinion leaders continue to demonstrate the clinical efficacy of the EnSite System, and the results of multiple post-market studies have been published in numerous scientific and medical publications, and presented at various scientific conferences, including those sponsored by the North American Society of Pacing and Electrophysiology, the American Heart Association, and the

American College of Cardiology. The Company has over 270 abstracts and 50 peer-reviewed articles that have been published in various scientific and medical journals.

The Company also has ongoing clinical research and educational relationships with numerous leading institutions in the United States, Europe, and Taiwan, and continues to conduct multi-center clinical studies around the world to further develop, enhance and promote various clinical applications of the EnSite System.

- *Expand Technology and Clinical Applications.* The Company believes clinical applications for the EnSite System can be extended from mapping complex arrhythmias such as atrial tachycardia in the right atrium, as currently approved by the FDA, to arrhythmias in other cardiac chambers such as VT, atrial fibrillation and atrial flutter, all of which share similar complex characteristics, including multiple sites of origin in unpredictable locations, and each of which tend to be challenging from a mapping and treatment perspective.

  In the U.S., human medical diagnostic devices are regulated by the FDA under the federal Food, Drug and Cosmetic Act, and are subject to clinical testing before the FDA grants approval to market and sell the device in the U.S. The Food, Drug and Cosmetic Act provides two basic review and approval procedures for medical devices. The first is a shortened submission procedure under Section 510(k) whereby the manufacturer notifies the FDA of its intent to market the product and is required to establish that the product to be marketed is substantially equivalent to a comparable product that has already been approved by the FDA. If a device does not qualify for the Section 510(k) procedure, the manufacturer must file a pre-market approval ("PMA") application, which typically involves significant additional clinical testing and a considerably longer FDA review process.

  In September 1998, the Company filed a Section 510(k) application with the FDA containing the results of its right atrial multi-center clinical trials, and in April 1999, received FDA approval to market the EnSite System for use in the right atrium. In December 1998, the Company filed a Section 510(k) application with the FDA containing the results of its left ventricular multi-center clinical trials. In March 1999, the Company announced that its FDA application for left ventricular use of the EnSite System would be submitted as a PMA application. Portions of the application have been submitted and approved, but ESI has not yet undertaken another clinical study for left ventricular use. The Company is still in discussions with the FDA regarding the best approach to obtain market approval for left ventricular use, and may submit a revised 510(k) application.

  Medical research has shown that atrial fibrillation, the most common form of sustained arrhythmia, although possible to originate in the right atrium, most often originates in the left atrium. In January 2001, the Company received FDA approval for the use of its EnSite System in the left atrium in a multi-center clinical study for diagnosing arrhythmias including atrial fibrillation. The Company began this study in the second quarter of 2001.

The Company continues to focus on the ability of its technology to provide improved speed, increased accuracy, improved navigation and guidance of catheters used in delivering therapy, and cost-effectiveness in mapping cardiac arrhythmias. We expect these improved mapping and navigation applications to benefit electrophysiologists in performing diagnostic procedures and prescribing treatments for an expanded patient population. In October 2001, the Company received FDA clearance for the Company's release of its EnSite Precision™ software, an upgraded version of the operating software used in the EnSite System that provides more realistic heart chamber geometry and new catheter positioning techniques designed to improve orientation, decrease procedure times, and reduce the use of fluoroscopy.

The Company also has been developing EnSite NavX®, a new navigation and localization application designed to enable three-dimensional non-fluoroscopic navigation and positioning of conventional linear mapping or ablation catheters. EnSite NavX enables electrophysiologists to navigate up to 64 electrodes on up to 8 catheters in any chamber of the heart, with or without geometry, to treat a variety of cardiac

arrhythmias. EnSite NavX was developed, in part, using certain three-dimensional intracardiac positioning and navigation technology that the Company licensed from Medtronic, Inc. in January 1998. Pursuant to the terms of this license agreement with Medtronic, the Company has the right to use the licensed technology for intracardiac mapping applications in the treatment of cardiac arrhythmias. The term of the Medtronic license extends until the expiration of the last of the patents on the licensed technology, which patents begin to expire in 2015, unless extended. The Company submitted EnSite NavX to the FDA for approval under Section 510(k) in January 2003.

In February 2002, the Company received proceeds of $10,000,000 in a private placement of 1,666,667 shares of its common stock to accredited investors. In January 2003, the Company received proceeds of $8,516,750 in a private placement of 3,097,000 shares of its common stock to accredited investors. Proceeds from this most recent sale of shares are being used for general working capital including expenses associated with new product development, clinical studies, and the commercial introduction of EnSite NavX following the Company's receipt of regulatory approval.

The Company was incorporated in Minnesota in 1992, and was reincorporated in Delaware in 1995. The Company's common stock began trading on The Nasdaq National Market under the symbol "ECSI" on March 19, 1997. The Company's world corporate headquarters are located at 1350 Energy Lane, Suite 110, St. Paul, Minnesota 55108, and its telephone number is (651) 523-6900. The address of the Company's web site is *www.endocardial.com*. The Company's European subsidiary offices are located at Lambroekstraat 5, 1831 Diegem, Belgium, and its telephone number is 32 2 719 02 27. The address of the Company's European subsidiary web site is *www.endocardial.com/europe*. The Company's annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and any other amendments to those reports are not presently made available to the public free of charge through the Company's website, but are expected to be available through the website before the end of the second quarter of 2003. Upon written request, electronic or paper copies of such reports will be provided free of charge. Requests should be directed to the Chief Financial Officer, at the Company's corporate headquarters.

Background

The heart consists of four chambers: the ventricles are the lower two chambers, and the atria are the upper two chambers. A normal heartbeat is the result of electrical impulses generated at the sinoatrial node, the heart's natural pacemaker located near the top of the right atrium. These impulses form a wave of electrical activation that travels down the atria, causing them to contract and fill the ventricles, the heart's primary pumping chambers, with blood. After a brief delay in the atrioventricular node, located between the chambers, the electrical activation wave enters the ventricles and produces a coordinated contraction of the ventricles that pumps blood throughout the body's circulatory system.

When defects in the heart tissue interfere with the normal formation or conduction of the heart's electrical activity, abnormal heart rhythms, known as cardiac arrhythmias, develop. Cardiac arrhythmias have numerous causes, including congenital defects, tissue damage from heart attacks or arteriosclerosis (the deposition of fatty substances in the inner layer of the arteries), and other diseases that accelerate, delay or redirect the transmission of the heart's electrical activity, thereby disrupting the normal coordinated contractions of the chambers. Cardiac arrhythmias characterized by an abnormally fast heart rate (more than 100 beats per minute) are known as tachycardias, which can appear in various forms.

Ventricular Tachycardia

Characteristics of Ventricular Tachycardias. Ventricular tachycardia, which afflicts approximately one million Americans, is a potentially life-threatening condition caused either by abnormally rapid impulse formation or by slow ventricular conduction which interferes with the heart's normal electrical activity and causes abnormally frequent contractions of the ventricles. Rapid ventricular contractions often result in significantly reduced cardiac output due to inefficient blood pumping. As a result, the body receives an inadequate supply of oxygen, which can cause dizziness, unconsciousness, cardiac arrest and death. VT

conditions tend to become more serious over time, and individuals with VT are at risk of imminent death due to its unpredictable nature.

Many VT conditions are the result of heart attacks caused by coronary artery disease. When a heart attack occurs due to a blockage in one or more coronary arteries, a portion of the heart muscle (most often in the left ventricle) dies. As a result, irregular borders consisting of intermixed healthy and scar tissue are formed and VT typically originates at these sites. As the average age of the U.S. population increases, the number of people who suffer heart attacks and are at risk of VT is also expected to increase.

VT is a highly complex and transient form of cardiac arrhythmia that varies significantly from patient to patient. A small percentage of ventricular tachycardia patients have simple forms of the disease, which tend to focus on a single anatomic site within the ventricle. The Company estimates, however, that of the one million patients who suffer from VT, the majority suffer from complex VTs that (i) have multiple sites of aberrant electrical activity, (ii) prevent sufficient cardiac output, making them dangerous to induce in the patient (which is required for diagnosis), and (iii) are non-sustained and, consequently, are only periodically detectable during a limited number of heartbeats.

Diagnosing Ventricular Tachycardia. Patients suspected of suffering from VT typically are initially screened by a cardiologist by means of external cardiac monitoring over a 24-hour period, usually in the form of an electrocardiogram or Holter recording, which captures electrical activity from surface leads placed on the patient's chest. If further testing is warranted, the patient is referred to a cardiac electrophysiologist for a cardiac electrophysiology ("EP") study.

An EP study evaluates the electrical integrity of the heart by stimulating multiple intra-cardiac sites and recording the electrical response. During an EP study, a patient's clinical tachycardia is induced in a controlled setting in order to diagnose the tachycardia and select an appropriate treatment or combination of treatments. EP studies using currently available technology are lengthy and tedious procedures which consist of probing the interior of the left ventricle with single-point contact catheters, often causing significant discomfort for the patient. In order to analyze the information generated by single-point contact catheters for the purpose of prescribing treatment, electrophysiologists review the signals measured by these catheters as multiple rows of waveforms displayed on a computer screen. Two or more catheters are often used to provide more information to the electrophysiologist and thereby aid in identifying the sites of origin of tachycardia. The electrophysiologist generally constructs a mental image of the sites of the VT within the heart's chamber by calculating the relative timing of electrical activation among the waveforms displayed on the computer screen. The electrophysiologist then estimates the site or sites of origin (which correspond to the physical positions of the catheters) using two-dimensional fluoroscopic (x-ray) images. As the tachycardia becomes more complex, the electrophysiologist's reconstruction of the heart's electrical activity and location of the sites of origin becomes more difficult.

The use of single-point contact catheter technology to perform diagnostic EP procedures can be extremely time-consuming, tedious and invasive. While the relatively small number of patients who suffer from simple forms of VT can be effectively diagnosed using existing single-point catheter technology, single-point contact catheters have limited utility in diagnosing complex ventricular tachycardias, including those that are dangerous to induce or are short in duration. The limited data produced in point-by-point mapping often does not provide the electrophysiologist with sufficient diagnostic information for a complete understanding of complex ventricular tachycardias. Moreover, the use of single-point contact catheters to diagnose complex ventricular tachycardias can take six-to-twelve hours, and require the extended use of fluoroscopy to guide the catheters, which exposes both the patient and attending medical staff to increased levels of radiation.

In an effort to address the diagnostic shortcomings of single-point contact catheters, several "basket" contact catheters measuring multiple points of electrical activity simultaneously currently are under development by other manufacturers. These basket catheters will require contact with the heart's surface in order to record and measure electrical activity, and the Company believes the use of these basket

catheters will be subject to many of the same shortcomings of single-point contact catheters discussed above.

Treatments Following Diagnosis of Ventricular Tachycardia. The Company's EnSite System is designed for mapping and diagnosing both simple and complex VT. While the Company does not currently design therapeutic products for the treatment of this disease, the Company believes the EnSite System provides electrophysiologists with a powerful diagnostic tool that improves their ability to more effectively select among available tachycardia treatment options.

Currently available options to treat VT include non-curative treatments such as antiarrhythmic drugs and implantable defibrillators, both of which attempt to ameliorate the patient's condition and reduce the risks associated with the VT, but do not eliminate the underlying cause of the tachycardia. Historically, the only curative treatment available for VT was open heart surgery, but the procedure was rarely used due to its high morbidity and mortality risk.

While antiarrhythmic drugs, which chemically suppress the arrhythmic activity, are commonly prescribed to treat VT, they are not curative and can result in considerable side effects, which limit the effectiveness of the drugs as well as the ability of patients to use these drugs over long periods of time. Automatic implantable cardioverter defibrillators ("ICDs"), which detect and stop a tachycardia once it has started by pacing or by applying high energy pulses, have also become a common treatment for VT. The useful life of an ICD is approximately five-to-seven years, at the end of which time the ICD is generally replaced in another surgical procedure. Many ICD patients also receive antiarrhythmic drug therapy in an attempt to minimize the frequency of VT episodes.

More recently, catheter ablation, a potentially curative treatment, has been used in a increasing number of cases for treating complex VT. In catheter ablations, a specially-designed catheter is guided to a patient's heart through a vein in the neck or groin in a minimally invasive procedure. A high radiofrequency current is emitted through the ablation catheter (an "RF catheter") to selectively destroy the heart tissue responsible for the abnormal electrical activity, and in many cases, resulting in a cure of the underlying VT. One of the limitations on the use of catheter ablation to treat VT has been the inability to consistently and effectively map the abnormal electrical activity caused by complex VT cases with single-point contact catheters. The difficulty in mapping these arrhythmias is due, in part, to the fact that it is very difficult for patients to tolerate a sustained hemodynamically unstable VT event required to map this type of arrhythmia with a single-point catheter. By contrast, the EnSite System can map these types of complex arrhythmias in a single beat. The development of ablation catheters continues to be the subject of increasing technological research and development by several manufacturers, and the Company believes the number of catheter ablation procedures to treat VT will continue to increase with further advances in diagnostic technology such as the Company's EnSite System.

Supraventricular Tachycardia

Approximately three million of the four million people in the United States who suffer from tachycardia have some form of Supraventricular tachycardia ("SVT"). Supraventricular tachycardia is an abnormally rapid beating of the atria which may reduce the amount of blood pumped into the ventricles, and, consequently, from the ventricles to the rest of the body. Although SVT can be debilitating, causing chest palpitations, fatigue and dizziness, it is generally not life-threatening. The principal types of SVT are Wolff-Parkinson-White syndrome ("WPW"), atrioventricular nodal re-entrant tachycardia ("AVNRT"), atrial fibrillation, atrial flutter, and atrial tachycardia.

Approximately one million people in the United States suffer from WPW or AVNRT. The tachycardias associated with WPW and AVNRT generally are relatively easy to diagnose and locate due to their more simple, single-site nature, and predictable location within the atria. Tachycardias associated with WPW and AVNRT usually can be effectively treated by catheter ablation with currently available contact catheters.

Approximately two million people in the United States suffer from atrial fibrillation or atrial flutter. Atrial fibrillation is the most common type of sustained atrial arrhythmia and is characterized by a disorganized and chaotic conduction of electrical activation, causing the heart's upper chambers to quiver (sometimes as fast as 600 to 1,000 beats per minute), which results in ineffective pumping of the atria. Under these conditions, blood tends to pool and clot, increasing the risk of stroke. The American Heart Association estimates that approximately fifteen percent of all strokes in the United States are caused by atrial fibrillation. The incidence of atrial fibrillation is linked to aging and thus is expected to increase as the average age of the United States population increases.

Typically, diagnosis of atrial fibrillation is easily discerned through an electrocardiogram recording. Beyond initial detection, electrophysiologists have had limited success in mapping the origin point of atrial fibrillation using current single-point catheter technology due to its highly complex and chaotic nature. The inability to effectively map and understand the origins of atrial fibrillation has hindered the development of treatments for this disease.

While antiarrhythmic drugs and anticoagulation therapy are the most commonly prescribed treatments for atrial fibrillation, these drugs are not curative and often have undesirable side effects. The only known curative treatment for atrial fibrillation is a costly and rarely performed open-heart surgical procedure known as the surgical maze procedure. The incisions made in this surgery electrically isolate the atria into regions that can no longer maintain fibrillation.

RF catheters have been approved for delivering ablation therapy in the atria; however, due, in part, to the limited clinical understanding of the inter-relationship between the morphology and electrophysiology of atrial fibrillation, the clinical success of ablation therapy for this disease has been inconsistent. Several manufacturers are developing specialized RF catheters for potentially delivering curative ablation therapy for atrial fibrillation. One such RF catheter under development is designed to create linear lesions along the interior wall of the atrium to electrically isolate regions of the chamber in a manner similar to the surgical maze procedure. Other emerging methods are aimed at more localized ablation treatment based on a hypothesis that atrial fibrillation is maintained in an electrically localized region of the chamber, requiring detailed mapping.

The Company believes that the complexity of atrial fibrillation and the search for effective and curative treatments, including RF catheter ablation, requires the use of diagnostic mapping technology with greater resolution and diagnostic capabilities than traditional EP recording technology, and the Company further believes its EnSite System provides those capabilities. The Company is continuing its FDA-approved multi-center clinical study for the use of the EnSite System in the left atrium for diagnosing arrhythmias including atrial fibrillation, which the Company began in the second quarter of 2001.

The EnSite System

The Company has developed and continues to enhance its proprietary EnSite System to address the need for more rapid, comprehensive and cost-effective diagnosis of complex forms of arrhythmia. The high resolution, three-dimensional, color display generated by the EnSite System is designed to provide electrophysiologists with greater diagnostic capabilities and information than currently available single-point contact catheter mapping devices. The EnSite System provides electrophysiologists with a real time, virtual image of the electrical activity of the heart without contacting the endocardial wall of the heart chamber. The EnSite System displays more than 3,000 points of electrical activity collected by the EnSite catheter using the Company's proprietary algorithms. Diagnosis is enhanced by the "Virtual Electrogram" function of the EnSite System workstation which allows electrophysiologists to instantaneously view the electrical activity at any of the more than 3,000 points displayed by selecting a specific point, or multiple points, on the three-dimensional color map of the heart that generated and displayed on the EnSite System workstation. In addition, the locator function of the EnSite System workstation also enhances diagnosis and treatment by providing electrophysiologists with real-time feedback as to the precise location of auxiliary and therapy catheters introduced into the heart.

The Company's EnSite System consists of the EnSite catheter and clinical workstation that together form an integrated system. The EnSite System is designed to map ventricular and atrial arrhythmia.

The EnSite Catheter

The EnSite catheter is a percutaneous, non-contact, single-use, multi-electrode array catheter designed for use exclusively with the EnSite clinical workstation. The EnSite catheter's multi-electrode array senses electrical activity generated from the endocardial wall while positioned in the heart chamber. The array area of the EnSite catheter is comprised of an inflatable polyurethane balloon within a mechanically expandable multi-electrode array. The multi-electrode array consists of 64 braided wires. A handle and cable connector are located at the proximal end of the EnSite catheter to allow the electrophysiologist to position the distal end of the catheter, deploy the multi-electrode array and make electrical connection from the array to the EnSite System patient interface unit.

The EnSite catheter is inserted percutaneously over a standard guidewire into a selected chamber of the heart. When positioned, the wire braid is mechanically expanded and the balloon residing underneath the wire braid area of the catheter is inflated with a radiopaque solution to form an ellipsoidal, multi-electrode array. When deployed, the multi-electrode array is small enough to permit the normal functioning of the heart. In addition to the EnSite catheter, a standard single-point diagnostic catheter is inserted in the heart chamber to facilitate establishing the chamber's spatial boundaries. The EnSite catheter multi-electrode array collects data used to compute more than 3,000 points of the heart chamber's electrical activity in the span of a few heartbeats by gathering a large amount of the electrical conduction information from the entire chamber and transmitting this information through the EnSite catheter to the EnSite System clinical workstation.

The EnSite System Clinical Workstation

The EnSite System clinical workstation consists of the Company's proprietary patient interface unit, a high-speed computer workstation, and other third-party peripherals, such as a color monitor, a printer and an optical disk drive. The EnSite System patient interface unit amplifies and digitizes the electrical information transmitted by the EnSite catheter. The patient interface unit also accepts information generated by other auxiliary sensors, including data from as many as 32 standard contact catheter electrodes, which allows the electrophysiologist to monitor clinical events or capture additional data for simultaneous display on the EnSite workstation. The electrical information transmitted by the EnSite catheter is processed by the workstation using the Company's proprietary algorithms, reconstruct and display the geometric layout of the heart chamber, together with the distribution of the electrical activity within the heart chamber. The geometric display and the electrical activity of the heart chamber are displayed on the EnSite workstation as high resolution, three-dimensional isopotential or isochronal color maps. The maps can be viewed as a snapshot in time, or as an animated playback at adjustable rates of speed. The maps can also be viewed from any perspective in space and may be zoomed in and out to facilitate rapid diagnosis and treatment of the tachycardia, including identifying the optimal site or sites for the delivery of ablation therapy.

The electrical activity displayed on the EnSite workstation's three-dimensional map also can be displayed as time-waveforms (e.g., "Virtual Electrograms") at multiple selected sites on the endocardium. These Virtual Electrograms are computed by the Company's proprietary algorithms, and the electrophysiologist then has the ability to select for display any of the more than 3,000 sites and waveforms by simply pointing and clicking with the workstation's mouse pointer at the desired location on the map of the heart. The Virtual Electrogram function provides the equivalent data as that which would result from positioning a standard single-point contact catheter at the same site on the endocardium, but without the need for actual physical contact with the endocardial wall to collect each data point.

Another feature of the EnSite System clinical workstation is the EnGuide™ locator signal that can be emitted from selected electrodes on standard EP catheters introduced into the heart chamber along with the EnSite catheter. The EnGuide locator signal provides electrophysiologists with an interactive method for locating and positioning auxiliary or therapy catheters. The EnGuide locator function is designed to allow electrophysiologists to reduce the amount of fluoroscopy used to diagnose and treat complex tachycardias than that which is required when using conventional single-point contact catheters. The EnGuide locator signal is detected and displayed on the workstation's three-dimensional map to provide electrophysiologists with real-time feedback on the precise location of the auxiliary or therapy catheter, and to assist in guiding the catheter (or catheters) to specific sites on the endocardium.

The EnSite System is designed to function as a complete, integrated electrophysiology laboratory system with a wide range of accurate and versatile diagnostic tools. In addition to displaying high resolution, graphical, three-dimensional maps of the heart chamber, the EnSite System provides multi-channel recording from standard EP electrode catheters and standard waveform displays. The Company intends to continue to develop and market new clinical applications for the EnSite System, some of which will require periodic software and hardware upgrades.

In the second quarter of 2000, the Company released Clarity™, an upgraded version of the Company's EnSite software that provided a simplified user interface, together with increased automation of arrhythmia analysis. In October 2001, the Company received released EnSite Precision™, a further upgrade to the EnSite software that delivered an improved and more realistic heart chamber geometry and new catheter positioning techniques designed to improve orientation, decrease overall procedure times, and reduce the use of fluoroscopy. In January 2003, the Company submitted a pre-market notification application under Section 510(k) for its recently developed EnSite NavX product, which enables non-fluoroscopic navigation of conventional linear mapping catheters when an EnSite catheter is not used. EnSite NavX incorporates certain three-dimensional intracardiac location technology licensed from Medtronic, Inc.

Research and Development

Virtually all of the Company's research and development activity is performed internally by the Company's team of scientists, engineers and technicians, in consultation with the Company's outside consultants. The Company's research and development team is divided among five groups: software engineering, applied research, hardware engineering, verification and validation, and catheter engineering. In addition, various members of the research and development team support the design and development of the manufacturing processes used in fabricating the Company's products.

Among its research and development goals, the Company is developing a digital image fusion ("DIF") application which will merge the electrical activation maps generated by the EnSite System with the actual three-dimensional computed tomography ("CT") or magnetic resolution imaging ("MRI") images of the patient's heart chamber, rather than the geometric models of the heart chamber currently generated by the EnSite System. The Company also is working on a project to improve the processing speed, capacity and cost-effectiveness of its EnSite workstation computing platform. In addition, the Company will continue to pursue software and hardware upgrades that improve and optimize the EnSite System functionality, incorporate EnSite location technology for use in conventional EP studies, and develop new catheter technologies for reduced size and cost. Future research and development objectives also include developing new clinical applications for the EnSite System, improving EnSite's current mapping capabilities and catheter configurations, as well as improving and enhancing the capabilities and ease-of-use features of the EnSite System, In addition, the research and development team will continue to support the Company's manufacturing personnel in refining manufacturing processes, and improving the efficiency, and reducing the cost of, manufacturing the EnSite System and the EnSite catheters.

The Company incurred research and development expenses of approximately $4.4 million, $5.3 million, and $5.5 million for the fiscal years ended December 31, 2000, 2001 and 2002, respectively. The Company anticipates that it will continue to make significant investments in research and development.

Manufacturing

The Company manufactures its EnSite catheters in a 4,600 square foot clean-room facility at its world corporate headquarters in St. Paul, Minnesota. The Company also performs final assembly and system level testing of all hardware and software components for the EnSite System clinical workstation at this facility.

The manufacturing process for the EnSite catheter involves a number of steps and component parts. The Company assembles and tests each catheter individually prior to packaging and sterilization, which it conducts in accordance with the FDA requirements. The Company has designed its manufacturing processes to automate, to the extent appropriate, production of its EnSite catheters to increase volume, improve efficiencies and reduce costs.

The manufacture of the EnSite System workstation, including the patient interface unit, involves the assembly, integration and testing of components purchased from third parties. The Company currently purchases the basic computer workstation for its EnSite System from Silicon Graphics, and the Company's software engineers program the workstation with its proprietary software, which include advanced proprietary mathematical algorithms.

The Company purchases the raw materials and various component parts for the EnSite System from a number of suppliers. The Company has adopted rigorous quality control measures to ensure that component parts purchased from third-party vendors meet its specifications and standards. Certain of these component parts are purchased from sole-source suppliers, including the Silicon Graphics computer workstation. There are relatively few alternative sources of supply for these components, and it may be difficult for the Company to locate additional suppliers for these components.

The Company has implemented a manufacturing quality program designed to meet all domestic and international standards for manufacturing medical devices. The Company is required to meet the requirements of the FDA's good manufacturing practices ("GMP") in order to distribute its products in the United States, the requirements for ISO 9001 and CE Mark certification in order to distribute its products in Europe, as well as the requirements of various other countries in the Asia Pacific region. During the fourth quarter of 2001, the Company passed a FDA inspection of the facility and the manufacturing processes. During the fourth quarter of 2002, the Company passed an ISO inspection of its facilities and quality systems. The Company first received ISO 9001 certification for its catheter and quality system in August 1997, and ISO 9002 certification for the clinical work station and a CE Mark for each of the EnSite catheter and the EnSite System workstation in the first quarter of 1998. The Company subsequently received ISO 9001 certification for the EnSite workstation in November 1998. As part of standard medical device regulatory requirements, the Company's facilities and manufacturing processes are subject to periodic inspections and audits by representatives of the various regulatory authorities. In the event the Company fails to satisfy GMP requirements, it may be required to alter its manufacturing processes. Moreover, any such failure could have a material adverse effect on the Company's ability to market its products, which could adversely affect its business and results of operations. The Company's suppliers also are required to satisfy GMP standards.

Sales and Marketing

In the first quarter of 1998, the Company received a CE Mark for each of the EnSite catheter and the EnSite 3000 workstation for use in the right atrium and left ventricle. The Company began marketing and selling the EnSite System and EnSite catheter in Europe during the second quarter of 1998 through a

distribution partnership with Medtronic. In 1999, the Company received approval from the FDA and Canadian regulatory authorities to market the EnSite catheter and EnSite System in the United States and Canada for use in the right atrium. In 2000, the Company received regulatory approval to market the EnSite System for cardiac mapping in Australia, Korea, Thailand, Malaysia, China and Hong Kong, and in Taiwan in 2001. The Company has filed and is awaiting approval from the regulatory authorities in Japan to begin marketing the EnSite System in Japan.

The Company submitted an application for FDA approval of EnSite NavX under Section 510(k) in January 2003. The Company will be certified to begin the marketing and sale of EnSite NavX in Europe upon the Company's final validation and release of EnSite NavX, and will thereafter also be approved to market EnSite NavX in various countries in the Asia Pacific region. A separate regulatory approval will be required to begin marketing EnSite NavX in Japan.

The Company employs a direct sales force in the United States and Europe, and uses distributors for certain other international markets. In 2001, the Company ended an exclusive distribution arrangement in Europe and Japan with Medtronic, Inc. Later in 2001, the Company established an exclusive distribution arrangement in Japan with Nihon Kohden, one of Japan's leading manufacturers, developers and distributors of medical electronic products. The Company intends to appoint additional distributors in various markets throughout the world. The Company retains all distribution rights in the United States and those countries in Europe in which it is currently selling direct.

The Company's initial distribution strategy focused on prominent electrophysiology labs in major medical centers that generally are more likely to keep abreast of and utilize new technologies such as the EnSite System for diagnosing and treating tachycardias. With more than 300 EnSite Systems now installed globally, the Company has begun to broaden its sales and marketing efforts to include a growing number of smaller, regional and community-based electrophysiology labs who are seeking to acquire and utilized advanced EP mapping and navigation technologies such as the EnSite System. As part of its strategy to increase the awareness of and acceptance by electrophysiologists of the clinical utilization of the EnSite System, the Company has focused on and intends to continue to focus on developing peer-reviewed journal articles authored by leading experts in electrophysiology, sponsoring publication and presentation of papers based on research covering the performance and benefits of the EnSite System, and conducting various informational seminars. In addition, as part of its marketing programs, the Company conducts introductory and advanced technical seminars, and training and education sessions with physicians, its sales and field clinical organizations, and its distributors in the use and clinical application of the EnSite System and EnSite catheters.

Patents and Proprietary Rights

The Company's success will depend in part on its ability to obtain patent protection for its products and processes, to preserve its trade secrets and to operate without infringing or violating the proprietary rights of third parties. The Company actively pursues patent protection in the United States and foreign jurisdictions for each of the areas of invention embodied in the EnSite System, and will actively pursue patent protection for proprietary aspects of its technology in the future. Currently, the Company has seventeen (17) U.S. patent applications pending by which it is seeking to obtain protection for certain enhancements currently embodied in the EnSite System, relating to the catheter, catheter localization techniques, and user interface elements. Additionally, seven U.S. patent applications have been allowed, in whole or in part, with issuance expected within the year. The Company also has five issued U.S. patents, which relate to the technology underlying the EnSite System. One of these patents covers the EnSite catheter. The remaining four patents are directed to measurement methodologies used in the EnSite System. The Company has also filed and has pending several foreign patent applications directed to various aspects of the technology underlying the EnSite System.

In January 1998, the Company signed a license agreement with Medtronic, Inc. which gave the Company the right to develop, use and commercialize certain three-dimensional intracardiac location technology for its EnSite System. This technology license, as currently in use by the Company, grants the Company the non-exclusive right to commercialize the licensed technology, royalty-free. The Company's right to use the technology for intracardiac mapping applications in the treatment of arrhythmias is effective until the expiration of the last of the patents on the licensed technology expire, which patents begin to expire in 2015, unless otherwise extended. EnSite NavX was developed, in part, incorporating this technology licensed from Medtronic.

The Company, like other firms that engage in the development and marketing of medical devices, must address issues and risks relating to patents and trade secrets. The coverage sought in a patent application can be denied or significantly reduced before or after a patent is issued. Consequently there can be no assurance that any of the Company's pending or future U.S. or foreign patent applications will result in issued patents, that the scope of any patent protection will exclude competitors or provide competitive advantages to the Company, that any of the Company's current or future U.S. or foreign patents will not be challenged, circumvented by competitors or others or that such patents will be found to be valid or sufficiently broad to protect the Company's technology. Since patent applications are confidential until patents are issued in the United States, or corresponding applications are published in other countries, and since publication of discoveries in the scientific or patent literature often lags behind actual discoveries, the Company cannot be certain that it was the first to make the inventions covered by each of its pending patent applications, or that it was the first to file patent applications for such inventions. In addition, there can be no assurance that competitors, many of which have substantial resources and have made substantial investments in competing technologies, will not seek to apply for and obtain patents that will prevent, limit or interfere with the Company's ability to make, use or sell its products either in the United States or in international markets. Further, the laws of certain foreign countries may not protect the Company's intellectual property rights to the same extent as do the laws of the United States.

In addition to patents, the Company relies on trade secrets and proprietary knowledge, which it seeks to protect, in part, through appropriate confidentiality and proprietary information agreements. In particular, the Company relies upon such means to protect the proprietary software used in the EnSite System. The confidentiality and proprietary information agreements generally provide that all confidential information developed or made known to individuals by the Company during the course of the relationship with the Company is to be kept confidential and not disclosed to third parties, except in specific circumstances. The agreements also generally provide that all inventions conceived by the individual in the course of rendering services to the Company shall be the exclusive property of the Company. There can be no assurance that proprietary information or confidentiality agreements with employees, consultants and others will not be breached, that the Company will have adequate remedies for any breach, or that the Company's trade secrets will not otherwise become known to or independently developed by competitors.

There has been substantial litigation regarding patent and other intellectual property rights in the medical device industry, and companies in the medical device industry have employed intellectual property litigation to gain a competitive advantage. There can be no assurance that the Company will not become subject to patent infringement claims or litigation in a court of law, or interference proceedings declared by the United States Patent and Trademark Office ("USPTO") to determine the priority of inventions or an opposition to a patent grant in a foreign jurisdiction. The defense and prosecution of intellectual property suits, USPTO interference or opposition proceedings, and related legal and administrative proceedings, are both costly and time-consuming and could result in substantial uncertainty to the Company. Litigation or regulatory proceedings may also be necessary to enforce patent or other intellectual property rights of the Company or to determine the scope and validity of other parties' proprietary rights. Any litigation, opposition or interference proceedings will result in substantial expense to the Company and significant diversion of effort by the Company's technical and management personnel. There can be no assurance that

the Company will have the financial resources to defend its patents from infringement or claims of invalidity. An adverse determination in any litigation could subject the Company to significant liabilities to third parties, require the Company to seek licenses from or pay royalties to third parties or prevent the Company from manufacturing, selling or using its proposed products, any of which could have a material adverse effect on the Company's business and prospects. The Company is not currently a party to any patent or other litigation.

Competition

The Company believes that its competitive success will depend primarily upon its ability to demonstrate the clinical efficacy of the EnSite System; effectively create market awareness and acceptance of the EnSite System and EnSite catheter, while maintaining the proprietary nature of current and future product applications; and manufacture and deliver the system on a timely basis. The market for the diagnostic mapping of tachycardias has attracted a high level of interest from various companies in the medical device industry, including those with an established presence in the field of electrophysiology, as well as from more recently formed companies. The Company's competitors include companies that offer standard, single-point contact diagnostic catheters, and companies that offer multi-point, basket contact catheters that use multiple electrodes to provide more data points for the measurement of the heart's electrical activity. The Company also is aware of other medical device companies that are developing alternatives to single-point contact catheter mapping technology.

The Company believes that participants in the market for mapping tachycardias compete on the basis of several factors, including clinical effectiveness, ease of use, cost, and clinical acceptance by health care professionals. Competition also is affected by the length of time and resources required for the development of products, clinical trials and regulatory approval. The medical device industry is characterized by rapid and significant technological change. As a result, the Company's success will depend in part on its ability to respond quickly to medical and technological changes through the development and introduction of new technologies or products.

Many of the Company's competitors and potential competitors have substantially greater capital resources, including larger and more experienced research and development staffs and facilities than the Company. In addition, most of the Company's competitors and potential competitors have substantially greater experience than the Company in researching and developing new products, testing products in clinical trials, obtaining regulatory approvals and manufacturing and marketing medical devices. There can be no assurance that the Company will succeed in developing and marketing technologies and products that are clinically more efficacious and cost-effective than more established diagnostic products or the new approaches and products developed and marketed by its competitors. Moreover, there can be no assurance that the Company will succeed in developing new technologies and products that are available prior to those offered by competitors. The Company's failure to demonstrate the clinical efficacy and cost-effective advantages of its products over those of its competitors could have a material adverse effect on the Company's business and results of operations.

Third-Party Reimbursement for the Company's Products

In the United States, health care providers, including hospitals and physicians, that purchase medical products for treatment of their patients generally rely on third-party payors, principally federal Medicare, state Medicaid and private health insurance plans, to reimburse all or a part of the costs and fees associated with the procedures performed using these medical products. The Company's success will depend on, among other things, the ability of health care providers to obtain satisfactory reimbursement from third-party payors for medical procedures in which the Company's products are used. Third-party reimbursement will depend upon decisions by the Center for Medicare and Medicaid Services, as well as by individual health maintenance organizations and private insurers and other payors. Third-party payors determine whether to reimburse for a particular procedure and, if so, will reimburse health care providers

for medical treatment based on a variety of methods, including a lump sum prospective payment system based on a diagnosis related group or per diem, a blend between the health care provider's reported costs and a fee schedule, a payment for all or a portion of charges deemed reasonable and customary, or a negotiated per capita fixed payment. Specific to Medicare, the EnSite catheter is currently reimbursable under both inpatient and outpatient procedure scenarios. For inpatient procedures, the EnSite procedure will most typically be reimbursed under Diagnosis Related Group 518. For outpatient procedures the EnSite catheter is eligible for separate reimbursement in addition to the hospital's Ambulatory Payment Classification for cardiac three-dimensional mapping. Third-party payors are increasingly challenging the pricing of medical products and procedures. Even if a procedure is eligible for reimbursement, the level of reimbursement may not be adequate. Additionally, payors may deny reimbursement if they determine that the device used in the treatment was unnecessary, inappropriate or not cost-effective, experimental or used for a non-approved indication.

The Company's EnSite catheter is sold at a premium in comparison to existing single-point catheters used in conventional diagnostic or mapping procedures, and requires an initial capital outlay for the companion EnSite clinical workstation. In addition to establishing the safety and efficacy of the EnSite System, and assuming no increase in the level of reimbursement for cardiovascular procedures expected to utilize the Company's products, the Company may be required to economically justify the relative increased cost of utilizing the EnSite System by satisfactorily demonstrating the benefits of the EnSite System to health care providers and payors in terms of such factors as enhanced patient procedural efficiencies, reduced radiation exposure, and improved patient outcomes.

Reimbursement systems in international markets vary significantly by country and by region within some countries, and reimbursement approvals must be obtained on a country-by-country basis. Many international markets have government managed health care systems that control reimbursement for new products and procedures. In most markets, there are private insurance systems as well as government managed systems. Market acceptance of the Company's products will depend on the availability and level of reimbursement in international markets targeted by the Company. There can be no assurance that the Company will obtain reimbursement in any country within a particular time, for a particular time, for a particular amount, or at all.

The Company believes that less-invasive procedures generally provide a more cost-effective overall treatment when compared to conventional drug, surgical and other treatments. Many hospital administrators and physicians justify the use of the Company's products by the attendant cost savings and clinical benefits that they believe will be derived from the use of the Company's products. However, the Company cannot provide assurance that these cost-savings and clinical benefit assumptions will in fact be recognized. Reimbursement for the Company's products is not assured in some international markets under either government or private reimbursement systems, and health care providers may not advocate reimbursement for procedures using the Company's products. Failure by hospitals in the United States or in international markets and other users of the Company's products to obtain reimbursement from third-party payors, or changes in government and private third-party payors' policies toward reimbursement for procedures employing the Company's products, would have a material adverse effect on the Company's business, financial condition and results of operations. Moreover, the Company is unable to predict what additional legislation or regulation, if any, relating to the health care industry or third-party coverage and reimbursement may be enacted in the future, or what effect such legislation or regulation would have on the Company.

Political, economic and regulatory influences are subjecting the health care industry in the United States to increased scrutiny. The Company anticipates that Congress, state legislatures and the private sector will continue to review and assess alternative health care delivery and payment systems. Potential approaches that have been considered include mandated basic health care benefits, controls on health care spending through limitations on the growth of private health insurance premiums and Medicare and Medicaid spending, greater reliance on prospective payment systems, the creation of large insurance

purchasing groups, price controls and other fundamental changes to the health care delivery system. Legislative debate is expected to continue in the future, and market forces are expected to demand reduced costs. The Company cannot predict what impact the adoption of any federal or state health care reform measures, future private sector reform or market forces may have on its business.

Government Regulation

United States

The Company's EnSite System is regulated in the United States as a medical device by the FDA under the federal Food, Drug and Cosmetic Act ("FDC Act") and requires premarket approval by the FDA prior to commercialization. In addition, certain material changes or modifications to medical devices also are subject to FDA review and approval. Pursuant to the FDC Act, the FDA regulates the research, testing, manufacture, safety, labeling, storage, record keeping, advertising, distribution and production of medical devices in the United States. Noncompliance with applicable requirements can result in warning letters, fines, injunctions, civil penalties, recall or seizure of products, total or partial suspension of production, failure of the government to grant premarket approval for devices, and criminal prosecution.

Medical devices are classified into one of three classes, Class I, II or III, on the basis of the controls deemed by the FDA to be necessary to reasonably ensure their safety and effectiveness. Class I devices are subject to general controls (e.g., labeling and adherence to GMPs). Class II devices are subject to general controls and to special controls (e.g., performance standards, and premarket notification). Generally, Class III devices are those which must receive premarket approval by the FDA to ensure their safety and effectiveness (e.g., life-sustaining, life-supporting and implantable devices, or new devices which have not been found substantially equivalent to legally marketed devices), and require clinical testing to ensure safety and effectiveness and FDA approval prior to marketing and distribution. The FDA also has the authority to require clinical testing of Class II devices.

If human clinical trials of a device are required and if the device presents a "significant risk," the manufacturer or the distributor of the device is required to file an investigational device exemption ("IDE") application with the FDA prior to commencing human clinical trials. The IDE application must be supported by data, typically including the results of animal and, possibly, mechanical safety testing. If the IDE application is approved by the FDA, human clinical trials may begin at a specified number of investigational sites with a maximum number of patients, as approved by the FDA. Sponsors of clinical trials are permitted to sell those devices distributed in the course of the study, provided such costs do not exceed recovery of the costs of manufacture, research, development and handling. The clinical trials must be conducted under the auspices of an independent institutional review board ("IRB") established pursuant to FDA regulations.

The FDC Act provides two basic review procedures for medical devices. Certain products may qualify for a submission authorized by Section 510(k) of the FDC Act, wherein the manufacturer gives the FDA a premarket notification of the manufacturer's intention to commence marketing the product. The manufacturer must, among other things, establish that the product to be marketed is substantially equivalent to another legally marketed product. Marketing may commence when the FDA issues a letter finding substantial equivalence. If a medical device does not qualify for the 510(k) procedure, the manufacturer must file a premarket approval ("PMA") application with the FDA. This procedure requires more extensive prefiling testing than the 510(k) procedure and involves a significantly longer FDA review process.

A PMA application must include extensive supporting data, including preclinical and clinical trial data, as well as credible scientific and/or medical literature to substantiate the safety and effectiveness of the device. Following receipt of a PMA application, if the FDA determines that the application is sufficiently complete to permit a substantive review, the FDA will "file" the application. Under the FDC Act, the FDA has 180 days to review a PMA application, although the review of such an application more

often occurs over a protracted time period, and generally takes approximately two years or more from the date of filing to completion.

The PMA application approval process can be expensive, uncertain and lengthy. A number of devices for which premarket approval has been sought have never been approved for marketing. The review time is often significantly extended by the FDA, which may require more information or clarification of information already provided in the filing. During the review period, an advisory committee likely will be convened to review and evaluate the application and provide recommendations to the FDA as to whether the device should be approved. In addition, the FDA will inspect the manufacturing facility to ensure compliance with the FDA's GMP requirements prior to approval of an application. If granted, the approval of the PMA application may include significant limitations on the indicated uses for which a product may be marketed.

The Company conducted clinical trials of its EnSite System on patients with VT at medical centers in the United Kingdom in late 1995, 1996 and 1997 under an authorization of the Medical Devices Agency ("the MDA") of the British government. The Company submitted its IDE application to the FDA in May 1996 based on the results of the initial four-patient trial, plus extensive pre-clinical testing. Based on consultation with the FDA, and to further support its IDE submission, the Company conducted nine additional ventricular patient trials and submitted this data in November 1996 in an amendment to the original IDE application. In December 1996, the FDA granted the Company an IDE to conduct a limited clinical trial of the EnSite System in the United States for left ventricular tachycardia mapping in five patients at one institution. The Company conducted a limited five patient clinical study under an IDE in early 1997. Based on the results of those trials, the FDA approved testing of the EnSite System on an additional ten patients. The Company had completed 13 of the 15 clinical trials in June 1997 when the FDA authorized full-scale clinical testing of the EnSite System in 73 patients at up to five institutions in the United States. In December 1998, the Company filed a premarket notification application with the FDA under Section 510(k) of the FDC Act containing the results of its left ventricular multi-center clinical trials and indicating the Company's intention to commence marketing in the U.S., but the FDA did not find substantial equivalence with other devices used in the ventricles based on initial clinical data. Following further discussions with the FDA, in March 1999, the Company announced that its FDA application for left ventricular use of the EnSite System will be submitted as a PMA application. Portions of the application have been submitted and approved, but the Company has not yet undertaken another clinical study for use of the EnSite System and EnSite catheter in the left ventricle. The Company is still in discussions with the FDA regarding the best approach to obtain market approval for left ventricular use, which may include a revised 510(k) application.

The Company conducted an initial study of its technology for mapping atrial tachycardia in seven patients in the United Kingdom during the second half of 1996. The Company submitted an IDE application to the FDA in June 1997 for use of the EnSite System in the right atrium, and received approval for the IDE in August 1997. In September 1998, the Company filed a 510(k) application with the FDA containing the results of its right atrial multi-center clinical trials. In April 1999, the Company received FDA approval to market the EnSite System for use in the right atrium. In January 2001, the FDA approved an IDE for a multi-center clinical study of the EnSite System in the left atrium for diagnosing arrhythmias, including atrial fibrillation. The Company began this study in the second quarter of 2001. On January 13, 2003, the Company filed a 510(k) application with the FDA seeking approval to begin marketing its recently developed EnSite NavX product for use in all four chambers of the heart.

The Company is required to register as a medical device manufacturer with the FDA and various state agencies, and to list its products with the FDA. As part of such medical device manufacturer registrations, the Company is periodically inspected by the FDA both for compliance with the FDA's GMP, and with other applicable regulations. These regulations require the Company to manufacture its products and maintain its documents in a prescribed manner with respect to manufacturing, testing and quality control

activities. Furthermore, the Company is required to comply with various FDA requirements for design, safety, advertising and labeling.

The Company is required to provide information to the FDA on death or serious injuries alleged to have been associated with the use of its medical devices, as well as product malfunctions that would likely cause or contribute to death or serious injury if the malfunction were to recur. In addition, the FDA prohibits an approved device from being marketed for unapproved applications. If the FDA believes that a company is not in compliance with the law, it can institute proceedings to detain or seize products, issue a recall, enjoin future violations, and assess civil and criminal penalties against the Company, its officers and its employees. Failure to comply with applicable FDA regulatory requirements could have a material adverse effect on the Company's business, financial condition and results of operations.

The advertising of most FDA-regulated products is subject to both FDA and Federal Trade Commission jurisdiction. The Company also is subject to regulation by the Occupational Safety and Health Administration and by other governmental entities.

Regulations regarding the manufacture and sale of the Company's products are subject to change. The Company cannot predict what impact, if any, such changes might have on its business, financial condition or results of operations.

International

International sales of the Company's products are subject to the individual regulatory agency product registration requirements of each country. The regulatory review process varies from country to country, and the Company cannot provide assurance that such approvals will be obtained on a timely basis or at all.

The Company received ISO 9001 certification for its catheter manufacturing and quality systems in August 1997, and ISO 9001 certification for the clinical workstation manufacturing in November 1998. The ISO 9000 series of standards for quality operations were developed to ensure that companies know the standards of quality to which they must adhere to receive certification. The European Union promulgated rules which required that medical products receive the right to affix the CE Mark, an international symbol of adherence to quality assurance standards and compliance with applicable European medical device directives. ISO 9000 certification was one of the CE Mark certification requirements. The Company obtained CE Mark certification for the EnSite catheter and for the EnSite 3000 clinical workstation. The Company will be certified to market EnSite NavX in Europe following self-notification of the completion of its verification and validation testing of the product.

Product Liability and Insurance

The development, manufacture and sale of medical products entail significant risk of product liability claims and product failure claims. The Company has conducted only limited clinical trials and does not yet have, and will not have for a number of years, sufficient clinical data to allow the Company to measure the risk of such claims with respect to its products. The Company faces an inherent business risk of financial exposure to product liability claims in the event the use of its products results in personal injury or death. The Company also faces the possibility that defects in the design or manufacture of the Company's products might necessitate a product recall. There can be no assurance that the Company will not experience losses due to product liability claims or recalls in the future. The Company currently maintains product liability insurance with coverage limits of $5 million per occurrence and $5 million annually in the aggregate and there can be no assurance that the coverage limits of the Company's insurance policies will be adequate. Product liability insurance is expensive, may be difficult to obtain and may not be available in the future on acceptable terms, or at all. Any claims against the Company, regardless of their merit or eventual outcome, could have a material adverse effect upon the Company's business, financial condition and results of operations.

Employees

The Company and its European subsidiary had a total of 204 full-time employees as of December 31, 2002. Of this number, 29 persons were engaged in research and development, 12 were involved in regulatory and quality assurance, 77 were involved with manufacturing and 86 were involved with administration, sales and marketing and support functions. No employee of the Company is covered by a collective bargaining agreement. In addition to its full-time workforce, the Company has consulting or other contractual relationships with 5 other individuals. The Company expects to add such new employees as are necessary to expand its manufacturing capacity for future commercial production.

Executive Officers

The executive officers of the Company, their ages and positions and a brief biography of each individual are as follows:

Name	Age	Position
James W. Bullock	46	President and Chief Executive Officer and Director
J. Robert Paulson, Jr. . . .	46	Chief Financial Officer
Frank J. Callaghan	49	Vice President, Research and Development
Richard J. Omilanowicz .	50	Vice President, Manufacturing and Operations
Patrick J. Wethington . . .	34	Vice President, North American Sales
Graydon E. Beatty	46	Chief Technical Officer and Director

James W. Bullock has been President, Chief Executive Officer and a Director of the Company since May 1994. In addition, Mr. Bullock served as the Chief Financial Officer of the Company from May 1994 until May 1996. From April 1992 until joining the Company, Mr. Bullock served as President and Chief Operating Officer of Stuart Medical, Inc., a cardiac monitoring start-up company. From April 1990 to April 1992, Mr. Bullock served as Vice President of Sales and Marketing of the Stackhouse Division of Bird Medical Technologies, a medical device company. From 1978 to 1990, Mr. Bullock served in a variety of marketing and sales management positions, most recently as Vice President of Sales, for the Pharmaseal Division of Baxter International Inc., a medical products company.

J. Robert Paulson, Jr. has been Chief Financial Officer of the Company since August 2002, and also leads the Company's marketing organization. From 2001 until joining the Company, Mr. Paulson served as Sr. Vice President and General Manager in the auditory products division of Advanced Bionics Corporation, a maker of cochlear implant systems. From 1995 to 2001, Mr. Paulson served in various capacities within Medtronic, Inc., a medical device company. Among his Medtronic positions were Vice President and General Manager of Surgical Navigation Technologies; Vice President of Corporate Strategy and Planning; and Director of Corporate Development. From 1988 to 1995, Mr. Paulson held various marketing, business development and legal positions at General Mills, Inc., and prior to that practiced law at the Minneapolis firm of Lindquist & Vennum.

Frank J. Callaghan has been Vice President of Research and Development of the Company since November 1995. From 1987 until joining the Company, Mr. Callaghan served as a Director of Research and Development at Telectronics Pacing Systems, Inc., a manufacturer of cardiac rhythm management devices. From 1983 to 1987 Mr. Callaghan served in several capacities, including Manager, Systems Technology, at Cordis Corporation, a manufacturer of angiographic and implantable devices.

Richard J. Omilanowicz has been Vice President of Manufacturing and Operations of the Company since November 1994, and Vice President of Operations since January 2001. From May 1993 until joining the Company, Mr. Omilanowicz served as General Manager of McKechnie Plastic Components, a custom injection molding company. From 1980 to May 1993, Mr. Omilanowicz served in several capacities at the Pharmaseal Division of Baxter International Inc., most recently as Director of Research, Development and Engineering.

Patrick J. Wethington has been Vice President of North American Sales of the Company since February 2003. From March 2000 to February 2003, Mr. Wethington served as the Company's Area Director and Territory Manager for the Upper Midwest. Mr. Wethington also served as Director of Marketing of the Company from November 1996 to March 2000. From 1989 until joining the Company, Mr. Wethington served in various marketing and sales positions with Guidant-Cardiac Pacemakers, Inc.

Graydon E. Beatty is a founder of the Company and has been Chief Technical Officer of the Company since May 1995 and a Director since August 1992. Since the Company's inception in May 1992, Mr. Beatty has served in several technical and management positions. In addition, from May 1992 until December 1993, Mr. Beatty served as a consultant with GMN Consulting, an engineering consulting firm, and as a consulting engineer of AngeMed, a division of Angeion Corp., a cardiovascular device company, from February 1992 to September 1992. Mr. Beatty was Senior Development Engineer of Bio-Medical Design Group, Inc., an electrophysiology system developer, from December 1991 to May 1992. From 1989 to December 1991, Mr. Beatty served as Principal Research Engineer at Cardiac Pacemakers, Inc., a cardiovascular device company.

Forward-Looking Statements

This Annual Report on Form 10-K and the Company's financial statements, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of this report and other documents incorporated by reference contain certain "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements represent the Company's expectations, beliefs, intentions or strategies concerning future events, including, but not limited to, any statements regarding its current assumptions about future financial performance; the continuation of historical trends; the sufficiency of its cash balances and cash generated from operating activities for future liquidity and capital resource needs; the expected impact of changes in accounting policies on the Company's results of operations, financial condition or cash flows; anticipated problems and its plans for future operations; and the economy in general or the future of the medical device industry, all of which are subject to various risks and uncertainties.

When used in this Form 10-K and in other filings by the Company with the Securities and Exchange Commission, in its press releases, presentations to securities analysts or investors, in oral statements made by or with the approval of an executive officer of the Company, the words or phrases "believes," "may," "will," "expects," "should," "continue," "anticipates," "intends," "will likely result," "estimates," "projects" or similar expressions and variations thereof are intended to identify such forward-looking statements. However, any statements contained in this Form 10-K that are not statements of historical fact may be deemed to be forward-looking statements.

The Company cautions that these statements by their nature involve risks and uncertainties, certain of which are beyond its control, and actual results may differ materially depending on a variety of important factors, including, but not limited to such factors as market demand and pressures on the pricing for its products; changing market conditions; medical device reimbursement; competition and procedure growth rates within the medical device industry; changes in accounting policies; risks associated with operations outside of the U.S.; changing economic conditions such as general economic slowdown, decreased consumer confidence and the impact of war on the economy; and other risks and uncertainties, including those described in Exhibit 99.1 to this Form 10-K.

ITEM 2. PROPERTIES

The Company leases approximately 33,660 square feet in St. Paul, Minnesota as its world corporate headquarters and production facility. The facility is leased through March 2004. The Company expects to sign an amendment to this lease agreement in early 2003 which will extend the lease through March 2005, with an option to further extend the lease through March 2007. The Company believes that this facility will

be adequate to meet its needs through the full commercial introduction of its planned products. The Company's European subsidiary, Endocardial Solutions N.V./S.A., leases office space in Diegem, Belgium as its European headquarters. This Belgium office space is leased on a month-to-month basis.

ITEM 3. LEGAL PROCEEDINGS

The Company is not currently subject to any pending or threatened litigation.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted to a vote of security holders during the fourth quarter of the fiscal year ended December 31, 2002.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

The Company's common stock began trading on the Nasdaq National Market under the symbol "ECSI" on March 19, 1997. On March 24, 1997, the Company received net proceeds of approximately $18,833,000 from an initial public offering of 2,250,000 shares of its common stock and approximately $6,278,000 from a concurrent private placement to Medtronic, Inc. of 750,000 shares of its common stock. Since its initial public offering, the Company has raised capital through several separate private placements of common stock to accredited investors. In July 1999, the Company received proceeds of $10,000,000 from a private placement of 1,111,111 shares of its common stock to accredited investors. In June 2000, the Company received proceeds of $12,687,500 from a private placement of 2,030,000 shares of its common stock to accredited investors. In March 2001, the Company received proceeds of $7,349,000 from a private placement of 2,449,666 shares of its common stock to accredited investors. The Company also issued warrants to purchase an additional 122,450 shares of common stock, at an exercise price of $4.00 per share, to the placement agent in the transaction, which warrants have been exercised. In February 2002, the Company received proceeds of $10,000,000 from a private placement of 1,666,667 shares of its common stock to accredited investors. In January 2003, the Company received proceeds of $8,516,750 from a private placement of 3,097,000 shares of its common stock to accredited investors. Proceeds from this most recent sale of shares are being used for general working capital, including expenses associated with new product development, clinical studies, and the commercial introduction of the EnSite NavX product following the Company's receipt of regulatory approval. The shares of common stock were sold pursuant to Section 4(2) of the Securities Act of 1933, as amended.

The following table sets forth, for the period indicated, the high and low sales prices of the Company's common stock, as quoted on the Nasdaq National Market.

	2002		2001	
	High	Low	High	Low
First Quarter	$8.578	$4.516	$6.500	$2.875
Second Quarter	9.250	5.203	7.156	3.125
Third Quarter	7.453	2.016	6.297	3.500
Fourth Quarter	4.531	2.203	6.188	3.750

On March 24, 2003, the closing sales price per share of the Company's common stock as quoted on the Nasdaq National Market was $3.03 per share. On March 24, 2003, there were approximately 132 holders of record of the Company's common stock, representing approximately 3700 stockholder accounts.

The Company has never declared or paid cash dividends on its capital stock. The Company currently intends to retain future earnings for use in its business and does not anticipate paying any cash dividends in the foreseeable future.

ITEM 6. SELECTED FINANCIAL DATA

The selected consolidated financial data below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 below and the Consolidated Financial Statements and the Notes thereto included in Item 8 below.

	Year Ended December 31,				
	2002	2001	2000	1999	1998
	(in thousands, except share and per share amounts)				
Statement of Operations Data:					
Revenue	$ 26,265	$ 22,893	$ 14,563	$ 9,597	$ 1,950
Cost of Goods Sold	9,473	9,241	7,174	6,592	3,624
Gross Margin	16,792	13,652	7,389	3,005	(1,674)
Operating Expenses:					
Research & Development	5,506	5,271	4,460	5,102	10,652
General & Administrative	3,024	2,241	2,065	2,003	1,774
Sales & Marketing	18,134	14,750	11,093	7,713	1,310
Operating Loss	(9,872)	(8,610)	(10,229)	(11,813)	(15,410)
Net Interest Income (Expenses) and Other	(89)	131	(82)	84	725
Net Loss	$ (9,961)	$ (8,479)	$ (10,311)	$ (11,729)	$ (14,685)
Net loss per share—basic and diluted	$ (.61)	$ (.60)	$ (.92)	$ (1.23)	$ (1.63)
Weighted average shares outstanding	16,324,066	14,211,318	11,212,420	9,559,494	8,989,477

	Year Ended December 31,				
	2002	2001	2000	1999	1998
			(in thousands)		
Balance Sheet Data:					
Cash and cash equivalents	$ 1,348	$ 4,550	$ 10,759	$ 7,087	$ 8,715
Working capital	6,896	6,341	7,273	9,700	8,920
Total assets	17,721	15,797	21,356	17,578	13,728
Long-term debt and capital lease obligations less current portion	363	301	584	4,564	812
Accumulated deficit	(80,448)	(70,486)	(62,007)	(51,696)	(39,864)
Total stockholders' equity	8,815	8,716	9,864	8,254	10,463

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion of the financial condition and results of operations of the Company should be read in conjunction with the Company's Consolidated Financial Statements and Notes thereto, and the other financial information included elsewhere in this Form 10-K. This Management's Discussion and Analysis of Financial Condition and Results of Operations contains descriptions of the Company's expectations regarding future trends affecting its business. These forward-looking statements and other

forward-looking statements made elsewhere in this document are made in reliance upon safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The following discussion, and the Company's cautionary statements included in Exhibit 99.3 to this Form 10-K, set forth certain factors the Company believes could cause actual results to differ materially from those contemplated by the forward looking-statements.

Summary

The Company was incorporated in May 1992. The Company develops, manufactures and markets the EnSite 3000 clinical workstation and EnSite catheter for use by electrophysiologists in diagnosing and mapping abnormal heart rhythms known as tachycardias. The EnSite 3000 clinical workstation and EnSite catheter received FDA approval for right atrial use in the U.S. and Canada in 1999. The EnSite products also were available in full market release to electrophysiologists in Europe beginning in 1998. ESI received general approval to market the EnSite System for cardiac mapping in Australia, Korea, Thailand, Malaysia, China and Hong Kong in 2000, and in Taiwan in 2001.

Results of Operations

Years ended December 31, 2002 and 2001

General. Net losses increased to approximately $10.0 million, or $0.61 per share, for the year ended December 31, 2002, from $8.5 million, or $0.60 per share, for the year ended December 31, 2001. The Company is in a period of growth in sales and marketing expenses related to market penetration, including increases in personnel costs.

Revenue and Cost of Goods Sold. Worldwide revenue for the year ended December 31, 2002 was $26.3 million, a $3.4 million, or 14.7%, increase over the same period in 2001. In the U.S., 2002 revenues increased approximately $1.7 million, or 9.4%, over 2001. EnSite catheter revenue in the U.S. during 2002 increased approximately $2.8 million, or 30.2%, over 2001. EnSite system revenue in the U.S. during 2002 declined by approximately $1.5 million, or 16.6%, over 2001.

International revenues during 2002 increased approximately $1.6 million, or 36.5%, over 2001. International revenues include sales direct to end-users in certain countries in Europe and Canada, and to distributors in other areas of Europe and in the Asia Pacific region. International revenue from EnSite catheter sales during 2002 increased approximately $1.1 million, or 57.2%, over 2001. International revenue from EnSite system sales during 2002 increased by approximately $0.4 million, or 15.5%, over 2001. International revenues were positively impacted due to higher average selling prices on both the EnSite catheter and EnSite clinical workstation, as a result of the Company's direct selling efforts in Europe following the termination of its distribution agreement with Medtronic at the end of September 2001. The Company believes that selling directly to the end-user will continue to improve sales in the European market.

Other revenue, which represents approximately 4.1% and 1.8% of worldwide revenue for the years ended December 31, 2002 and 2001, respectively, includes deferred revenue generated from extended service contracts, as well as revenue from accessories sales and repairs related to the EnSite clinical workstation.

Revenue in 2002 from EnSite clinical workstation sales was $10.4 million, compared to $11.5 million during 2001, a decrease of 9.6%. The decrease was due to the lower sales of the EnSite clinical workstation in the U.S. Domestic sales accounted for 72.1% of total EnSite clinical workstation sales during 2002, compared to 78.1% during 2001.

Revenue in 2002 from EnSite catheter sales was $14.8 million, compared to $11.0 million during 2001, an increase of 34.7%. Domestic sales accounted for 80.4% of total EnSite catheter sales during 2002, compared to 83.2% during 2001.

Cost of goods sold including unabsorbed manufacturing expenses was $9,472,885 and $9,241,039 for the years ended December 31, 2002 and 2001, respectively.

The gross profit margin was 63.9% for the year ended December 31, 2002, compared with 59.6% during the same period in 2001. The increase in margins is primarily attributable to improvements in the EnSite catheter manufacturing process and material costs, together with improved absorption of manufacturing overhead from increased EnSite catheter revenue during 2002. Gross margins on EnSite catheters improved to 68.5% in 2002, up from 63.2% in 2001. Additionally, because the Company's margins on its domestic sales are substantially higher than the margins on its international sales, the Company's margins were positively impacted due to the fact that 76.7% of the Company's revenue during 2002 was from domestic sales. The Company expects these gross margin improvements will continue to be recognized in 2003 on both EnSite catheters and EnSite Systems.

Research and Development Expenses. Research and development expenses include compensation and benefit costs for the clinical, software, hardware, catheter, and applied research departments, as well as costs associated with regulatory expenses. Research and development expenses were approximately $5.5 million for the year ended December 31, 2002, compared to $5.3 million during the same period in 2001, an increase of $0.2 million, or 4.4%. The Company expects to make continued significant R&D investments and clinical studies during 2003.

General and Administrative Expenses. General and administrative expenses were approximately $3.0 million and $2.3 million for the years ended December 31, 2002 and 2001, respectively, an increase of approximately $0.8 million, or 34.9%. The increase in 2002 was due primarily to several one-time charges incurred in 2002, including the hiring and relocation of the Company's Chief Financial Officer, additional legal fees related to increased patent activities for EnSite NavX, EnSite DIF and congestive heart failure applications, and professional service expenses related to business development activities. The Company expects general and administrative expenses to decrease in 2003.

Sales and Marketing. Sales and marketing expenses were approximately $18.1 million for the year ended December 31, 2002, an increase of $3.4 million from $14.8 million incurred during the same period in 2001, or 22.9%. This increase was primarily attributable to costs associated with the hiring of additional sales and field clinical personnel to build and train the U.S. and European field organizations. The Company expects sales and marketing expenses to remain relatively constant during 2003.

Interest Income and Expense. Interest income was $68,258 and $318,209 for the years ended December 31, 2002 and 2001, respectively. The decrease was due primarily to lower average cash and cash equivalent balances and lower interest rates. Interest expense was $134,782 and $161,367 for the years ended December 31, 2002 and 2001, respectively.

Years ended December 31, 2001 and 2000

General. Net losses decreased to $8,479,043, or $0.60 per share, for the year ended December 31, 2001, from $10,311,147, or $.92 per share, for the year ended December 31, 2000. The Company was in a period of growth in sales and marketing expenses related to market penetration, including increases in personnel costs.

Revenue and Cost of Goods Sold. Worldwide revenue for the year ended December 31, 2001 was $22.9 million, a $8.3 million, or 57%, increase over the same period in 2000. In the U.S., revenues increased approximately $7.5 million, or 70%, during 2001 over 2000 revenues. Approximately $5.9 million of the $7.5 million revenue increase in the U.S. during 2001 came from EnSite catheter sales, where unit sales increased approximately 90% over 2000. Increased utilization per system per month during 2001 contributed to these higher unit and revenue numbers.

International revenues increased approximately $0.8 million, or 21%, during 2001 over 2000 revenues. International revenues include sales direct to the end-user in Europe and Canada, and to distributors in

Europe and Asia Pacific. A majority of the increase in international revenues was related to EnSite catheter sales, where unit sales increased approximately 31% over 2000. International revenues were also positively impacted in the fourth quarter of 2001, due to higher average selling prices on both the EnSite catheter and EnSite clinical workstation, when the Company launched its direct selling efforts in Europe after the termination of its distribution agreement with Medtronic at the end of September 2001.

Other revenue, which represents approximately 1.8% and 2.1% of worldwide sales for the years ended December 31, 2001 and 2000, respectively, includes revenue generated from extended service contracts, repairs and accessories sales related to the EnSite clinical workstation.

EnSite clinical workstation sales were $11.5 million for fiscal year 2001, compared to $8.4 million for the same period in 2000, or an increase of 37%. The increase was due mainly to the higher sales of the EnSite clinical workstation in the U.S. Domestic sales accounted for 78% of total EnSite clinical workstation sales during fiscal year 2001, compared to 72% for the same period in 2000.

EnSite catheter sales were $11.0 million for fiscal year 2001, compared to $5.9 million for the same period in 2000, or an increase of 87%. Domestic sales accounted for 83% of total EnSite catheter sales during fiscal year 2001, compared to 77% for the same period in 2000.

Cost of goods sold, including unabsorbed manufacturing expenses, were approximately $9.2 million and $7.2 million for the years ended December 31, 2001 and 2000, respectively.

The gross profit margin was 59.6% for the year ended December 31, 2001, compared with 50.7% during the same period in 2000. The increase in margins was mainly attributed to the better EnSite catheter absorption of manufacturing overhead from the growth in domestic sales over the prior year. Additionally, because the Company's margins on its domestic sales are substantially higher than those of its international sales, the Company saw more favorable results in margins due to 81% of the revenue recorded during the year being from domestic sales, compared to 74% from the same period in 2000. Also, EnSite catheter margin increased approximately eight percentage points above the previous year's margin.

Research and Development Expenses. Research and development expenses include compensation and benefit costs within the clinical, software, hardware, catheter and applied research departments as well as costs associated with regulatory expenses. Research and development expenses were approximately $5.3 million for the year ended December 31, 2001, compared to $4.5 million during the same period in 2000, an increase of $0.8 million.

General and Administrative Expenses. General and administrative expenses were approximately $2.3 million and $2.1 million for the years ended December 31, 2001 and 2000, respectively, an increase of approximately $0.2 million. The increase was due primarily to higher personnel costs and professional service expenses.

Sales and Marketing. Sales and marketing expenses increased to $14.8 million during the year ended December 31, 2001, from $11.1 million during the same period in 2000, an increase of $3.7 million. The increase was primarily attributable to increases in personnel and costs associated with building and training of the U.S. and European sales and clinical teams.

Interest Income and Expense. Interest income was $318,208 and $604,691 for the years ended December 31, 2001 and 2000, respectively. The decrease was due primarily to lower average cash and cash equivalent balances and lower interest rates. Interest expense was $161,367 and $677,674 for the years ended December 31, 2001 and 2000, respectively. The decrease was directly related to the repayment of the loan to Medtronic, Inc. during February 2001.

Liquidity and Capital Resources

On March 24, 1997, the Company received net proceeds of approximately $18,833,000 from an initial public offering of 2,250,000 shares of its common stock and approximately $6,278,000 from a concurrent

private placement to Medtronic, Inc. of 750,000 shares of its common stock. The Company's operations since inception have been funded by net proceeds from the sales of stock totaling approximately $89.2 million through December 31, 2002. As of December 31, 2002 and December 31, 2001, the Company had cash, cash equivalents and short-term investments of approximately $1.3 million and $4.6 million, respectively.

For the year ended December 31, 2002, the Company used approximately $11.9 million of cash for operations, compared to approximately $5.7 million for the same period in 2001. The Company's accounts receivable balances was approximately $8.1 million at December 31, 2002, an increase of $3.1 million from December 31, 2001. The increase in accounts receivable is attributed, in part, to the Company's direct selling efforts in Europe and the timing of fourth quarter 2002 sales in relation to the payment terms of these sales. The other factor affecting the increase in accounts receivable relates to the Company's efforts during the third and fourth quarters of 2002 to sell extended maintenance agreements with hardware upgrades to its current installed base of EnSite customers in the U.S., Europe and Asia Pacific. At December 31, 2002, the Company had sold 85 of these extended maintenance agreements with hardware upgrades, but the revenue from these sales was deferred and will be recognized during 2003 (and thereafter in some cases depending on the length of the extended maintenance period). The deferred revenue from the sale of these extended maintenance agreements is reflected in the increase in the current liability portion of deferred revenue of $2.2 million at December 31, 2002, as compared to $0.6 million at December 31, 2001. The accounts receivable associated with these extended maintenance agreements are included in the $8.1 million balance at December 31, 2002.

The inventories balance at December 31, 2002 was approximately $4.8 million, an increase of approximately $2.0 million, or 74.8%, over December 31, 2002. This increase in inventory was primarily attributable to three factors, First, the Company increased production of EnSite Version 3.2 clinical workstations during the fourth quarter of 2002 in anticipation of the EnSite system hardware configuration change associated with the expected approval to begin marketing of EnSite Version 4.0 with NavX in the U.S. and Europe during the second quarter of 2003. The extended maintenance agreements discussed in the preceding paragraph entitle customers to receive the EnSite Version 4.0 and NavX upgrade following FDA approval, and the Company's hardware production group will begin manufacturing the new hardware required to upgrade these EnSite Systems during the first quarter of 2003. Accordingly, the Company increased its production of EnSite Version 3.2 clinical workstations during the fourth quarter to meet EnSite System sale forecasts during the fourth quarter of 2002 and the first quarter of 2003. The second factor affecting year-end inventory levels is related to the Company's anticipated approval to begin marketing EnSite Version 3.2 Systems in Japan in 2003. Because the Company does not anticipate receiving approval to market the EnSite Version 4.0 and NavX clinical workstation in Japan during 2003, the Company's hardware production group increased production of EnSite Version 3.2 workstations during the fourth quarter of 2002 in order to meet the 2003 EnSite sales forecasts for Japan provided by the Company's Japan distributor. The Company believes its inventory of EnSite Systems will decrease during 2003, while EnSite catheter inventories are likely to increase slightly as a result of increased sales projections for 2003. Inventory in 2003 also will increase slightly to reflect the introduction of EnSite NavX surface electrode kits that the Company will begin to market worldwide following regulatory approval.

Accounts payable (including accrued expenses) of approximately $4.4 million at December 31, 2002 increased $0.3 million from December 31, 2001. The slight increase reflects the Company's continued efforts to closely match turns of both receivables and payables in order to optimize the Company's cash flows. The Company expects accounts payable to increase during 2003 as operating and production expenses increase to support continued growth in revenue and the introduction of EnSite NavX. The Company had no short-term investment portfolio as of December 31, 2002.

In March 2001, the Company received proceeds of $7,349,000 from a private placement of 2,449,666 shares of its common stock to accredited investors. In June 2001, the Company entered into a $3.5 million credit facility agreement with Silicon Valley Bank, consisting of a $1.5 million capital lease line and a $2.0 million revolving line of credit. The capital lease line expired in June 2002, and the current revolving

credit facility expires in April 2003. The Company expects to be able to renew the revolving credit facility under similar terms, and also is evaluating the renewal of the capital lease line. As of December 31, 2002, the Company had outstanding $762,167 on the expired capital lease line and had $1.0 million outstanding on the revolving line of credit. The credit facility agreement contains certain restrictive financial covenants, including an obligation to maintain a specified ratio of "current assets" to "current liabilities" (a "quick ratio"), as well as a minimum "tangible net worth". As of December 31, 2002, the Company was not in compliance with the quick ratio or tangible net worth covenants, but Silicon Valley Bank had granted the Company a forbearance under the credit agreement, pending completion of the equity offering described in the following paragraph. Upon receipt of the private placement proceeds described below in January 2003, the Company was again in compliance with the restrictive covenants of the Silicon Valley Bank credit facility.

In February 2002, the Company received proceeds of $10,000,000 from a private placement of 1,666,667 shares of its common stock to accredited investors. In January 2003, the Company received proceeds of $8,516,750 in a private placement of 3,097,000 shares of its common stock to accredited investors.

The Company believes that its existing cash, cash equivalents, short-term investments and bank financing will be sufficient to fund the operations of the Company to profitability, which the Company anticipates will occur in the fourth quarter of 2003. If the Company achieves profitability as expected, the need for additional financing is not presently anticipated. The Company's future liquidity and capital requirements will depend on numerous factors, including the timing of regulatory actions regarding the Company's products, the results of clinical trials and competition, the extent to which the Company's EnSite System gains market acceptance, the costs, timing and method of expansion of sales, marketing, research and development and manufacturing activities and the ability of the Company to obtain additional bank financing. If the Company is not able to renew its existing credit facility in April 2003, the Company believes it would be able to obtain financing from another financial institution or secure an alternative form of financing to meet its working capital requirements. However, the pricing of an alternative form of financing may not be on as favorable of terms as the Company's current credit facility.

Critical Accounting Policies and Estimates

The consolidated financial statements are prepared in accordance with accounting principles generally accepted in the U.S., which require the Company to make estimates and assumptions in certain circumstances that affect amounts reported in the accompanying consolidated financial statements and related footnotes. In preparing these financial statements, management has made its best estimates and judgments of certain amounts included in the financial statements, giving due consideration to materiality. The Company does not believe there is a great likelihood that materially different amounts would be reported related to the accounting policies described below. However, application of these accounting policies involves the exercise of judgment and use of assumptions as to future uncertainties and, as a result, actual results could differ from these estimates.

Revenue Recognition. Revenue from the sale of the Company's EnSite clinical workstation is recognized at the time of shipment in instances where the Company has evidence of a contract, the purchase price is fixed and determinable, and collection is probable. Revenue from service and support contracts, and extended maintenance and hardware upgrade agreements are deferred and recognized ratably over the period the services are provided or as the upgrades are performed. The Securities and Exchange Commission's Staff Accounting Bulletin (SAB) No. 101, "Revenue Recognition" provides guidance on the application of generally accepted accounting principles to selected revenue recognition issues. The Company has concluded that its revenue recognition policy is appropriate and in accordance with SAB No. 101.

Allowance for Doubtful Accounts. Accounts receivable are reduced by an allowance for amounts that may become uncollectible in the future. The estimated allowance is based on management's review of accounts receivable balances and historic write-offs.

Inventories and Related Allowance for Excess and Obsolete Inventory. Inventories are valued at the lower of cost or market and have been reduced by an allowance for excess and obsolete inventories. The estimated allowance is based on management's review of inventories on hand compared to estimated future usage and sales.

New Accounting Standards. In November 2002, the EITF issued EITF Issue No. 00-21, Accounting for Revenue Arrangements with Multiple Deliverables. EITF Issue No. 00-21 addresses certain aspects of the accounting by a vendor for arrangements under which it will perform multiple revenue-generating activities. EITF Issue No. 00-21 establishes three principles: revenue arrangements with multiple deliverables should be divided into separate units of accounting, arrangement consideration should be allocated among the separate units of accounting based on their relative fair values, and revenue recognition criteria should be considered separately for separate units of accounting. EITF Issue No. 00-21 is effective for all revenue arrangements entered into in fiscal periods beginning after June 15, 2003, with early adoption permitted. The Company does not believe the adoption of EITF Issue No. 00-21 will have a material effect on its consolidated results of operations, financial position, or cash flows.

In December 2002, the Financial Accounting Standards Board issued SFAS No. 148, Accounting for Stock-Based Compensation—Transition and Disclosure. SFAS No. 148 amends SFAS No. 123, Accounting for Stock-Based Compensation, to provide alternative methods of transition for a voluntary change to the fair value method of accounting for stock-based employee compensation. SFAS No. 148 also amends the disclosure requirements of SFAS No. 123 to require more disclosure in the summary of significant accounting policies, the effects of an entity's accounting policy with respect to stock-based employee compensation on reported net income and earnings per share in annual and interim financial statements. The disclosure provision is required for all companies with stock-based employee compensation, regardless of whether the company utilizes the fair value method of accounting described in SFAS No. 123 or the intrinsic value method described in APB Opinion No. 25, Accounting For Stock Issued to Employees. SFAS No. 148's amendment of the transition and annual disclosure provisions of SFAS No. 123 are effective for fiscal years ending after December 15, 2002. The disclosure provisions for interim financial statements are effective for interim periods beginning after December 15, 2002. The Company currently accounts for stock-based compensation utilizing the intrinsic value method of accounting for stock-based employee compensation described by APB Opinion No. 25.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The Company had approximately $1.4 million of cash and investments on December 31, 2002. The Company received proceeds of $8,516,750 from a private placement of 3,097,000 shares of its common stock to accredited investors in January 2003. Substantially all of this cash is invested in money market funds. Because of the credit risk criteria of the Company's investment policies, the primary market risk associated with these investments is interest rate risk. The Company does not use derivative financial instruments to manage interest rate risk or to speculate on future changes in interest rates. A rise in interest rates could negatively affect the fair value of the Company's investments; however, because management considers it unlikely that the Company would need or choose to substantially liquidate the Company's investments prior to their maturity, management believes that such an increase in interest rates would not have a material impact on the Company's future earnings or cash flows. Even though the Company conducts sales in foreign currencies through its European subsidiary, management does not believe the Company is exposed to any material foreign currency exchange rate risk.

ITEM 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Report of Independent Auditors

Board of Directors and Stockholders
Endocardial Solutions, Inc.

We have audited the accompanying consolidated balance sheets of Endocardial Solutions, Inc. as of December 31, 2002 and 2001, and the related consolidated statements of operations, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2002. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Endocardial Solutions, Inc. at December 31, 2002 and 2001, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2002, in conformity with accounting principles generally accepted in the United States.

/s/ ERNST & YOUNG LLP

Minneapolis, Minnesota
January 27, 2003

Endocardial Solutions, Inc.

Consolidated Balance Sheets

	December 31	
	2002	2001
Assets		
Current assets:		
Cash and cash equivalents	**$ 1,347,753**	$ 4,550,059
Accounts receivable, net of allowance for doubtful accounts (2002—$60,000; 2001—$60,000)	**8,148,723**	5,084,412
Inventories	**4,634,635**	2,733,145
Prepaid expenses and other current assets	**872,684**	554,202
Total current assets	**15,003,795**	12,921,818
Furniture and equipment	**8,278,575**	7,329,598
Less accumulated depreciation	**(5,827,679)**	(4,721,350)
	2,450,896	2,608,248
Deposits	**49,344**	49,947
Notes receivable		
Patents, net of accumulated amortization (2002—$120,494; 2001—$111,489)	**206,226**	—
	10,804	19,809
Software development costs, net of accumulated amortization (2001—$891,107)	**—**	197,185
Total assets	**$ 17,721,065**	$ 15,797,007
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	**$ 1,705,316**	$ 2,287,338
Accrued compensation expenses	**2,671,764**	2,363,200
Bank line of credit	**1,000,000**	750,000
Current portion of capital lease obligations	**513,593**	594,010
Current portion of deferred revenue	**2,217,285**	586,104
Total current liabilities	**8,107,958**	6,580,652
Long-term liabilities:		
Capital lease obligations	**363,195**	301,187
Deferred revenue	**435,170**	199,368
Stockholders' equity:		
Undesignated Preferred Stock, par value $.01 per share: Authorized shares—10,000,000 Issued and outstanding shares—none	**—**	—
Common Stock, $.01 par value: Authorized shares—40,000,000 Issued and outstanding shares—December 31, 2002—16,567,593; December 31, 2001—14,934,624	**165,676**	149,346
Additional paid-in capital	**88,986,908**	79,707,845
Less notes receivable from officer	**—**	(371,250)
Accumulated deficit	**(80,447,669)**	(70,486,214)
Accumulated other comprehensive gain/(loss)	**308,537**	(9,556)
Deferred compensation	**(198,710)**	(274,371)
Total stockholders' equity	**8,814,742**	8,715,800
Total liabilities and stockholders' equity	**$ 17,721,065**	$ 15,797,007

See accompanying notes.

Endocardial Solutions, Inc.

Consolidated Statements of Operations

	Year ended December 31		
	2002	2001	2000
Revenue	$26,265,155	$22,893,306	$ 14,562,894
Cost of goods sold	9,472,885	9,241,039	7,174,431
Gross margin	16,792,270	13,652,267	7,388,463
Operating expenses:			
Research and development	5,506,593	5,271,169	4,459,737
General and administrative	3,023,657	2,240,737	2,064,697
Sales and marketing	18,134,496	14,750,075	11,093,095
Operating loss	(9,872,476)	(8,609,714)	(10,229,066)
Other income (expense):			
Interest income	68,258	318,208	604,691
Interest expense	(134,782)	(161,367)	(677,674)
Other	(22,455)	(26,170)	(9,098)
	(88,979)	130,671	(82,081)
Net loss	$(9,961,455)	$(8,479,043)	$(10,311,147)
Net loss per share—basic and dilutive	$ (0.61)	$ (0.60)	$ (0.92)
Weighted average shares outstanding	16,324,066	14,211,318	11,212,420

See accompanying notes.

Endocardial Solutions, Inc.

Consolidated Statements of Changes in Stockholders' Equity

	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Deferred Compensation	Notes Receivable From Officer	Total
	Shares	Amount						
Balance at December 31, 1999	10,185,183	$101,852	$59,877,434	$(51,696,024)	$ —	$ (29,690)	$ —	$ 8,253,572
Private placement at $6.25 per share in June 2000, net of offering costs	2,030,000	20,300	11,846,268	—	—	—	—	11,866,568
Exercise of stock options	34,512	345	38,112	—	—	—	—	38,457
Deferred compensation related to stock options	—	—	7,812	—	—	(7,812)	—	(7,812)
Amortization of deferred compensation	—	—	—	—	—	16,719	—	16,719
Net loss	—	—	—	(10,311,147)	—	—	—	(10,311,147)
Balance at December 31, 2000	12,249,695	122,497	71,769,626	(62,007,171)	—	(20,783)	—	9,864,169
Private placement at $3.00 per share in March 2001, net of offering costs	2,449,666	24,497	6,751,724	—	—	—	—	6,776,221
Exercise of warrants	122,450	1,224	488,576	—	—	—	—	489,800
Value of warrant issued with bank financing	—	—	8,750	—	—	—	—	8,750
Value of full recourse note receivable from officer in connection with stock purchase	110,000	1,100	370,150	—	—	—	(371,250)	—
Exercise of stock options	2,813	28	4,019	—	—	—	—	4,047
Deferred compensation related to stock options	—	—	315,000	—	—	(315,000)	—	—
Amortization of deferred compensation Comprehensive loss:	—	—	—	—	—	61,412	—	61,412
Net loss	—	—	—	(8,479,043)	—	—	—	(8,479,043)
Foreign currency translation adjustment	—	—	—	—	(9,556)	—	—	(9,556)
Comprehensive loss								(8,488,599)
Balance at December 31, 2001	14,934,624	149,346	79,707,845	(70,486,214)	(9,556)	(274,371)	(371,250)	8,715,800
Private placement at $6.00 per share in February 2002, net of offering costs	**1,666,667**	**16,667**	**9,323,941**	—	—	—	—	**9,340,608**
Purchase of common stock	**(48,880)**	**(489)**	**(134,465)**	—	—	—	**165,024**	**30,070**
Reclassification of note receivable	—	—	—	—	—	—	**206,226**	**206,226**
Value of warrants issued in connection with consulting agreement	—	—	**42,250**	—	—	—	—	**42,250**
Exercise of stock options	**15,182**	**152**	**32,937**	—	—	—	—	**33,089**
Deferred compensation related to stock options	—	—	**14,400**	—	—	**(14,400)**	—	—
Amortization of deferred compensation Comprehensive loss:	—	—	—	—	—	**90,061**	—	**90,061**
Net loss	—	—	—	**(9,961,455)**	—	—	—	**(9,961,455)**
Foreign currency translation adjustment	—	—	—	—	**318,093**	—	—	**318,093**
Comprehensive loss								**(9,643,362)**
Balance at December 31, 2002	**16,567,593**	**$165,676**	**$88,986,908**	**$(80,447,669)**	**$308,537**	**$(198,710)**	**$ —**	**$ 8,814,742**

See accompanying notes.

Endocardial Solutions, Inc.

Consolidated Statements of Cash Flows

	Year ended December 31		
	2002	2001	2000
Operating activities			
Net loss	**$(9,961,455)**	$(8,479,043)	$(10,311,147)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	**1,312,405**	1,705,221	1,526,297
Amortization of deferred compensation	**90,061**	61,412	16,719
Value of warrants issued	**42,250**	8,750	—
Loss on disposal of equipment	**—**	8,118	1,394
Receipt of stock as note receivable payment	**30,070**	—	—
Changes in operating assets and liabilities:			
Accounts receivable	**(2,826,816)**	(1,572,713)	209,751
Inventories	**(1,850,886)**	478,093	(404,853)
Prepaid expenses and other assets	**(273,923)**	(64,538)	104,076
Accounts payable	**(603,117)**	1,350,965	(752,560)
Accrued compensation expenses	**287,937**	728,854	(105,081)
Deferred revenue	**1,830,359**	44,036	92,812
Net cash used in operating activities	**(11,923,115)**	(5,730,845)	(9,622,592)
Investing activities			
Purchase of short-term investments	**—**	(2,938,753)	(3,926,782)
Maturities of short-term investments	**—**	5,926,341	6,255,000
Purchase of furniture and equipment	**(222,678)**	(567,398)	(781,727)
Patent expenditures	**—**	(650)	(13,566)
Software development costs	**—**	(295,777)	(493,967)
Net proceeds from sale of equipment	**—**	—	2,200
Net cash (used in) provided by investing activities	**(222,678)**	2,123,763	1,041,158
Financing activities			
Proceeds from notes payable	**—**	—	3,500,000
Proceeds from bank line of credit	**250,000**	750,000	—
Principal payments on notes payable and capital lease obligations	**(743,239)**	(7,634,722)	(823,031)
Proceeds from issuance of common stock	**9,373,697**	7,270,068	11,905,025
Net cash provided by financing activities	**8,880,458**	385,346	14,581,994
Effect of exchange rate changes on cash	**63,029**	255	—
Increase (decrease) increase in cash and cash equivalents	**(3,202,306)**	(3,221,481)	6,000,560
Cash and cash equivalents at beginning of year	**4,550,059**	7,771,540	1,770,980
Cash and cash equivalents at end of year	**$ 1,347,753**	$ 4,550,059	$ 7,771,540
Supplemental disclosure of non-cash investing and financing activities			
Purchase of equipment through capital lease obligations	**$ 724,830**	$ 352,403	$ 255,610
Note receivable from officer	**—**	371,250	—

See accompanying notes.

1. Description of Business

Endocardial Solutions, Inc. (the "Company") designs, develops and manufactures a minimally invasive and integrated system that locates and facilitates treatment of cardiac arrhythmias. Arrhythmias are abnormal heart rhythms caused by disorders interfering with the normal electrical activity of the heart, which, if undetected and untreated, can cause palpitations, dizziness and fainting, or sudden cardiac death. The Company is developing products to diagnose various types of ventricular arrhythmias (including ventricular tachycardia, a widespread, complex and serious form of arrhythmia), and atrial arrhythmias (including atrial fibrillation). The Company believes its proprietary technology will enable physicians to rapidly and accurately map the heart's electrical activity and locate the abnormal heart rhythms through three-dimensional imaging, and navigate various diagnostic and therapeutic catheters in connection with the treatment of cardiac arrhythmias.

2. Summary of Significant Accounting Policies

Basis of Consolidation

The consolidated financial statements include the accounts of Endocardial Solutions, Inc. and its wholly owned subsidiary after elimination of inter-company accounts and transactions.

Cash and Cash Equivalents

The Company considers all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents. At December 31, 2002 and 2001, the Company's cash equivalents consisted of investments in government securities carried at an amortized cost which approximated market value, with no resulting unrealized gains and losses recognized.

Revenue Recognition

Revenue from the sale of the Company's EnSite System is recognized at the time of shipment in instances where the Company has evidence of a contract, the fee charged is fixed and determinable, and collection is probable.

Deferred revenue originates from maintenance agreements and extended maintenance agreements the Company enters into with its customers. With the initial sale of an EnSite clinical workstation the Company provides a standard one-year maintenance agreement for the EnSite System, which covers repairs, service and technical support of the patient interface unit and the Silicon Graphics display workstation. This standard service and support agreement also covers any software upgrades released during the maintenance agreement period. Subsequent to the expiration of the first year maintenance agreement, customers are able to purchase an extended maintenance agreement of either one-year or two years duration, for the same level of service and support and software upgrades during the extended maintenance agreement period. In addition, customers have the option of purchasing an extended maintenance agreement that covers, in addition to the standard service, support and software upgrades, any hardware upgrades released during the term of the extended maintenance agreement. Long-term deferred revenue originates from sales of extended service and support maintenance agreements. Revenue from service and support maintenance agreements is recognized ratably over the period the services are provided. Revenue from hardware upgrades is recognized at the time the EnSite system under the maintenance agreement is upgraded.

2. Summary of Significant Accounting Policies (Continued)

Shipping and handling costs are included in the cost of goods sold.

Software Development Costs

The Company capitalizes software development costs in accordance with Statement of Financial Accounting Standards No. 86, *Accounting for the Costs of Computer Software to be Sold, Leased or Otherwise Marketed*. The capitalization of these costs begins when a product's technological feasibility has been established and ends when the product is available for general release to customers. Any amounts capitalized are amortized over an estimated economic useful life of 18 months.

Furniture and Equipment

Furniture and equipment are recorded at cost. Depreciation is provided using the straight-line method over the estimated useful lives of the assets ranging from three to seven years. Amortization of assets recorded under capital leases is provided using the straight line method over the life of the lease.

Patents

Patent costs are being amortized on a straight-line basis over five years. The Company periodically reviews its patents for impairment in value. Any adjustment from the analysis is charged to operations.

Income Taxes

Income taxes are accounted for under the liability method. Deferred income taxes are provided for temporary differences between financial reporting and tax basis of assets and liabilities.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Inventories

Inventories are valued at the lower of cost (first-in, first-out method) or market.

Stock-Based Compensation

At December 31, 2002, the Company had two stock-based employee compensation plans, which are described more fully in Note 6. The Company accounts for those plans under the recognition and measurement principles of Accounting Principles Board (APB) Opinion No. 25, *Accounting for Stock Issued to Employees*, and related interpretations. The following table illustrates the effect on net loss and loss per share if the Company had applied the fair value recognition provisions of Financial Accounting

2. Summary of Significant Accounting Policies (Continued)

Standards Board (FASB) Statement of Financial Accounting Standards (SFAS) No. 123, *Accounting for Stock-based Compensation*, to stock- based employer compensation.

	2002	2001	2000
Net loss as reported	**$ (9,961,455)**	$(8,479,043)	$(10,311,147)
Add: Stock compensation expense under fair value method	**90,061**	61,412	16,719
Deduct: Total stock-based employee compensation expense determined under fair-value-based method for all awards	**(1,681,434)**	(1,219,262)	(1,450,876)
Pro forma net loss	**$(11,552,828)**	$(9,636,893)	$(11,745,304)
Net loss per share as reported	**$ (0.61)**	$ (0.60)	$ (0.92)
Pro forma net loss per common share	**$ (0.71)**	$ (0.68)	$ (1.05)

Pro forma information regarding net loss and loss per share is required by SFAS No. 123, and has been determined as if the Company had accounted for its employee stock options under the fair value method of SFAS No. 123. The fair value for these options was estimated at the date of grant using a Black-Scholes option pricing model with the following assumptions:

	2002	2001	2000
Risk-free interest rate	**3.82%**	4.42%	6.18%
Dividend yield	**0%**	0%	0%
Volatility factor	**.96**	.87	.77
Weighted average expected life	**7.03 years**	6.87 years	6.62 years

Impairment of Long-Lived Assets

The Company will record impairment losses on long-lived assets used in operations when indicators of impairment are present and the undiscounted cash flows estimated to be generated by those assets are less than the assets' carrying amount.

Net Loss Per Share

Basic loss per share is computed using the weighted average number of common shares outstanding. Diluted loss per share is computed using the combination of dilutive common share equivalents and the weighted average number of common shares outstanding. Diluted earnings per share is not separately presented, as the effect of outstanding options and warrants is anti-dilutive.

New Accounting Standards

In November 2002, the EITF issued EITF Issue No. 00-21, Accounting for Revenue Arrangements with Multiple Deliverables. EITF Issue No. 00-21 addresses certain aspects of the accounting by a vendor for arrangements under which it will perform multiple revenue-generating activities. EITF Issue No. 00-21

2. Summary of Significant Accounting Policies (Continued)

establishes three principles: revenue arrangements with multiple deliverables should be divided into separate units of accounting, arrangement consideration should be allocated among the separate units of accounting based on their relative fair values, and revenue recognition criteria should be considered separately for separate units of accounting. EITF Issue No. 00-21 is effective for all revenue arrangements entered into in fiscal periods beginning after June 15, 2003, with early adoption permitted. The Company does not believe the adoption of EITF Issue No. 00-21 will have a material effect on its consolidated results of operations, financial position, or cash flows.

3. Inventories

Inventories consist of the following as December 31:

	2002	2001
Raw materials	**$2,099,943**	$1,191,782
Work-in-progress	**497,589**	594,437
Finished goods	**2,037,103**	946,926
	$4,634,635	$2,733,145

4. Long-Term Debt and Capital Lease Obligations

Long-Term Debt

In June 2001, the Company entered into a $3.5 million credit facility agreement, consisting of a $1.5 million capital lease line and a $2.0 million revolving line of credit. The capital lease line expired in June 2002, and the revolving line of credit was renewed in April of 2002, at which time the credit facility was increased from $2.0 million to $3.0 million. Borrowings under the credit facility are limited to the lesser of $3 million or 75% of eligible U.S. receivables. This credit facility expires in April of 2003, and the Company expects to be able to renew this credit facility under similar terms. As of December 31, 2002 the Company had $1.0 million outstanding on the revolving line of credit.

The underlying agreement for the revolving line of credit discussed above contains certain restrictive financial covenants, including an obligation to maintain a specified ratio of "current assets" to "current liabilities" (a "quick ratio"), as well as a minimum "tangible net worth". As of December 31, 2002, the Company was not in compliance with the quick ratio or tangible net worth covenants, but the credit institution had granted the Company a forbearance under the credit agreement, pending completion of an equity offering described in Note 14. Upon receipt of the private placement proceeds in January 2003, the Company was again in compliance with the restrictive covenants of the credit facility. Advances under the line of credit are charged a variable rate of interest equal to the prime rate plus one half of a percent (7.0%) at December 31, 2002, which was higher than the contractual interest rate due to the fact the Company was not in compliance with certain financial covenants as discussed above.

Capital Lease Obligations

The Company has entered into equipment leasing line of credit agreements with two different venture leasing companies for the acquisition of furniture, fixtures and research and development equipment. As of

4. Long-Term Debt and Capital Lease Obligations (Continued)

December 31, 2002 and 2001, the Company had outstanding lease obligations under these agreements of $876,788 and $895,197, respectively.

The cost of furniture and equipment in the accompanying balance sheets includes the following amounts under capital leases as of December 31:

	2002	2001
Research and development equipment	**$3,142,831**	$2,310,589
Less accumulated amortization	**1,858,001**	1,272,324
Net assets under capital leases	**$1,284,830**	$1,038,265

Future minimum lease payments under capital leases consisted of the following as of December 31, 2002:

Year ending December 31:	
2003	$535,216
2004	332,031
2005	64,626
Total minimum payments	931,873
Less amount representing interest	55,085
Present value of net minimum payments	876,788
Less current portion	513,593
Long-term obligations, net of current portion	$363,195

Interest paid for the years ended December 31, 2002, 2001 and 2000 was $130,056, $301,198, and $607,098, respectively.

5. Operating Leases

The Company leases its office facility and certain equipment under operating lease agreements which expire on various dates through 2004. Under the office facility agreement, the Company is required to pay a base rent plus certain operating expenses. Rent expense was $570,904, $461,754 and $493,576 for the years ended December 31, 2002, 2001 and 2000, respectively.

Future minimum lease commitments required under non-cancelable operating leases as of December 31, 2002 are as follows:

Year ending December 31:	
2003	$530,584
2004	133,240
	$663,824

6. Stock Options and Warrants

The Company has adopted the 1993 Incentive and Long-Term Stock Option Plan ("the Plan") under which directors, officers, employees and consultants of the Company may receive options to purchase Common Stock. The options granted under the Plan can either be incentive stock options or non-statutory stock options. Options granted under the Plan may not be at a price less then the fair market value of the Common Stock on the date of grant.

In 1997, the Company adopted the Directors' Stock Option Plan ("the Directors' Plan"). The Directors' Plan provides for the automatic grant of non-statutory stock options of Common Stock to non-employee directors. The option price for non-employee directors is equal to the fair market value of a share of Common Stock as of the grant date.

The following table summarizes the activity under the Company's stock option plans:

	Director's Plan		1993 Long-Term Plan Options Outstanding			Weighted Average Exercise Price Per Share
	Shares Available for Grant	Options Outstanding	Shares Available for Grant	NSO	ISO	
Balance at December 31, 1999	121,667	78,333	381,196	37,500	1,250,867	$6.25
Granted	(33,333)	33,333	(155,747)	36,247	119,500	7.94
Canceled	—	—	118,877	—	(118,877)	9.56
Exercised	—	—	—	—	(34,512)	1.12
Balance at December 31, 2000	88,334	111,666	344,326	73,747	1,216,978	6.34
Additional shares reserved for issuance	—	—	750,000		—	—
Granted	(40,000)	40,000	(801,250)		801,250	4.81
Canceled	—	—	108,955	(36,247)	(72,708)	8.43
Exercised	—	—	—	—	(2,813)	1.44
Balance at December 31, 2001	48,334	151,666	402,031	37,500	1,942,707	5.64
Additional shares reserved for issuance	**100,000**	**—**	**750,000**	**—**	**—**	**—**
Granted	**(45,000)**	**45,000**	**(1,073,000)**	**25,000**	**1,048,000**	**4.08**
Canceled	**—**	**—**	**327,377**	**—**	**(327,377)**	**6.66**
Exercised	**—**	**—**	**—**	**—**	**(15,182)**	**2.18**
Balance at December 31, 2002	**103,334**	**196,666**	**406,408**	**62,500**	**2,648,148**	**4.94**

6. Stock Options and Warrants (Continued)

The following table summarizes information about the stock options outstanding at December 31, 2002:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Price Per Share	Number Exercisable	Weighted-Average Exercise Price Per Share
$ 0.20 - $ 0.34	331,500	1.86	$ .33	331,500	$ .33
0.60 - 2.40	94,800	3.33	2.04	94,800	2.04
2.73 - 7.88	1,676,220	8.75	3.87	522,903	4.38
8.00 - 12.38	784,294	6.04	9.32	633,948	9.48
12.50 - 13.13	20,500	5.17	12.88	20,500	12.88
0.20 - 13.13	2,907,314	7.03	4.94	1,603,651	5.52

Options outstanding under the stock option plans expire at various dates during the period from April 2003 through November 2012.

The weighted-average grant date fair value of options granted during the years ended December 31, 2002, 2001 and 2000 was $2.63, $2.21, and $4.83 per share, respectively.

As of December 31, 2002, the Company had 37,500 warrants outstanding with exercise prices ranging from $.20 to $5.02 and expiring between November 2003 and June 2006, issued in connection with licensing and debt agreements.

The Company also has an Employee Stock Purchase Plan under which 200,000 shares have been reserved for purchase by employees. The purchase price of the shares under the Plan is the lesser of 85% of the fair market value on either the first or last day of the offering period. Offering periods are each three months. Employees may designate up to 15% of their compensation for the purchase of stock under the Plan. There have been no shares issued under the Plan.

7. Deferred Compensation

During the years ended December 31, 2002, 2001, and 2000, the Company granted stock options for the purchase of 45,000 shares, 125,000 shares, and 31,247 shares, respectively, of common stock to individuals where the exercise price was less than the fair market value of the stock on the date of grant. As a result, the Company recorded deferred compensation for the excess of deemed value for accounting purposes of the common stock to be issued upon exercise of such options over the aggregate exercise price of such options of $14,400, $315,000, and $7,812, respectively, in 2002, 2001, and 2000. For the years ended December 31, 2002, 2001, and 2000, the Company recognized expense of $90,061, $61,412, and $16,719, respectively, associated with such stock option grants.

7. Deferred Compensation (Continued)

The remaining unamortized deferred compensation is expected to be charged to operations as follows:

2003	$ 85,316
2004	82,350
2005	29,845
2006	1,199
Total	$198,710

8. Income Taxes

At December 31, 2002, the Company had net operating loss carryforwards of approximately $75,867,000. The net operating loss carryforwards are available to offset future taxable income and begin to expire in the year 2009. No benefit has been recorded for such loss carryforwards, and utilization in future years may be limited under Section 382 of the Internal Revenue Code if significant ownership changes have occurred.

Components of deferred tax assets are as follows:

	December 31	
	2002	2001
Deferred tax assets:		
Net operating loss carryforwards	$ 28,829,000	$ 25,494,000
Accrued liabilities	180,000	143,000
Other	34,000	34,000
	29,043,000	25,671,000
Deferred tax liabilities:		
Depreciation and amortization	33,000	22,000
Capitalized software costs	—	75,000
Net deferred tax assets	29,010,000	25,574,000
Valuation allowance	(29,010,000)	(25,574,000)
Total net deferred tax assets	$ —	$ —

9. Sources of Supply

The Company purchases raw materials and certain key components of its products, including the computer workstation and certain components for its catheter from sole, single or limited source suppliers. The Company currently has no agreements that would ensure delivery of raw materials and components from such suppliers. Establishing additional or replacement suppliers for any of the numerous components used in the Company's products, if required, may not be accomplished quickly and could involve significant additional costs. The inability of any of the Company's suppliers to provide an adequate supply of components in a timely manner, or the inability of the Company to locate qualified alternative suppliers

9. Sources of Supply (Continued)

for material and components at reasonable costs, could adversely affect the Company's business, financial condition and results of operations.

10. Note Receivable

In January 2001, the Company entered into a $371,250 full recourse note agreement with an officer of the Company for the purchase of 110,000 restricted shares of the Company's common stock. The note bore interest at 9.5% per year and was due in full in January 2006. This officer left the employment of the Company in 2002, at which time 61,120 shares of the Company common stock held by the employee had fully vested. The Company elected to purchase the 48,880 unvested shares of restricted Company common stock from the employee at a purchase price of $165,024, which shares were cancelled. In connection with the repurchase of the unvested shares, the Company recorded expense of $30,070. Concurrently, the former employee executed an amended, interest-free, full recourse note agreement in the amount of $206,226. This note is payable to the Company on the earlier of (i) January 2, 2011, or (ii) within 20 days following the sale of any of the 61,120 shares of Company common stock that were subject to the original agreement.

In October 2002, the Company issued a stock option grant of 25,000 shares of common stock at an exercise price of $2.76 per share in connection with a consulting agreement between the former officer and the Company. The option expires in seven years from the grant date and was deemed to have a value of $42,250 using a Black-Scholes option pricing model, which was expensed during the year ended December 31, 2002.

11. Significant Customer

For the year ended December 31, 2000, one of the Company's distributors accounted for 16% of net revenues.

12. Segment Reporting

Sales by geographic distinction as percentages of total sales were as follows for the years ended December 31:

	2002	2001	2000
Domestic	77%	81%	74%
International:			
Europe	16	10	16
Asia Pacific	5	7	8
Canada/Mexico	2	2	2

13. Quarterly Financial Data (unaudited, in thousands, except per share data)

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2002				
Net revenue	$ 7,108	$ 7,532	$ 5,508	$ 6,117
Gross profit	4,507	4,743	3,467	4,075
Net loss	(1,795)	(1,930)	(3,118)	(3,118)
Basic and diluted net loss per share	$ (0.12)	$ (0.12)	$ (0.19)	$ (0.19)
2001				
Net revenue	$ 4,602	$ 5,578	$ 5,818	$ 6,895
Gross profit	2,524	3,355	3,531	4,242
Net loss	(2,491)	(2,462)	(1,994)	(1,532)
Basic and diluted net loss per share	$ (0.20)	$ (0.17)	$ (0.13)	$ (0.10)

14. Subsequent Event

On January 8, 2003, the Company completed the sale of 3,097,000 shares of its common stock at a price of $2.75 per share, resulting in gross proceeds to the Company of $8,516,750.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The section under the heading "Election of Directors" and the section entitled "Section 16(a) Beneficial Ownership Reporting Compliance" in the Company's Proxy Statement for its Annual Meeting of Stockholders to be held on May 21, 2003 (the "2003 Proxy Statement"), which definitive 2003 Proxy Statement will be filed within 120 days after the close of the fiscal year ended December 31, 2002, are incorporated herein by reference.

See Item 1 in Part I hereof for information regarding Executive Officers of the Company.

ITEM 11. EXECUTIVE COMPENSATION

The section under the heading "Election of Directors" entitled "Compensation of Directors" and the section entitled "Executive Compensation" in the 2003 Proxy Statement, which definitive 2003 Proxy Statement will be filed within 120 days after the close of the fiscal year ended December 31, 2002, are incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The sections entitled "Equity Compensation Plan Information" and "Security Ownership of Certain Beneficial Owners and Management" in the 2003 Proxy Statement, which definitive 2003 Proxy Statement will be filed within 120 days after the close of the fiscal year ended December 31, 2002, are incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The section entitled "Certain Transactions" in the 2003 Proxy Statement, which definitive 2003 Proxy Statement will be filed within 120 days after the close of the fiscal year ended December 31, 2002, is incorporated herein by reference.

ITEM 14. CONTROLS AND PROCEDURES

(a) Evaluation of disclosure controls and procedures. Under the supervision and with the participation of management, including the Company's Chief Executive Officer and Chief Financial Officer, an evaluation was carried out of the effectiveness of the design and operation of the Company's disclosure controls and procedures as of the date (the "Evaluation Date") within the 90-day period prior to the filing of this Annual Report on Form 10-K. Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of the Evaluation Date, the Company's disclosure controls and procedures are effective to ensure that information the Company is required to disclose in its filings with the Securities and Exchange Commission under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms.

(b) Changes in internal controls. Subsequent to the date of management's evaluation, there were no significant changes made in the Company's internal controls or in other factors that could significantly affect these controls.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES, AND REPORTS ON FORM 8-K

(a) Documents filed as part of this Report

(1) Financial Statements. The following financial statements of the Company are included in Part II, Item 8, of this Annual Report on Form 10-K.

(2) Financial Statement Schedules

None. All financial statement schedules are omitted because of the absence of conditions under which they are required.

(3) EXHIBITS

3.1 Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

3.2 Amended Bylaws of the Company (incorporated by reference to Exhibit 3.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 0-22233))

3.3 Certificate of Designation of Series A Junior Participating Preferred Stock (incorporated by reference to Exhibit 3.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 0-22233))

4.1 Warrant Agreement dated November 18, 1993 between the Company and Tikkun Resource Development relating to warrant issued to Tikkun Resource Development to purchase shares of common stock (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

4.2 Rights Agreement dated as of August 25, 1999 between the Company and Norwest Bank Minnesota, National Association, as Rights Agent (incorporated by reference to Exhibit 1 to the Company's Registration Statement on Form 8-A dated August 25, 1999 (File No. 0-22233))

10.1 Real Property Lease Agreement dated September 15, 1993 between the Company and the Port Authority of St. Paul, together with Amendment Nos. 1, 2 and 3 thereto dated February 6, 1995, May 16, 1995, June 4, 1996, respectively (incorporated by reference to Exhibit 10.1 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

10.2 Amendment No. 4 to the Real Property Lease Agreement dated September 15, 1993 between the company and the Port Authority of St. Paul (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-22233))

10.3 Master Lease Agreement dated November 14, 1994 as amended between the Company and Comdisco, Inc. (incorporated by reference to Exhibit 10.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 0-333-20677))

10.4* Amended and Restated 1993 Long-Term Incentive and Stock Option Plan, as amended May 15, 2001 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))

10.5* Directors' Stock Option Plan (incorporated by reference to Exhibit 10.4 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

10.6* 1997 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.5 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

10.7 License Agreement, dated January 30, 1998, between the Company and Medtronic, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 1998, as amended on July 31, 1998 (File No. 0-22233))

10.8 Master Lease Agreement dated May 4, 1998, between the Company and Transamerica Business Credit Corporation (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 1998 (File No. 0-22233))

10.9 Warrant, dated February 2, 1999, to purchase shares of common stock, issued by the Company to Medtronic Asset Management, Inc. (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K for the year ended December 31, 1998 (File No. 0-22233))

10.10 Extension of Lease Commitment, dated February 12, 1999, by Transamerica Business Credit Corporation (incorporated by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K for the year ended December 31, 1998 (File No. 0-22233))

10.11* Employment and Noncompetition Agreement, dated as of November 3, 2000, between the Company and James W Bullock (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.12* Change in Control Agreement, dated November 3, 2000, between the Company and James W Bullock (incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.13* Form of Change in Control Agreement between the Company and each of J. Robert Paulson, Jr., Graydon Beatty, Frank Callaghan and Richard Omilanowicz (incorporated by reference to Exhibit 10.25 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.14 Amendment No. 5, dated August 2, 1999, to the Real Property Lease dated September 15, 1993 between the Company and the Port Authority of St. Paul (incorporated by reference to Exhibit 10.26 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.15 Amendment No. 6, dated January 29, 2001, to the Real Property Lease dated September 15, 1993 between the Company and Place & Plaza LLC (acquired from the Port Authority of St. Paul) (incorporated by reference to Exhibit 10.27 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.16 Form of Stock Purchase Agreement, dated March 22, 2001, among the Company and the Investors named therein (incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.17 Loan and Security Agreement dated June 28, 2001, between the Company and Silicon Valley Bank (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))

10.18 Warrant to Purchase Stock, dated June 28, 2001, issued by the Company to Silicon Valley Bank (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))

10.19 Real Property Lease dated August 13, 2001 between the Company and Place & Plaza LLC (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2001 (File No. 0-22233))

10.20 Form of Stock Purchase Agreement, dated February 25, 2002, among the Company and the Investors named therein (incorporated by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K for the year ended December 31, 2001 (File No. 0-22233))

10.21 Form of Stock Purchase Agreement, dated January 2, 2003, among the Company and the Investors named therein (Filed herewith)

21 List of Subsidiaries (Filed herewith)

23 Consent of Ernst & Young LLP (Filed herewith)

24 Power of Attorney (Included on signature page)

99.1 Cautionary Statement for Purposes of the "Safe Harbor" Provisions of the Private Securities Litigation Reform Act of 1995 (Filed herewith)

99.2 Certification of principal executive officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Filed herewith)

99.3 Certification of principal financial officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (Filed herewith)

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* Management contract or compensatory plan or arrangement required to be filed as an exhibit to Form 10-K pursuant to Item 15(c) of the Form 10-K Report.

(b) Reports on Form 8-K

A report on Form 8-K, dated October 8, 2002, was filed by the Registrant; such report included as an exhibit under Item 7 a copy of a press release issued by the Registrant announcing its first successful Digital Image Fusion procedure.

A report on Form 8-K, dated October 21, 2002 was filed by the Registrant; such report contained information under Item 9 (Regulation FD Disclosure) and included as an exhibit under Item 7 a copy of a press release issued by the Registrant announcing its third quarter earnings results.

(c) See Item 15(a)(3) above.

(d) See Item 15(a)(2) above.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of St. Paul, Minnesota.

Date: March 28, 2003

ENDOCARDIAL SOLUTIONS, INC.

By /s/ JAMES W. BULLOCK

James W. Bullock,
President and Chief Executive Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report has been signed by the following persons on behalf of the registrant and in the capacities indicated on the 28th day of March, 2003.

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints James W. Bullock and J.Robert Paulson, Jr., as his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to the Annual Report on Form 10-K of Endocardial Solutions, Inc., and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, lawfully do or cause to be done by virtue hereof.

Signature	Title
/s/ JAMES W. BULLOCK James W. Bullock	President, Chief Executive Officer and Director (Principal Executive Officer)
/s/ J. ROBERT PAULSON, JR. J. Robert Paulson, Jr.	Chief Financial Officer (Principal Financial and Accounting Officer)
/s/ GRAYDON E. BEATTY Graydon E. Beatty	Director
/s/ ROBERT G. HAUSER, M.D. Robert G. Hauser, M.D.	Director
/s/ WARREN S. WATSON Warren S. Watson	Director
/s/ RICHARD D. RANDALL Richard D. Randall	Director
/s/ MARK T. WAGNER Mark T. Wagner	Director

Certification of Chief Executive Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, James W. Bullock, certify that:

1. I have reviewed this annual report on Form 10-K of Endocardial Solutions, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 28, 2003

Name: /s/ JAMES W. BULLOCK

Title: President and Chief Executive Officer

Certification of Chief Financial Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, J. Robert Paulson, Jr., certify that:

1. I have reviewed this annual report on Form 10-K of Endocardial Solutions, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 28, 2003

Name: /s/ J. ROBERT PAULSON, JR.

Title: Chief Financial Officer

INDEX TO EXHIBITS

3.1	Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))
3.2	Amended Bylaws of the Company (incorporated by reference to Exhibit 3.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 0-22233)
3.3	Certificate of Designation of Series A Junior Participating Preferred Stock (incorporated by reference to Exhibit 3.3 to the Company's Annual Report on Form 10-K for the year ended December 31, 1999 (File No. 0-22233))
4.1	Warrant Agreement dated November 18, 1993 between the Company and Tikkun Resource Development relating to warrant issued to Tikkun Resource Development to purchase shares of common stock (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))
4.2	Rights Agreement dated as of August 25, 1999 between the Company and Norwest Bank Minnesota, National Association, as Rights Agent (incorporated by reference to Exhibit 1 to the Company's Registration Statement on Form 8-A dated August 25, 1999 (File No. 0-22233))
10.1	Real Property Lease Agreement dated September 15, 1993 between the Company and the Port Authority of St. Paul, together with Amendment Nos. 1, 2 and 3 thereto dated February 6, 1995, May 16, 1995, June 4, 1996, respectively (incorporated by reference to Exhibit 10.1 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))
10.2	Amendment No. 4 to the Real Property Lease Agreement dated September 15, 1993 between the Company and the Port Authority of St. Paul (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-22233)).
10.3	Master Lease Agreement dated November 14, 1994, as amended, between the Company and Comdisco, Inc. (incorporated by reference to Exhibit 10.2 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))
10.4*	Amended and Restated 1993 Long Term Incentive and Stock Option Plan, as amended May 15, 2001 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))
10.5*	Directors' Stock Option Plan (incorporated by reference to Exhibit 10.4 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))
10.6*	1997 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.5 to the Company's Registration Statement on Form S-1, dated January 29, 1997, as amended on March 5, 1997, March 13, 1997 and March 18, 1997 (File No. 333-20677))

10.7 License Agreement, dated January 30, 1998, between the Company and Medtronic, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 1998, as amended on July 31, 1998 (File No. 0-22233))

10.8 Master Lease Agreement dated May 4, 1998, between the Company and Transamerica Business Credit Corporation (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 1998 (File No. 0-22233))

10.9 Warrant, dated February 2, 1999, to purchase shares of common stock, issued by the Company to Medtronic Asset Management, Inc. (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K for the year ended December 31, 1998 (File No. 0-22233))

10.10 Extension of Lease Commitment, dated February 12, 1999, by Transamerica Business Credit Corporation (incorporated by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K for the year ended December 31, 1998 (File No. 0-22233))

10.11* Employment and Noncompetition Agreement, dated as of November 3, 2000, between the Company and James W Bullock (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.12* Change in Control Agreement, dated November 3, 2000, between the Company and James W Bullock (incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.13* Form of Change in Control Agreement between the Company and each of J. Robert Paulson, Jr., Graydon Beatty, Frank Callaghan and Richard Omilanowicz. (incorporated by reference to Exhibit 10.25 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.14 Amendment No. 5, dated August 2, 1999, to the Real Property Lease dated September 15, 1993 between the Company and the Port Authority of St. Paul (incorporated by reference to Exhibit 10.26 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.15 Amendment No. 6, dated January 29, 2001, to the Real Property Lease dated September 15, 1993 between the Company and Place & Plaza LLC (acquired from the Port Authority of St. Paul) (incorporated by reference to Exhibit 10.27 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.16 Form of Stock Purchase Agreement, dated March 22, 2001, among the Company and the Investors named therein (incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K for the year ended December 31, 2000 (File No. 0-22233))

10.17 Loan and Security Agreement dated June 28, 2001, between the Company and Silicon Valley Bank (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))

10.18 Warrant to Purchase Stock, dated June 28, 2001, issued by the Company to Silicon Valley Bank (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2001 (File No. 0-22233))

10.19 Real Property Lease dated August 13, 2001 between the Company and Place & Plaza LLC (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2001 (File No. 0-22233))

10.20 Form of Stock Purchase Agreement, dated February 25, 2002, among the Company and the Investors named therein (incorporated by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K for the year ended December 31, 2001 (File No. 0-22233))

10.21 Form of Stock Purchase Agreement, dated January 2, 2003, among the Company and the Investors named therein (Filed herewith)

21 List of Subsidiaries (Filed herewith)

23 Consent of Ernst & Young LLP (Filed herewith)

24 Power of Attorney (Included on signature page)

99.1 Cautionary Statement for Purposes of the "Safe Harbor" Provisions of the Private Securities Litigation Reform Act of 1995 (Filed herewith)

99.2 Certification of principal executive officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2003 (Filed herewith)

99.3 Certification of principal financial officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2003 (Filed herewith)

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* Management contract or compensatory plan or arrangement required to be filed as an exhibit to Form 10-K pursuant to Item 15(c) of the Form 10-K Report.

Certification of Chief Executive Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, James W. Bullock, certify that:

1. I have reviewed this annual report on Form 10-K of Endocardial Solutions, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: April 10, 2003

Name: /s/ JAMES W. BULLOCK

Title: President and Chief Executive Officer

Certification of Chief Financial Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, J. Robert Paulson, Jr., certify that:

1. I have reviewed this annual report on Form 10-K of Endocardial Solutions, Inc.;

2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;

3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:

a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;

b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and

c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: April 10, 2003

Name: /s/ J. ROBERT PAULSON, JR.

Title: Chief Financial Officer

CORPORATE INFORMATION

EXECUTIVE OFFICERS

James W. Bullock
President,
Chief Executive Officer
and Director

Graydon E. Beatty
Chief Technical Officer
and Director

Richard J. Omilanowicz
Vice President,
Manufacturing and Operations

J. Robert Paulson, Jr.
Chief Financial Officer

Patrick J. Wethington
Vice President,
Sales, North America

BOARD OF DIRECTORS

James W. Bullock
President and
Chief Executive Officer
Endocardial Solutions, Inc.

Graydon E. Beatty
Chief Technical Officer
Endocardial Solutions, Inc.

Robert G. Hauser, M.D.
Cardiologist
Minneapolis Cardiology Associates

Richard J. Nigon
Executive Vice President
Miller Johnson Steichen Kinnard, Inc.

Jean-Paul (J.P.) Peltier
Vice President,
Business Development
HomeServices of America, Inc.

Richard D. Randall
President and
Chief Executive Officer
TranS1, Inc.

Mark T. Wagner
President and
Chief Executive Officer
ProVation Medical

Warren S. Watson
Vice President of Arrhythmia
Business Operations
Medtronic Cardiac Rhythm Management

TRANSFER AGENT AND REGISTRAR

Wells Fargo Bank
Minnesota, N.A.
South Saint Paul, MN
800-689-8788

AUDITORS

Ernst & Young LLP
Minneapolis, MN

LEGAL COUNSEL

Dorsey & Whitney LLP
Minneapolis, MN

ANNUAL MEETING

The Company's Annual Meeting of Stockholders will be held on May 21, 2003 at 9:00 A.M. at:

Hilton Minneapolis & Towers
1001 Marquette Avenue
Minneapolis, MN 55403

FORM 10-K

A copy of the Company's Form 10-K filed with the Securities and Exchange Commission is available free of charge by calling Investor Relations at the number below.

CORPORATE HEADQUARTERS

1350 Energy Lane, Suite 110
Saint Paul, MN 55108-5254

Telephone: 651-523-6900
Facsimile: 651-644-7897

INVESTOR INQUIRIES

Telephone: 651-523-6959
e-mail: investor@endocardial.com

LISTING

Trades on Nasdaq Stock Market® under the symbol "ECSI"

ENDOCARDIAL
SOLUTIONS

WORLD HEADQUARTERS

Endocardial Solutions, Inc.
1350 Energy Lane, Suite 110
Saint Paul, MN 55108-5254
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Toll Free: 1-800-ESI-8038
Facsimile: 651-647-9464
Toll Free Fax: 800-ESI-2505
Email: esi@endocardial.com
Internet: www.endocardial.com

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Lambroekstraat 5
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