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 28, 2019

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 0-26946

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

Delaware	**94-3125814**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

3560 Bassett Street
Santa Clara, California 95054
(Address of principal executive office, including Zip Code)

Registrant's telephone number, including area code: (408) 986-9888

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock ($0.001 par value)	**IVAC**	**The Nasdaq Stock Market LLC (Nasdaq Global Select)**

Securities registered pursuant to Section 12(g) of the Act:
None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☐ Yes ☒ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. ☐ Yes ☒ No

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 whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). ☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). ☐ Yes ☒ No

As of June 30, 2019, the aggregate market value of voting and non-voting stock held by non-affiliates of the Registrant was approximately $108,615,756 (based on the closing price for shares of the Registrant's Common Stock as reported by the Nasdaq Stock Market for the last trading day prior to that date). Shares of Common Stock held by each executive officer and director have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

On February 7, 2020, 23,559,479 shares of the Registrant's Common Stock, $0.001 par value, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE.

Portions of the Registrant's Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated by reference into Part III. Such proxy statement will be filed within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain information in this Annual Report on Form 10-K (“report” or “Form 10-K”) of Intevac, Inc. and its subsidiaries (“Intevac” or the “Company”), including “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7, is forward-looking in nature. All statements in this report, including those made by the management of Intevac, other than statements of historical fact, are forward-looking statements. Examples of forward-looking statements include statements regarding Intevac’s future financial results, operating results, cash flows and cash deployment strategies, business strategies, costs, products, working capital, competitive positions, management’s plans and objectives for future operations, research and development, acquisitions and joint ventures, growth opportunities, customer contracts, investments, liquidity, declaration of dividends, and legal proceedings, as well as market conditions and industry trends. These forward-looking statements are based on management’s estimates, projections and assumptions as of the date hereof and include the assumptions that underlie such statements. Forward-looking statements may contain words such as “may,” “will,” “should,” “could,” “would,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “potential” and “continue,” the negative of these terms, or other comparable terminology. Any expectations based on these forward-looking statements are subject to risks and uncertainties and other important factors, including those discussed in Item 1A, “Risk Factors,” below and elsewhere in this report. Other risks and uncertainties may be disclosed in Intevac’s prior Securities and Exchange Commission (“SEC”) filings. These and many other factors could affect Intevac’s future financial condition and operating results and could cause actual results to differ materially from expectations based on forward-looking statements made in this report or elsewhere by Intevac or on its behalf. Intevac undertakes no obligation to revise or update any forward-looking statements.

The following information should be read in conjunction with the Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements included in this report.

PART I

Item 1. *Business*

Overview

Intevac’s business consists of two reportable segments:

Thin-film Equipment (“TFE”): Intevac is a leader in the design and development of high-productivity, thin-film processing systems. Our production-proven platforms are designed for high-volume manufacturing of substrates with precise thin-film properties, such as the hard disk drive (“HDD”) media, display cover panel (“DCP”), and solar photovoltaic (“PV”) markets we serve currently.

Photonics: Intevac is a leading developer of advanced high-sensitivity digital sensors, cameras and systems that primarily serve the defense industry. We are a leading provider of integrated digital night-vision imaging systems for the U.S. military.

Intevac was incorporated in California in October 1990 and was reincorporated in Delaware in 2007.

TFE Segment

Hard Disk Drive (“HDD”) Equipment Market

Intevac designs, manufactures, markets and services complex capital equipment used to deposit thin films and lubricants onto substrates to produce magnetic disks that are used in HDDs. Disk and disk drive manufacturers produce magnetic disks in a sophisticated manufacturing process involving many steps, including plating, annealing, polishing, texturing, sputtering, etching, stripping and lubrication. Intevac believes its systems represent approximately 65% of the installed capacity for disk sputtering worldwide. Intevac’s systems are used by manufacturers of magnetic media such as Seagate Technology, Western Digital, including its wholly-owned subsidiary HGST, Fuji Electric, and Showa Denko.

HDDs are a primary storage medium for digital data including nearline “cloud” applications and are used in products and applications such as personal computers (“PCs”), enterprise data storage, video players and video game consoles. Intevac believes that HDD media shipments will grow over time, driven by continued high growth rates in digitally-stored data, by the slowing of areal density improvements, by the increase in demand for nearline drives for cloud storage, an increasing tie ratio (the average number of disks per hard drive) and by new and emerging applications. The projected growth rates for digitally-stored data on HDDs exceed the rate of areal density improvements, at the same time as the tie ratio is increasing, which results in demand for magnetic disks outpacing HDD units.

In recent years HDD media units have been negatively impacted by declining PC units, primarily resulting from the proliferation of tablets and the transition to centralized storage. Although the HDD industry continues to expect growth in the nearline data storage market segment, the transition to centralized storage combined with the negative growth in PC shipments has resulted in lower HDD shipments in recent years. However, Intevac continues to believe that long-term demand for hard disks required for high capacity HDDs will increase, driven by growth in demand for digital storage, a declining growth rate in areal density improvements, and increased information technology spending to support the transition to cloud storage. The number of disk manufacturing systems needed to support this growth as well as future technology transitions and improvements is expected to vary from year to year depending on the factors noted above.

Intevac expects that HDD manufacturers will extend their utilization of planar perpendicular media with the introduction of new technologies such as Heat Assisted Magnetic Recording (“HAMR”) and Energy Assisted Magnetic Recording (“EAMR”). Initial volume shipments of both HAMR and EAMR-based HDDs are expected to begin in 2020. Intevac believes that leading manufacturers of magnetic media, that are using Intevac systems for the development of these new technologies, will create a significant market opportunity for systems upgrades in support of the media evolution required by these new technologies as they are more widely adopted.

Display Cover Panel (“DCP”) Market

Intevac develops equipment to deposit optically transparent thin films onto DCPs typically found on consumer and automotive electronic products.

DCPs are found in products including smartphones, tablet PCs, wearable devices, gaming systems, digital cameras, automotive infotainment systems and digital signage. In 2019, approximately 1.37 billion smartphones, 157 million tablet PCs and 66.5 million smart watches were shipped to consumers worldwide. For smartphones alone, it is forecasted that nearly 1.48 billion units will ship by 2023, representing a CAGR of 1.1% for the 2019 – 2023 time period.

The DCP is typically made of tempered glass, such as soda-lime or aluminosilicate, or other materials such as sapphire, ceramic and colorless polyimide. The primary function of the DCP is to provide a clear protective interface to the display it protects. In many cases, the DCP is treated with various coatings to enhance its protective performance as well as for clarity, readability and touch sensitivity.

The types of coatings typically found on DCPs of electronic devices include: Scratch Protection (“SP”) coatings, Anti-Reflection (“AR”) coatings, Anti-Finger (“AF”) and Non-Conductive Vacuum Metallization (“NCVM”) coatings.

SP coatings generally consist of hard thin films deposited onto the surface of the DCP. Their primary function is to provide enhanced protection against the incidence of scratch, but they can also provide greater breakage resistance. Intevac has developed and is currently marketing a SP coating known as Optical Diamond-like-Carbon (“oDLC®”) utilizing its production-proven carbon film technology that is also used on HDD media. This coating provides a hard protective layer which significantly improves the DCP’s resistance to scratches and breakage. The oDLC coating has demonstrated scratch protection benefits reflecting a greater than 20 times improvement over current standard cover glass under stainless steel ball Taber scratch testing. Furthermore, using a Ring-on-Ring (“RoR”) test, cover glass with our oDLC coating provides a greater than 20 percent increase in breakage resistance strength over cover glass without the oDLC coating. Intevac expects that the adoption of AR and NCVM coatings on mobile devices will create an increased need for SP coatings and provide a significant demand opportunity for oDLC.

In 2019, Intevac released DiamondClad™ protective coating. DiamondClad is a proprietary multi-step process that improves upon our original single film solution, oDLC. Developed in-house utilizing the ion beam source technology released last year, DiamondClad now performs similar to sapphire in scratch testing at the Mohs scale of material hardness 8 standard, compared to the industry standard glass with anti-fingerprint or AF coatings, which scratch at a Mohs 5 level. DiamondClad coating outperforms standard cover-glass by a factor of 4 in Taber wear testing, and by a factor of 4 to 6 times in use-case AF durability testing with sand, denim, and perspiration.

AR coatings enable greater light transmission though the DCP by reducing the light reflected by the surface back to the user's eye. This allows the user to more easily read the display and reduces the required power needed to display the image which results in extending the battery life. A significant drawback to using AR coatings is their susceptibility to scratch. AR coatings are typically soft and must be applied to the outer surface of the DCP. These coatings generally scratch easily, and as such, smartphone manufacturers have been reluctant to implement AR coatings on their products.

AF coatings provide water and oil protection for the surface of the DCP. This coating, which prevents fingerprints, provides greater aesthetics as well as improving readability. AF coatings allow for greater visual acuity when fingerprints are not visible. The drawback to AF coatings is their relatively low resistance to wear. The coating is soft and usually wears off within a few months of product purchase.

With the adoption of wireless charging and the upcoming 5G standard of wireless communication, smartphone manufacturers are making a major transition to DCP on the backside of the device. This transition is essential to ensure that the backside cover, which previously used to be metallic, does not interfere with the wireless signals. NCVM coatings are a new type of color film coating, applied for decorative purposes, to the backside DCP. When applied to the exterior, the NCVM coating provides a pleasing aesthetic and gives manufacturers flexibility with color customization. Decorative NCVM coatings have evolved from single color to multiple colors with complex transitions. Intevac has developed a proprietary technology that enables the creation of uniquely patterned NCVM coatings for the phone back cover. Several leading handset manufacturers are currently evaluating this technology for potential incorporation into their upcoming phone models.

When applied to the exterior of the backside DCP, NCVM has a tendency to scratch easily and rub off over time, leading to a poor appearance. To preserve the color film on the backside DCP, manufacturers are reliant on SP coatings for scratch-resistance and a consistent appearance. Intevac expects the adoption of AR and NCVM coatings on mobile devices will create an increased need for SP coatings and provide a significant demand opportunity for oDLC and DiamondClad coatings.

Solar Market

Intevac designs, manufactures and markets capital equipment for the PV solar manufacturing industry.

A solar cell (also called a PV cell) is a solid state device that converts the energy of sunlight directly into electricity. Assemblies of cells are used to make solar modules, also known as solar panels. Solar panels have broad-based end market applications for utility-scale solar farms; integrated building PV arrays for commercial, retail, and offices; residential rooftop; and for portable devices.

The cost of electricity generated from solar energy, in many cases, remains higher than that of electricity generated from traditional energy sources. However, deployment of photovoltaics is gaining momentum on a worldwide scale, particularly in Asia, North America and other regions, where solar PV is now increasingly competitive with conventional energy sources. Grid parity, whereby solar PV generates power at a levelized cost of electricity ("LCOE") less than or equal to the price of power purchased from the electrical grid, has already been reached in about thirty countries. In countries or areas where the cost of solar energy generation remains higher than traditional electricity generation sources, some governments have implemented various tax credits and other financial incentives to promote the growth in solar and other alternative energy sources. As a result of solar energy costs having favorably declined due to the increased scale and improved manufacturing efficiencies spurred by these incentive policies, many governments have reduced or are planning to reduce their incentives for solar, a trend which is likely to continue. More than 138 gigawatts of solar capacity were added globally in 2019, rising 35% year-on-year, but the rate is expected to taper off to a modest growth of 3% in 2020. Intevac expects that 2020 will continue to be challenging for the solar industry due to further declines in solar panel pricing.

The PV industry continues to focus on the development of high-efficiency cell technologies aimed at simultaneously boosting PV efficiency and reducing solar energy production costs. New vacuum process technologies and integrated processing steps are expected to become increasingly important as companies search for lower-cost manufacturing solutions for PV cells.

Intevac offers products for wafer-based crystalline silicon ("c-Si") solar cell manufacturing processes, the prevailing manufacturing process in the PV industry. Intevac's products for the solar industry are specifically focused on cell designs with the highest energy conversion efficiency, which are within the n-type mono crystalline portion of the market.

Intevac offers thin-film vacuum process manufacturing solutions for c-Si cell fabrication applications. Intevac offers high-productivity process equipment solutions that enable low-cost solar cell manufacturing with high cell efficiency, consistent with the PV industry's focus and requirements. Intevac has developed two vacuum process application technologies for solar cell manufacturing: one utilizes Physical Vapor Deposition ("PVD") technology for the deposition of thin films onto c-Si wafers, and the other utilizes ion implantation, which selectively changes the electrical characteristics of the c-Si solar cell.

PVD is a process used in multiple ways in the manufacturing of solar cells such as for fabricating electrical contacts and conductor layers, depositing reflective layers of various types, and for growing transparent conductive oxide layers, all of which are critical to the efficiency of solar cells.

Ion implantation is a solar cell processing technology whereby an impurity is added to a PV structure to improve its conductivity. In ion implantation, a beam of ions of a desired dopant element such as phosphorus or boron is electrostatically accelerated and directed toward the target material, introducing the impurity. In a subsequent thermal annealing step, the dopant is electrically activated. The ion implant processes enable precision engineering of the dose and of the depth of dopant elements to form emitter structures in working solar cells. Ion implantation is a technique being introduced to solar cell lines as a means to lower the cost per watt to manufacture the cell. Ion implantation can replace existing diffusion processes in existing solar processing lines for present-day PV cell structures, and is also extendable to new advanced cell structures. In both cases, ion implant-formed emitters are created with fewer processing steps, and therefore at lower cost, than the diffusion processes implant displaces. Intevac's ion implantation products are based upon technology developed by Solar Implant Technologies, Inc. ("SIT") which was acquired by Intevac in November 2010.

Fan-Out Packaging Market

Intevac is bringing to market capital equipment for fan-out packaging applications, fan-out packaging being a specialized part of the overall semiconductor device packaging market.

Semiconductor device packaging technology in general, and fan-out wafer level packaging ("FOWLP")/fan-out panel level packaging ("FOPLP") technology in particular, is being driven by the strong cost advantages these technologies offer over the cost of further implementing continued Moore's Law progress for 10nm and 7nm semiconductor device process nodes. Generally speaking, fan-out packaging provides for increased Input/Output ("I/O") density for a given semiconductor device while simultaneously supporting continued progress in shrinking the individual semiconductor devices, resulting in decreased footprint per device and, by extension, decreases in the amount of space integrated circuit content occupies in handheld consumer electronic products, for example in smartphones, wearables, and in Internet of Things ("IoT") devices.

Fan-out packaging technology consists of a series of operations where known good semiconductor devices from silicon wafers fabricated by an Integrated Device Manufacturer ("IDM"), or by a semiconductor foundry, are singulated and then assembled onto a substrate or temporary carrier, which is then overmolded with epoxy mold compound and cured to create what is known as a reconstituted wafer. The reconstituted wafer then goes through another series of process steps (dielectric deposition, metallization, photolithography), to create a redistributed "fan-out" of the electrical interconnections from the original silicon device area to an expanded area that includes the device (die) surface itself, along with a generous amount of extra surface created from the mold compound area.

A redistribution layer ("RDL") is the "fanned-out" metal layer on a packaged integrated circuit that makes the I/O pads of the integrated circuit available in other locations. PVD processes are essential to RDL fabrication; in fan-out packaging, our INTEVAC MATRIX®PVD system is used to deposit thin layers of Titanium ("Ti"), Titanium Tungsten ("TiW") and Copper ("Cu") to form the barrier/seed layer upon which the full RDL is constructed.

Applications driving the adoption of fan-out packaging include, among others: (1) baseband processors and application processors; (2) radio frequency ("RF") transceivers and switches; (3) power management integrated circuits ("PMIC"); (4) radar modules for automotive; (5) audio codec; and (6) microcontrollers.

Smartphones from Apple, Xiaomi, LG and others incorporate fan-out packaged components, as do most higher-end automobiles. IoT applications in the future are expected to contribute additional significant volume in fan-out packaged devices.

The compelling advantages our INTEVAC MATRIX PVD system brings to fan-out packaging are a much-reduced cost of ownership over the current PVD process tools of record used for RDL barrier/seed layer applications, and also the flexibility to run round wafers, and square or rectangular panels, with no changes to the INTEVAC MATRIX PVD system beyond a simple substrate carrier substitution.

TFE Products

Intevac's TFE product portfolio addressing each of these markets is based around common core technologies and competencies. Intevac believes its TFE product portfolio can be extended to support adjacent markets. Based on its history and market and technology leadership in the HDD industry, Intevac offers superior high-productivity vacuum handling of small substrates at the lowest cost of ownership. Lowest cost of ownership includes various advantages such as high target utilization, high throughput, small footprint, double-sided coating, and reduced materials costs.

Product Table

The following table presents a representative list of the TFE products that we offered during fiscal 2019 and fiscal 2018.

TFE Products	Applications and Features
HDD Equipment Market	
200 Lean® Disk Sputtering System	• Uses PVD and chemical vapor deposition ("CVD") technologies. • Deposits magnetic films, non-magnetic films and protective carbon-based overcoats. • Provides high-throughput for small-substrate processing. • Over 160 units installed.
Upgrades, spares, consumables and services (non-systems business)	• Upgrades to the installed base to support the continued growth in areal density or reduce the manufacturing cost per disk.
DCP Market	
INTEVAC VERTEX® System	• Utilizes vertical sputtering for multiple film types. • Provides high-throughput for small-substrate processing. • Uses patented carbon deposition source. • Modular design enables expandability. • Enables low-temperature processing.
INTEVAC VERTEX™ Spectra System	• Extension of the VERTEX system. • Incorporates multiple source technologies in a single system. • Uses proprietary ion beam processing for deposition and etching. • Enables unique patterned NCVM and hard AR coatings.
INTEVAC VERTEX™ Marathon System	• Versatile platform for high volume manufacturing of multi-step, multi-layer optical coatings. • Enables diverse coatings — DiamondClad, patterned NCVM and AR films.
Solar PV Market	
INTEVAC MATRIX PVD System	• Deposits electrical contacts and conductor layers, reflective layers, and transparent conductive oxide layers, all of which are critical to the efficiency of solar cells. • Includes patented Linear Scanning Magnetic Array ("LSMA") magnetron source, with industry-leading target utilization rate of over 65 percent. • Provides high-throughput for small-substrate processing.
INTEVAC MATRIX Implant System	• Utilizes the chambers and transport mechanism of the MATRIX platform while using the implant sources from the ENERG*i* system.
ENERG*i*® Implant System	• Supports both phosphorus and boron dopant technologies. • Extendable to new advanced solar cell structures.
Fan-Out Packaging Market	
INTEVAC MATRIX PVD System	• Deposits barrier/seed layers for fan-out RDL. • Includes LSMA magnetron source, with industry-leading target utilization rate of over 65 percent. • Provides high-throughput and low cost of ownership for small-substrate or large panel processing. • Provides flexibility for handling round, square, or rectangular substrates for fan-out packaging.

TFE Products	Applications and Features
Adjacent Markets	
INTEVAC MATRIX System	• Incorporates multiple thin-film deposition techniques such as PVD, CVD, Etch, Implant, heating and cooling. • Consists of high-speed linear transport. • Flexible design enables handling of various different small substrate sizes and shapes. • Performs double-sided coating within vacuum.

Photonics Segment

Photonics Market

Intevac Photonics develops, manufactures and sells compact, high-sensitivity digital-optical products for the capture and display of extreme low-light images. These products incorporate high resolution digital night-image sensors operating in the visible and near infrared ("NIR") light spectrums and are based on Intevac's proprietary EBAPS® (Electron Bombarded Active Pixel Sensor) technology.

Photonics products primarily address the high performance military night-vision market. Our products provide digital imagery in extremely low-light level conditions. Intevac provides these products for military aircraft including the U.S. Army AH-64 Apache Attack Helicopter and the F-35 Joint Strike Fighter. The Company is developing additional technologies to address soldier head-mounted and weapon-mounted applications.

Military Products

Intevac's EBAPS is incorporated into custom-designed cameras, modules and system products for high performance military applications. Intevac's EBAPS can be integrated at various levels with optics, electronics, software, and displays based upon customer specifications and requirements. Intevac has developed a next-generation, 3.7 mega-pixel resolution Intevac Silicon Imagine Engine ("ISIE") 19 EBAPS which operates at higher resolutions, lower light levels, higher speeds, and lower power consumption for use in next-generation systems. Customization typically occurs in the areas of electronics, near-eye micro-displays and mechanical packaging. Intevac's products by application are:

Helicopter Pilotage

Intevac provides a night-vision camera with a 2.0 mega-pixel resolution EBAPS module which is gimbal turret-mounted on the nose of the Apache helicopter. The low-light level digital video is then viewable by the helicopter pilot on a Head-Mounted Display ("HMD") enabling the pilot to have enhanced night vision and allowing the aircrew to view multiple aircraft-mounted sensor information.

Fixed Wing Aircraft Pilotage

Intevac provides night-vision modules with a 2.0 mega-pixel resolution EBAPS module which are integrated with the F-35 fighter pilot's helmet and enables the pilot to have enhanced night vision incorporating navigational and tactical information. Additionally, a similar integrated night vision camera utilizing a 2.0 mega-pixel resolution EBAPS is being designed into the Striker II helmet for the NATO Eurofighter Typhoon aircraft.

Long-Range Target Identification

Intevac provides the Laser Illuminated Viewing and Ranging ("LIVAR®") shortwave-infrared camera for long range military night time surveillance systems that can identify targets at distances of up to twenty kilometers. Photonics' LIVAR camera is incorporated into long range target identification systems manufactured by a major defense contractor.

Augmented Reality ("AR") and Wireless HMDs

Intevac provides HMDs for applications in AR and weapon sights. The HMD is a near-eye, high-definition, wide field-of-view ("FOV") micro-display system for portable viewing of video in military and commercial applications. Depending on the application, Intevac provides configuration choices that include monocular or binocular, mono or stereo video, wired or wireless interfaces, and with integral inertial measurement units ("IMU"). An AR HMD overlays symbology and other information on and tracked in a view of the real world, creating the illusion that they occupy the same space. Intevac has developed and demonstrated wide FOV AR displays for use in HMDs.

Soldier Mobility

Intevac is developing a digital-fused binocular night-vision goggle with AR which will integrate the next-generation EBAPS. This goggle will demonstrate superior night-vision capability, with digital advantages, such as zoom, information overlay, and wireless image transmission and reception.

Intevac is developing a digital night-vision camera for the U.S. Army's Integrated Visual Augmentation System ("IVAS") program. The IVAS will incorporate head, body, and weapon technologies on individual soldiers. It is a single platform that soldiers can use to fight, rehearse, and train that provides increased mobility and situational awareness necessary to achieve overmatch against adversaries and includes a squad-level combat training capability.

Commercial Products

Low-Light Cameras

Photonics' MicroVista® product line of commercial compact and lightweight low-light Complementary Metal–Oxide–Semiconductor ("CMOS") cameras provides high sensitivity in the ultraviolet, visible or NIR regions of the spectrum for use in industrial inspection, bio-medical and scientific applications. These cameras are primarily sold through distribution channels and to original equipment manufacturers.

Customer Concentration

Historically, a significant portion of Intevac's revenue in any particular period has been attributable to sales to a limited number of customers.

The following customers accounted for at least 10 percent of Intevac's consolidated net revenues in fiscal 2019 and 2018.

	2019	2018
Seagate Technology	49%	52%
U.S. Government	20%	*
Jolywood (Hongkong) Industrial Holdings Co., Limited	14%	*
HGST	*	13%

* Less than 10%

Intevac expects that sales of Intevac's products to relatively few customers will continue to account for a high percentage of Intevac's revenues in the foreseeable future.

Foreign sales accounted for 67% of revenue in fiscal 2019 and 71% of revenue in fiscal 2018. The majority of Intevac's foreign sales are to companies in Asia or to U.S. companies for use in their Asian manufacturing or development operations. Intevac anticipates that foreign sales will continue to be a significant portion of Intevac's TFE revenues. Intevac's disk sputtering equipment customers include magnetic disk manufacturers, such as Fuji Electric and Showa Denko, and vertically integrated HDD manufacturers, such as Seagate, Western Digital and HGST. Intevac's PV solar equipment customers include several major solar cell manufacturers. Intevac's DCP equipment customers include DCP manufacturers, such as Truly Opto-electronics. Intevac's customers' manufacturing facilities are primarily located in California, China, Taiwan, Japan, Malaysia, Philippines, Portugal and Singapore.

Competition

The principal competitive factors affecting the markets for Intevac TFE products include price, product performance and functionality, ease of integration, customer support and service, reputation and reliability. Intevac has one major competitor, Canon Anelva, in the hard disk drive equipment market and has historically experienced intense worldwide competition for magnetic disk sputtering equipment. Intevac primarily faces competition from large established global competitors in the PV equipment market including Centrotherm Photovoltaics, Jusung, Kingston and Von Ardenne. Intevac faces competition in the DCP market from optical coating equipment manufacturers such as Optorun and Shincron, glass manufacturers that may develop scratch resistant glass, touchscreen manufacturers that may adopt harder substrate materials, or other equipment companies, chemical companies or the display cover plate manufacturers themselves that may offer competing protective coatings including DLC, NCVM and AR. Intevac's competitors for PVD processes in the fan-out packaging market include the companies SPTS Technologies, Evatec AG, ULVAC Technologies, Inc., Tango Systems, Inc., and NEXX Systems. These competitors generally have substantially greater financial, technical, marketing, manufacturing and other resources as compared to Intevac. Furthermore, any of Intevac's competitors may develop enhancements to, or future generations of, competitive products that offer superior price or performance features. In addition, new competitors, with enhanced products may enter the markets that Intevac currently serves.

The principal competitive factors affecting Photonics products include price, extreme low-light level performance, power consumption, resolution, size, ease of integration, reliability, spectral band, reputation and customer support and service. Intevac faces substantial competition for Photonics products, and many competitors have substantially greater resources and brand recognition. In the military market for soldier and helicopter night vision goggles, Elbit Systems and L-3 Communications are large and well-established defense contractors and are the primary U.S. manufacturers of analog image intensifier tubes used in Generation-III night-vision devices. For long range airborne targeting applications, Intevac competes against camera providers using low light CMOS imagery. Intevac expects that other companies will develop digital night-vision products and aggressively promote their sales. Within the near-eye display market, Intevac also currently faces competition from Rockwell-Collins, Kopin and Six 15 Technologies in the defense space and anticipates that in the future it will experience competition from lower performance, niche commercial HMD providers expanding into defense applications, all of which can offer cost-competitive products.

Marketing and Sales

TFE sales are made primarily through Intevac's direct sales force. Intevac also sells its products through distributors in Japan and China. The selling process for Intevac's TFE products is multi-level and lengthy, involving individuals from marketing, engineering, operations, customer service and senior management.

Installing and integrating new equipment requires a substantial investment by a customer. Sales of Intevac's systems depend, in significant part, upon the decision of a prospective customer to replace obsolete equipment or to increase manufacturing capacity by upgrading or expanding existing manufacturing facilities or by constructing new manufacturing facilities, all of which typically involve a significant capital commitment. Intevac's systems have a lengthy sales cycle, during which Intevac may expend substantial funds and management time and effort with no assurance that a sale will result.

The production of large complex systems requires Intevac to make significant investments in inventory both to fulfill customer orders and to maintain adequate supplies of spare parts to service previously shipped systems. Intevac maintains inventories of spare parts in the United States, Singapore, Malaysia and China to support its TFE customers. Intevac often requires its TFE customers to pay for systems in three installments, with a portion of the system price billed upon receipt of an order, a portion of the price billed upon shipment, and the balance of the price and any sales tax due upon completion of installation and acceptance of the system at the customer's factory.

Intevac provides process and applications support, customer training, installation, start-up assistance and post-installation service support to Intevac's TFE customers. Intevac has field offices in Singapore, China, and Malaysia to support Intevac's customers in Asia.

Warranties for Intevac's TFE products typically range between 12 and 24 months from customer acceptance. During the warranty period any necessary non-consumable parts are supplied and installed without charge.

Sales of Photonics products for military applications are primarily made to the end user through Intevac's direct sales force. Intevac sells to the U.S. government and to leading defense contractors such as Lockheed Martin Corporation, Northrop Grumman Corporation, Elbit Systems of America, Raytheon, Leonardo DRS, BAE Systems and Safran Electronics and Defense.

Intevac is subject to long sales cycles in the Photonics segment because many of Intevac's products, such as Intevac's night-vision systems, typically must be designed into Intevac's customers' products, which are often complex and state-of-the-art. These development cycles are generally multi-year, and Intevac's sales are dependent on Intevac's customer successfully integrating Intevac's product into its product, completing development of its product and then obtaining production orders for its product. Sales of these products are also often dependent on ongoing funding of defense programs by the U.S. government and its allies. Additionally, sales to international customers are contingent on issuance of export licenses by the U.S. government.

Photonics generally invoices its research and development customers either as costs are incurred, or as program milestones are achieved, depending upon the particular contract terms. As a government contractor, Intevac invoices customers using estimated annual rates approved by the Defense Contracts Audit Agency ("DCAA").

Research and Development and Intellectual Property

Intevac's long-term growth strategy requires continued development of new products. Intevac works closely with Intevac's customers to design products that meet their planned technical and production requirements. Product development and engineering organizations are located primarily in the United States and Singapore.

Intevac's competitive position significantly depends on Intevac's research, development, engineering, manufacturing and marketing capabilities, and not just on Intevac's patent position. However, protection of Intevac's technological assets by obtaining and enforcing intellectual property rights, including patents, is important. Therefore, Intevac's practice is to file patent applications in the United States and other countries for inventions that Intevac considers important. Although Intevac does not consider Intevac's business materially dependent upon any one patent, the rights of Intevac and the products made and sold under Intevac's patents along with other intellectual property, including trademarks, know-how, trade secrets and copyrights, taken as a whole, are a significant element of Intevac's business.

Intevac enters into patent and technology licensing agreements with other companies when management determines that it is in Intevac's best interest to do so. Intevac pays royalties under existing patent license agreements for use of certain patented technologies in several of Intevac's products. Intevac also receives, from time to time, royalties from licenses granted to third parties. Royalties received from or paid to third parties have not been material to Intevac's consolidated results of operations.

In the normal course of business, Intevac periodically receives and makes inquiries regarding possible patent infringements. In dealing with such inquiries, it may be necessary or useful for us to obtain or grant licenses or other rights. However, there can be no assurance that such licenses or rights will be available to us on commercially reasonable terms, or at all. If Intevac is not able to resolve or settle claims, obtain necessary licenses and/or successfully prosecute or defend Intevac's position, Intevac's business, financial condition and results of operations could be materially and adversely affected.

Manufacturing

Intevac manufactures its TFE products at its facilities in California and Singapore. Intevac's TFE manufacturing operations include electromechanical assembly, vacuum processing, fabrication of sputter sources, and system assembly, alignment and testing.

Photonics products are manufactured at Intevac's facility in California. Photonics manufactures sensors, cameras, integrated camera systems, and near-eye display systems using advanced manufacturing techniques and equipment. Intevac's operations include vacuum processing, and electromechanical and optical system assembly.

Employees

At December 28, 2019, Intevac had 272 employees, including 14 contract employees.

Compliance with Environmental Regulations

Intevac is subject to a variety of governmental regulations relating to the use, storage, discharge, handling, emission, generation, manufacture, treatment and disposal of toxic or otherwise hazardous substances, chemicals, materials or waste. Intevac treats the cost of complying with government regulations and operating a safe workplace as a normal cost of business and allocates the cost of these activities to all functions, except where the cost can be isolated and charged to a specific function. The environmental standards and regulations promulgated by government agencies in California and Singapore are rigorous and set a high standard of compliance. Intevac believes its costs of compliance with these regulations and standards are comparable to other companies operating similar facilities in these jurisdictions.

Information about our Executive Officers

Certain information about our executive officers as of February 12, 2020 is listed below:

Name	Age	Position
Executive Officers:		
Wendell T. Blonigan	58	President and Chief Executive Officer
James Moniz	62	Executive Vice President, Finance and Administration, Chief Financial Officer and Treasurer
Timothy Justyn	57	Executive Vice President and General Manager, Photonics
Jay Cho	55	Executive Vice President and General Manager, TFE
Other Key Officers:		
Verle Aebi	65	Chief Technology Officer, Photonics
Terry Bluck	60	Chief Technology Officer, TFE
Kimberly Burk	54	Senior Vice President, Global Human Resources

Mr. Blonigan joined Intevac in July 2013 as President and Chief Executive Officer. Prior to joining Intevac, Mr. Blonigan co-founded Orbotech LT Solar in 2009 and served as the company's Chief Executive Officer until 2013. From 2006 until 2009, he was the Chief Operating Officer at Photon Dynamics, Inc. In 1991, Mr. Blonigan joined Applied Materials' AKT display subsidiary. During his tenure at AKT, he held various positions. In 2003, he was appointed President and served in this role until 2006; from 1999 through 2003 he was Vice President, and prior to that time he was Director of Engineering and New Product Development. Mr. Blonigan holds a BS in electronic engineering technology from DeVry University Missouri Institute of Technology.

Mr. Moniz joined Intevac as Executive Vice President, Finance and Administration, Chief Financial Officer and Treasurer in November 2014. Mr. Moniz previously served as the Chief Financial Officer of Nanometrics, Inc. from 2009 until his retirement in 2011. During 2008, Mr. Moniz was the Chief Financial Officer at Photon Dynamics, Inc. From 2000 until 2008, Mr. Moniz served as the Chief Financial Officer at Nextest Systems Corporation. Prior to Nextest, Mr. Moniz held senior financial management positions at Millennia Vision Corporation, Lockheed Martin Corporation, Loral Corporation and Varian Associates. Mr. Moniz holds an MBA, a BS in accounting and a BS in marketing from San Jose State University.

Mr. Justyn has served as Executive Vice President and General Manager, Photonics from February 2018. Mr. Justyn served as Senior Vice President of Global Operations from February 2015 to February 2018. Mr. Justyn served as Vice President, Photonics from October 2008 to February 2015. Mr. Justyn served as Vice President, TFE Manufacturing from April 1997 to October 2008. Mr. Justyn joined Intevac in February 1991 and has served in various roles in our TFE Products Division and our former night-vision business. Mr. Justyn holds a BS in chemical engineering from the University of California, Santa Barbara.

Mr. Cho joined Intevac in January 2014 and currently serves as Executive Vice President and General Manager, TFE. Prior to joining Intevac, Mr. Cho was President, Chief Executive Officer and Co-Founder of REEnewal Corporation. From 2006 to 2011, Mr. Cho served as Vice President / General Manager of the Tester and Repair Business Units of Orbotech LTD. From 2005 to 2006, Mr. Cho served as Vice President, Product Development at Metara Inc. From 1992 to 2005, Mr. Cho held various management positions at Novellus Systems, Inc. Prior to Novellus, Mr. Cho worked for Digital Equipment Corporation and Intermec Corporation. Mr. Cho holds a BS in electrical engineering from Washington State University and an MBA from University of Phoenix.

Mr. Aebi has served as Chief Technology Officer of the Photonics business since August 2006. Previously, Mr. Aebi served as President of the Photonics Division from July 2000 to July 2006 and as General Manager of the Photonics Division since May 1995. Mr. Aebi was elected as a Vice President of the Company in September 1995. From 1988 through 1994, Mr. Aebi was the Engineering Manager of the night-vision business Intevac acquired from Varian Associates in 1991, where he was responsible for new product development in the areas of advanced photocathodes and image intensifiers. Mr. Aebi holds a BS in physics and an MS in electrical engineering from Stanford University.

Mr. Bluck rejoined Intevac as Chief Technology Officer of TFE in August 2004. Mr. Bluck had previously worked at Intevac from December 1996 to November 2002 in various engineering positions. The business unit Mr. Bluck worked for was sold to Photon Dynamics in November 2002, and he was employed there as Vice President, Rapid Thermal Process Product Engineering until August 2004. Mr. Bluck holds a BS in physics from San Jose State University.

Ms. Burk joined Intevac in May 2000 and currently serves as Senior Vice President of Global Human Resources. Prior to joining Intevac, Ms. Burk served as Human Resources Manager of Moen, Inc. from 1999 to 2000 and as Human Resources Manager of Lawson Mardon from 1994 to 1999. Ms. Burk holds a BS in sociology from Northern Illinois University.

Available Information

Intevac's website is *http://www.intevac.com.* Intevac makes available free of charge, on or through its website, its annual, quarterly and current reports, and any amendments to those reports, as soon as reasonably practicable after electronically filing such reports with, or furnishing them to, the SEC. This website address is intended to be an inactive textual reference only and none of the information contained on Intevac's website is part of this report or is incorporated by reference herein.

Trademarks

Intevac's trademarks include the following: "200 Lean®," "DiamondClad™," "DIAMOND DOG™," "EBAPS®," "ENERG*i*®," "LIVAR®," "INTEVAC LSMA®," "INTEVAC MATRIX®," "MicroVista®," "NightVista®," "oDLC®," "INTEVAC VERTEX®," "VERTEX Marathon™," and "VERTEX SPECTRA™."

Item 1A. *Risk Factors*

The following factors could materially affect Intevac's business, financial condition or results of operations and should be carefully considered in evaluating the Company and its business, in addition to other information presented elsewhere in this report.

The industries we serve are cyclical, volatile and unpredictable.

A significant portion of our revenue is derived from the sale of equipment used to manufacture commodity technology products such as disk drives, PV solar cells and cell phones. This subjects us to business cycles, the timing, length and volatility of which can be difficult to predict. When demand for commodity technology products exceeds production capacity, then demand for new capital equipment such as ours tends to be amplified. Conversely, when supply of commodity technology products exceeds demand, then demand for new capital equipment such as ours tends to be depressed. We cannot predict with any certainty when these cycles will begin or end. Our sales of systems for magnetic disk production increased in 2016 as a customer began upgrading the technology level of its manufacturing capacity. Sales of systems and upgrades for magnetic disk production in 2017 and 2018 were higher than in 2016 as this customer's technology upgrade continued. Sales of systems and upgrades for magnetic disk production in 2019 were slightly down from the levels in 2018 as this customer took delivery of four systems. Intevac expects sales of systems and upgrades for magnetic disk production in 2020 will be at similar levels from the levels in 2019.

Our equipment represents only a portion of the capital expenditure that our customers incur when they upgrade or add production capacity. Accordingly, our customers generally commit to making large capital expenditures far in excess of the cost of our systems alone when they decide to purchase our systems. The magnitude of these capital expenditures requires our customers to have access to large amounts of capital. Our customers generally reduce their level of capital investment during downturns in the overall economy or during a downturn in their industries.

In recent years the photovoltaic (solar) market has undergone a downturn, which is likely to impact our sales of PV equipment. The solar industry from time to time experiences periods of structural imbalance between supply and demand, and such periods put intense pressure on our customers' pricing. The solar industry is currently in such a period. Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. During any such period, solar module manufacturers may reduce their sales prices in response to competition, even below their manufacturing costs, in order to generate sales and may do so for a sustained period of time. As a result, our customers may be unable to sell their solar modules or systems at attractive prices or for a profit during a period of excess supply of solar modules, which would adversely affect their results of operations and their ability to make capital investments such as purchasing our products.

We must effectively manage our resources and production capacity to meet rapidly changing demand. Our business experiences rapid growth and contraction, which stresses our infrastructure, internal systems and managerial resources. During periods of increasing demand for our products, we must have sufficient manufacturing capacity and inventory to meet customer demand; attract, retain and motivate a sufficient number of qualified individuals; and effectively manage our supply chain. During periods of decreasing demand for our products, we must be able to align our cost structure with prevailing market conditions; motivate and retain key employees and effectively manage our supply chain.

Sales of our equipment are primarily dependent on our customers' upgrade and capacity expansion plans and whether our customers select our equipment.

We have no control over our customers' upgrade and capacity expansion plans, and we cannot be sure they will select, or continue to select, our equipment when they upgrade or expand their capacity. The sales cycle for our equipment systems can be a year or longer, involving individuals from many different areas of Intevac and numerous product presentations and demonstrations for our prospective customers. Our sales process also commonly includes production of samples and customization of our products. We do not typically enter into long-term contracts with our customers, and until an order is actually submitted by a customer there is no binding commitment to purchase our systems. In some cases, orders are also subject to customer acceptance or other criteria even in the case of a binding agreement.

Sales of new manufacturing systems are also dependent on obsolescence and replacement of the installed base of our customers' existing equipment with newer, more capable equipment. If upgrades are developed that extend the useful life of the installed base of systems, then we tend to sell more upgrade products and fewer new systems, which can significantly reduce total revenue.

Our 200 Lean HDD customers also experience competition from companies that produce alternative storage technologies like flash memory, which offer smaller size, lower power consumption and more rugged designs. These storage technologies are being used increasingly in enterprise applications and smaller form factors such as tablets, smart-phones, ultra-books, and notebook PCs instead of hard disk drives. Tablet computing devices and smart-phones have never contained, nor are they likely in the future to contain, a disk drive. Products using alternative technologies, such as flash memory, optical storage and other storage technologies are becoming increasingly common and could become a significant source of competition to particular applications of the products of our 200 Lean HDD customers, which could adversely affect our results of operations. If alternative technologies, such as flash memory, replace hard disk drives as a significant method of digital storage, then demand for our hard disk manufacturing products would decrease.

The Photonics business is also subject to long sales cycles because many of its products, such as our military imaging products, often must be designed into the customers' end products, which are often complex state-of-the-art products. These development cycles are typically multi-year, and our sales are contingent on our customers successfully integrating our product into their product, completing development of their product and then obtaining production orders for their product from the U.S. government or its allies.

We operate in an intensely competitive marketplace, and our competitors have greater resources than we do.

In the market for our disk sputtering systems, we experience competition primarily from Canon Anelva, which has sold a substantial number of systems worldwide. In the PV equipment market, Intevac faces competition from large established competitors including Centrotherm Photovoltaics, Jusung, Kingston and Von Ardenne. In the market for our military imaging products we experience competition from companies such as Elbit Systems and L-3 Communications. Some of our competitors have substantially greater financial, technical, marketing, manufacturing and other resources than we do, especially in the DCP and PV equipment markets. Our competitors may develop enhancements to, or future generations of, competitive products that offer superior price or performance features, and new competitors may enter our markets and develop such enhanced products. Moreover, competition for our customers is intense, and our competitors have historically offered substantial pricing concessions and incentives to attract our customers or retain their existing customers.

Our growth depends on development of technically advanced new products and processes.

We have invested heavily, and continue to invest, in the development of new products, such as our 200 Lean HDD and other PVD systems, our coating systems for DCP, our solar systems for PV applications, our digital night-vision products and our near-eye display products. Our success in developing and selling new products depends upon a variety of factors, including our ability to: predict future customer requirements; make technological advances; achieve a low total cost of ownership for our products; introduce new products on schedule; manufacture products cost-effectively including transitioning production to volume manufacturing; commercialize and attain customer acceptance of our products; and achieve acceptable and reliable performance of our new products in the field. Our new product decisions and development commitments must anticipate continuously evolving industry requirements significantly in advance of sales. In addition, we are attempting to expand into new or related markets, including the PV and display cover glass markets. Our expansion into the PV and cover glass markets is dependent upon the success of our customers' development plans. To date we have not recognized material revenue from such products. Failure to correctly assess the size of the markets, to successfully develop cost effective products to address the markets or to establish effective sales and support of the new products would have a material adverse effect on future revenues and profits. In addition, if we invest in products for which the market does not develop as anticipated, we may incur significant charges related to such investments.

Rapid technological change in our served markets requires us to rapidly develop new technically advanced products. Our future success depends in part on our ability to develop and offer new products with improved capabilities and to continue to enhance our existing products. If new products have reliability or quality problems, our performance may be impacted by reduced orders, higher manufacturing costs, delays in acceptance and payment for new products and additional service and warranty expenses.

We are exposed to risks associated with a highly concentrated customer base.

Historically, a significant portion of our revenue in any particular period has been attributable to sales of our disk sputtering systems to a limited number of customers. This concentration of customers, when combined with changes in the customers' specific capacity plans and market share shifts can lead to extreme variability in our revenue and financial results from period to period.

The concentration of our customer base may enable our customers to demand pricing and other terms unfavorable to Intevac, and makes us more vulnerable to changes in demand by or issues with a given customer. Orders from a relatively limited number of manufacturers have accounted for, and will likely continue to account for, a substantial portion of our revenues. The loss of one of these large customers, or delays in purchasing by them, could have a material and adverse effect on our revenues.

Our operating results fluctuate significantly from quarter to quarter, which can lead to volatility in the price of our common stock.

Our quarterly revenues and common stock price have fluctuated significantly. We anticipate that our revenues, operating margins and common stock price will continue to fluctuate for a variety of reasons, including: (1) changes in the demand, due to seasonality, cyclicality and other factors in the markets for computer systems, storage subsystems and consumer electronics containing disks as well as cell phones and PV solar cells our customers produce with our systems; (2) delays or problems in the introduction and acceptance of our new products, or delivery of existing products; (3) timing of orders, acceptance of new systems by our customers or cancellation or delay of those orders; (4) new products, services or technological innovations by our competitors or us; (5) changes in our manufacturing costs and operating expense; (6) changes in general economic, political, stock market and industry conditions; and (7) any failure of our operating results to meet the expectations of investment research analysts or investors.

Any of these, or other factors, could lead to volatility and/or a rapid change in the trading price of our common shares. In the past, securities class action litigation has been instituted against companies following periods of volatility in the market price of their securities. Any such litigation, if instituted against Intevac, could result in substantial costs and diversion of management time and attention.

We may not be able to obtain export licenses from the U.S. government permitting delivery of our products to international customers.

Many of our products, especially Photonics products, require export licenses from U.S. government agencies under the Export Administration Act, the Trading with the Enemy Act of 1917, the Arms Export Act of 1976 or the International Traffic in Arms Regulations. These regulations limit the potential market for some of our products. We can give no assurance that we will be successful in obtaining all the licenses necessary to export our products. Heightened government scrutiny of export licenses for defense related products has resulted in lengthened review periods for our license applications. Exports to countries that are not considered by the U.S. government to be allies are likely to be prohibited, and even sales to U.S. allies may be limited. Failure to comply with export control laws, including identification and reporting of all exports and re-exports of controlled technology or exports made without correct license approval or improper license use could result in severe penalties and revocation of licenses. Failure to obtain export licenses, delays in obtaining licenses, or revocation of previously issued licenses would prevent us from selling the affected products outside the United States and could negatively impact our results of operations.

The Photonics business is dependent on U.S. government contracts, which are subject to fixed pricing, immediate termination and a number of procurement rules and regulations.

We sell our Photonics products and services directly to the U.S. government, as well as to prime contractors for various U.S. government programs. The U.S government is considering significant changes in the level of existing, follow-on or replacement programs. We cannot predict the impact of potential changes in priorities due to military transformations and/or the nature of future war-related activities. A shift of government priorities to programs in which we do not participate and/or reductions in funding for or the termination of programs in which we do participate, unless offset by other programs and opportunities, could have a material adverse effect on our financial position, results of operations, or cash flows.

Funding of multi-year government programs is subject to congressional appropriations, and there is no guarantee that the U.S. government will make further appropriations. Sales to the U.S. government and its prime contractors may also be affected by changes in procurement policies, budget considerations and political developments in the United States or abroad. For example, if the U.S. government is less focused on defense spending or there is a decrease in hostilities, demand for our products could decrease. The loss of funding for a government program would result in a loss of future revenues attributable to that program. The influence of any of these factors, which are beyond our control, could negatively impact our results of operations.

A significant portion of our U.S. government revenue is derived from fixed-price development and production contracts. Under fixed-price contracts, unexpected increases in the cost to develop or manufacture a product, whether due to inaccurate estimates in the bidding process, unanticipated increases in material costs, reduced production volumes, inefficiencies or other factors, are borne by us. We have experienced cost overruns in the past that have resulted in losses on certain contracts, and may experience additional cost overruns in the future. We are required to recognize the total estimated impact of cost overruns in the period in which they are first identified. Such cost overruns could have a material adverse effect on our results of operations.

Generally, government contracts contain provisions permitting termination, in whole or in part, without prior notice at the government's convenience upon the payment of compensation only for work done and commitments made at the time of termination. We cannot ensure that one or more of the government contracts under which we, or our customers, operate will not be terminated under these circumstances. Also, we cannot ensure that we, or our customers, would be able to procure new government contracts to offset the revenues lost as a result of any termination of existing contracts, nor can we ensure that we, or our customers, will continue to remain in good standing as federal contractors.

As a U.S. government contractor we must comply with specific government rules and regulations and are subject to routine audits and investigations by U.S. government agencies. If we fail to comply with these rules and regulations, the results could include: (1) reductions in the value of our contracts; (2) reductions in amounts previously billed and recognized as revenue; (3) contract modifications or termination; (4) the assessment of penalties and fines; and (5) suspension or debarment from government contracting or subcontracting for a period of time or permanently.

Our business could be negatively impacted by cyber and other security threats or disruptions.

As a defense contractor, we face various cyber and other security threats, including espionage and attempts to gain unauthorized access to sensitive information and networks. Although we utilize various procedures and controls to monitor and mitigate the risk of these threats, there can be no assurance that these procedures and controls will be sufficient. These threats could lead to losses of sensitive information or capabilities; financial liabilities and damage to our reputation. If we are unable to maintain compliance with security standards applicable to defense contractors, we could lose business or suffer reputational harm.

Cyber threats to businesses in general are evolving and include, but are not limited to, malicious software, destructive malware, attempts to gain unauthorized access to data, disruption or denial of service attacks, and other electronic security breaches that could lead to disruptions in our systems, unauthorized release of confidential, personal or otherwise protected information (ours or that of our employees, customers or partners), and corruption of data, networks or systems. In addition, we could be impacted by cyber threats or other disruptions or vulnerabilities found in products we use or in our partners' or customers' systems that are used in connection with our business. These events, if not prevented or effectively mitigated, could damage our reputation, require remedial actions and lead to loss of business, regulatory actions, potential liability and other financial losses.

Changes to our effective tax rate affect our results of operations.

As a global company, we are subject to taxation in the United States, Singapore and various other countries. Significant judgment is required to determine and estimate worldwide tax liabilities. Our future effective tax rate could be affected by: (1) changes in tax laws; (2) the allocation of earnings to countries with differing tax rates; (3) changes in worldwide projected annual earnings in current and future years: (4) accounting pronouncements; or (5) changes in the valuation of our deferred tax assets and liabilities. Although we believe our tax estimates are reasonable, there can be no assurance that any final determination will not be different from the treatment reflected in our historical income tax provisions and accruals, which could result in additional payments by Intevac.

Our success depends on international sales and the management of global operations.

In previous years, the majority of our revenues have come from regions outside the United States. Most of our international sales are to customers in Asia, which includes products shipped to overseas operations of U.S. companies. We currently have manufacturing facilities in California and Singapore and international customer support offices in Singapore, China, and Malaysia. We expect that international sales will continue to account for a significant portion of our total revenue in future years. Certain of our suppliers are also located outside the United States.

Managing our global operations presents challenges including, but not limited to, those arising from: (1) global trade issues; (2) variations in protection of intellectual property and other legal rights in different countries; (3) concerns of U.S. governmental agencies regarding possible national commercial and/or security issues posed by growing manufacturing business in Asia; (4) fluctuation of interest rates, raw material costs, labor and operating costs, and exchange rates; (5) variations in the ability to develop relationships with suppliers and other local businesses; (6) changes in the laws and regulations of the United States, including export restrictions, and other countries, as well as their interpretation and application; (7) the need to provide technical and spares support in different locations; (8) political and economic instability; (9) cultural differences; (10) varying government incentives to promote development; (11) shipping costs and delays; (12) adverse conditions in credit markets; (13) variations in tariffs, quotas, tax codes and other market barriers; and (14) barriers to movement of cash.

We must regularly assess the size, capability and location of our global infrastructure and make appropriate changes to address these issues.

Difficulties in integrating past or future acquisitions could adversely affect our business.

We have completed a number of acquisitions and dispositions during our operating history. We have spent and may continue to spend significant resources identifying and pursuing future acquisition opportunities. Acquisitions involve numerous risks including: (1) difficulties in integrating the operations, technologies and products of the acquired companies; (2) the diversion of our management's attention from other business concerns; and (3) the potential loss of key employees of the acquired companies. Failure to achieve the anticipated benefits of the prior and any future acquisitions or to successfully integrate the operations of the companies we acquire could have a material and adverse effect on our business, financial condition and results of operations. Any future acquisitions could also result in potentially dilutive issuance of equity securities, acquisition or divestiture-related write-offs or the assumption of debt and contingent liabilities. In addition, we have made and will continue to consider making strategic divestitures. With any divestiture, there are risks that future operating results could be unfavorably impacted if targeted objectives, such as cost savings, are not achieved or if other business disruptions occur as a result of the divestiture or activities related to the divestiture.

Our success is dependent on recruiting and retaining a highly talented work force.

Our employees are vital to our success, and our key management, engineering and other employees are difficult to replace. We do not maintain key person life insurance on any of our employees. The expansion of high technology companies worldwide has increased demand and competition for qualified personnel, and has made companies increasingly protective of prior employees. It may be difficult for us to locate employees who are not subject to non-competition agreements and other restrictions.

The majority of our U.S. operations are located in California where the cost of living and of recruiting employees is high. Our operating results depend, in large part, upon our ability to retain and attract qualified management, engineering, marketing, manufacturing, customer support, sales and administrative personnel. Furthermore, we compete with industries such as the hard disk drive, semiconductor, and solar industries for skilled employees. Failure to retain existing key personnel, or to attract, assimilate or retain additional highly qualified employees to meet our needs in the future, could have a material and adverse effect on our business, financial condition and results of operations.

We are dependent on certain suppliers for parts used in our products.

We are a manufacturing business. Purchased parts constitute the largest component of our product cost. Our ability to manufacture depends on the timely delivery of parts, components and subassemblies from suppliers. We obtain some of the key components and subassemblies used in our products from a single supplier or a limited group of suppliers. If any of our suppliers fail to deliver quality parts on a timely basis, we may experience delays in manufacturing, which could result in delayed product deliveries, increased costs to expedite deliveries or develop alternative suppliers, or require redesign of our products to accommodate alternative suppliers. Some of our suppliers are thinly capitalized and may be vulnerable to failure.

Our business depends on the integrity of our intellectual property rights.

The success of our business depends upon the integrity of our intellectual property rights, and we cannot ensure that: (1) any of our pending or future patent applications will be allowed or that any of the allowed applications will be issued as patents or will issue with claims of the scope we sought; (2) any of our patents will not be invalidated, deemed unenforceable, circumvented or challenged; (3) the rights granted under our patents will provide competitive advantages to us; (4) other parties will not develop similar products, duplicate our products or design around our patents; or (5) our patent rights, intellectual property laws or our agreements will adequately protect our intellectual property or competitive position.

From time to time, we have received claims that we are infringing third parties' intellectual property rights or seeking to invalidate our rights. We cannot ensure that third parties will not in the future claim that we have infringed current or future patents, trademarks or other proprietary rights relating to our products. Any claims, with or without merit, could be time-consuming, result in costly litigation, cause product shipment delays or require us to enter into royalty or licensing agreements. Such royalty or licensing agreements, if required, may not be available on terms acceptable to us.

We could be involved in litigation.

From time to time we may be involved in litigation of various types, including litigation alleging infringement of intellectual property rights and other claims and customer disputes. Litigation is expensive, subjects us to the risk of significant damages and requires significant management time and attention and could have a material and adverse effect on our business, financial condition and results of operations.

We are subject to risks of non-compliance with environmental and other governmental regulations.

We are subject to a variety of governmental regulations relating to the use, storage, discharge, handling, emission, generation, manufacture, treatment and disposal of toxic or otherwise hazardous substances, chemicals, materials or waste. If we fail to comply with current or future regulations, such failure could result in suspension of our operations, alteration of our manufacturing process, remediation costs or substantial civil penalties or criminal fines against us or our officers, directors or employees. Additionally, these regulations could require us to acquire expensive remediation or abatement equipment and incur substantial expenses to comply with them.

Business interruptions could adversely affect our operations.

Our operations are vulnerable to interruption by fire, earthquake, floods or other natural disaster, quarantines or other disruptions associated with infectious diseases, national catastrophe, terrorist activities, war, disruptions in our computing and communications infrastructure due to power loss, telecommunications failure, human error, physical or electronic security breaches and computer viruses, and other events beyond our control. We do not have a detailed disaster recovery plan. Despite our implementation of network security measures, our tools and servers may be vulnerable to computer viruses, break-ins and similar disruptions from unauthorized tampering with our computer systems and tools located at customer sites. Political instability could cause us to incur increased costs in transportation, make such transportation unreliable, increase our insurance costs or cause international currency markets to fluctuate. All these unforeseen disruptions and instabilities could have the same effects on our suppliers and their ability to timely deliver their products. In addition, we do not carry sufficient business interruption insurance to compensate us for all losses that may occur, and any losses or damages incurred by us could have a material adverse effect on our business and results of operations. For example, we self-insure earthquake risks because we believe this is the prudent financial decision based on the high cost of the limited coverage available in the earthquake insurance market. An earthquake could significantly disrupt our operations, most of which are conducted in California. It could also significantly delay our research and engineering effort on new products, most of which is also conducted in California. We take steps to minimize the damage that would be caused by business interruptions, but there is no certainty that our efforts will prove successful.

We could be negatively affected as a result of a proxy contest and the actions of activist stockholders.

A proxy contest with respect to election of our directors, or other activist stockholder activities, could adversely affect our business because: (1) responding to a proxy contest and other actions by activist stockholders can be costly and time-consuming, disruptive to our operations and divert the attention of management and our employees; (2) perceived uncertainties as to our future direction caused by activist activities may result in the loss of potential business opportunities, and may make it more difficult to attract and retain qualified personnel and business partners; and (3) if individuals are elected to our Board of Directors with a specific agenda, it may adversely affect our ability to effectively and timely implement our strategic plans.

We are required to evaluate our internal control over financial reporting under Section 404 of the Sarbanes-Oxley Act of 2002, and any adverse results from such evaluation could result in a loss of investor confidence in our financial reports and have an adverse effect on our stock price.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, our management must perform evaluations of our internal control over financial reporting. Beginning in 2004, our Form 10-K has included a report by management of their assessment of the adequacy of such internal control. Additionally, our independent registered public accounting firm must publicly attest to the effectiveness of our internal control over financial reporting. We have completed the evaluation of our internal controls over financial reporting as required by Section 404 of the Sarbanes-Oxley Act. Although our assessment, testing, and evaluation resulted in our conclusion that as of December 28, 2019, our internal controls over financial reporting were effective, we cannot predict the outcome of our testing in future periods. Ongoing compliance with this requirement is complex, costly and time-consuming. If Intevac fails to maintain effective internal control over financial reporting; our management does not timely assess the adequacy of such internal control; or our independent registered public accounting firm does not deliver an unqualified opinion as to the effectiveness of our internal control over financial reporting, then we could be subject to restatement of previously reported financial results, regulatory sanctions and a decline in the public's perception of Intevac, which could have a material and adverse effect on our business, financial condition and results of operations.

Item 1B. *Unresolved Staff Comments*

None.

Item 2. *Properties*

Intevac maintains its corporate headquarters in Santa Clara, California. The location, approximate size and type of facility of the principal properties are listed below. Intevac leases all of its properties and does not own any real estate.

Location	Square Footage	Principal Use
Santa Clara, CA	169,583	Corporate Headquarters; TFE and Photonics Marketing, Manufacturing, Engineering and Customer Support
Singapore	31,947	TFE Manufacturing and Customer Support
Malaysia	1,291	TFE Customer Support
Shenzhen, China	2,568	TFE Customer Support

Intevac considers these properties adequate to meet its current and future requirements. Intevac regularly assesses the size, capability and location of its global infrastructure and periodically makes adjustments based on these assessments.

Item 3. ***Legal Proceedings***

From time to time, Intevac is involved in claims and legal proceedings that arise in the ordinary course of business. Intevac expects that the number and significance of these matters will increase as Intevac's business expands. Any claims or proceedings against us, whether meritorious or not, could be time consuming, result in costly litigation, require significant amounts of management time, result in the diversion of significant operational resources, or require us to enter into royalty or licensing agreements which, if required, may not be available on terms favorable to us or at all. Intevac is not presently a party to any lawsuit or proceeding that, in Intevac's opinion, is likely to seriously harm Intevac's business.

Item 4. ***Mine Safety Disclosures***

Not applicable.

PART II

Item 5. *Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities*

Market Information

Intevac common stock is traded on The Nasdaq Stock Market (NASDAQ Global Select) under the symbol "IVAC." As of February 12, 2020, there were 75 holders of record.

Recent Sales of Unregistered Securities

None.

Repurchases of Intevac Common Stock

On November 21, 2013, Intevac's Board of Directors approved a stock repurchase program authorizing up to $30.0 million in repurchases. On August 15, 2018, Intevac's Board of Directors approved a $10.0 million increase to the original stock repurchase program authorizing up to $40.0 million. At December 28, 2019, $10.8 million remains available for future stock repurchases under the repurchase program. Intevac did not make any common stock repurchases during the three months ended December 28, 2019.

Item 6. *Selected Financial Data*

Not applicable for smaller reporting companies.

Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Management's Discussion and Analysis (MD&A) is intended to facilitate an understanding of Intevac's business and results of operations. This MD&A should be read in conjunction with Intevac's Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements included elsewhere in this Form 10- K. The following discussion contains forward-looking statements and should also be read in conjunction with the cautionary statement set forth at the beginning of this Form 10-K. MD&A includes the following sections:

- *Overview:* a summary of Intevac's business, measurements and opportunities.
- *Results of Operations:* a discussion of operating results.
- *Liquidity and Capital Resources:* an analysis of cash flows, sources and uses of cash, and financial position.
- *Critical Accounting Policies:* a discussion of critical accounting policies that require the exercise of judgments and estimates.

Overview

Intevac is a provider of vacuum deposition equipment for a wide variety of thin-film applications, and a leading provider of digital night-vision technologies and products to the defense industry. The Company leverages its core capabilities in high-volume manufacturing of small substrates to provide process manufacturing equipment solutions to the HDD, DCP, and solar cell industries. Intevac also provides sensors, cameras and systems for government applications such as night vision and long-range target identification. Intevac's customers include manufacturers of hard disk media, DCPs and solar cells as well as the U.S. government and its agencies, allies and contractors. Intevac reports two segments: TFE and Photonics.

Product development and manufacturing activities occur in North America and Asia. Intevac has field offices in Asia to support its TFE customers. Intevac's products are highly technical and are sold primarily through Intevac's direct sales force. Intevac also sells its products through distributors in Japan and China.

Intevac's results are driven by a number of factors including success in its equipment growth initiatives in the DCP and solar markets and by worldwide demand for HDDs. Demand for HDDs depends on the growth in digital data creation and storage, the rate of areal density improvements, the end-user demand for PCs, enterprise data storage, nearline "cloud" applications, video players and video game consoles that include such drives. Intevac continues to execute its strategy of equipment diversification into new markets by introducing new products, such as for a thin-film PVD application for protective coating for DCP manufacturing and a thin-film PVD application for PV solar cell manufacturing. Intevac believes that expansion into these markets will result in incremental equipment revenues for Intevac and decrease Intevac's dependence on the HDD industry. Intevac's equipment business is subject to cyclical industry conditions, as demand for manufacturing equipment and services can change depending on supply and demand for HDDs, cell phones, and PV cells as well as other factors such as global economic conditions and technological advances in fabrication processes.

Fiscal Year	2019	2018	Change 2019 vs. 2018
	(in thousands, except percentages and per share amounts)		
Net revenues	$ 108,885	$ 95,114	$ 13,771
Gross profit	$ 40,868	$ 32,694	$ 8,174
Gross margin percent	37.5%	34.4%	3.1 points
Operating income (loss)	$ 3,925	$ (4,217)	$ 8,142
Net income	$ 1,148	$ 3,581*	$ (2,433)
Net income per diluted share	$ 0.05	$ 0.16*	$ (0.11)

* The Company's results for fiscal 2018 included the reversal of the valuation allowance recorded against the deferred tax assets in Singapore. This reversal resulted in the recognition of a non-cash income tax benefit in the fourth quarter of 2018 of $7.9 million, or $0.35 per diluted share.

Fiscal 2018 financial results reflected a challenging environment. In 2018, Intevac recognized revenue on four 200 Lean HDD systems as our HDD customer upgraded the technology level of their manufacturing capacity. In 2018, Intevac recognized revenue on the three solar implant ENERG*i* systems shipped in the previous year. Photonics continued to deliver production shipments of the night-vision camera modules for the F35 Joint Strike Fighter program in fiscal 2018. With the completion of the Apache program in 2017, the Photonics revenue profile moved from a product-driven one to a funded R&D revenue profile. Photonics margins and operating results were negatively impacted by a higher-mix of lower margin technology development contracts versus product sales. Fiscal 2018 net income reflected recognition of an income tax benefit and lower operating expenses due to cost containment activities put in place in the first quarter of fiscal 2018, offset in part by lower net revenues and lower gross margins. During fiscal 2018, the Company reversed the valuation allowance recorded against the deferred tax assets related to its Singapore operations. This reversal resulted in the recognition of a non-cash income tax benefit of $7.9 million. During fiscal 2018, the Company did not recognize an income tax benefit on its U.S. net operating loss.

Fiscal 2019 financial results reflected an improved environment as the Company resumed its growth trajectory. Fiscal 2019 HDD equipment sales were slightly lower than 2018. Intevac recognized revenue on four 200 Lean HDD systems with an additional two in backlog at the end of the year. In 2019, Intevac recognized revenue on nine solar implant ENERG*i* systems. We also made significant progress in our TFE growth initiatives, placing evaluation tools with leading manufacturers in both the display cover glass market and the advanced semiconductor packaging market. In fiscal 2019, Photonics business levels were higher compared to the prior year due primarily to the $31.6 million U.S. Army IVAS contract award. Photonics continued to deliver production shipments of the night-vision camera modules for the F35 Joint Strike Fighter program in fiscal 2019 and resumed shipments of the Apache camera in the second half of 2019. Fiscal 2019 net income was the result of higher net revenues and higher gross margins. During 2019, the Company received an unfavorable decision on its appeal to a tax audit in Singapore and although management has decided to appeal this decision, management determined that the Company could no longer support a more likely than not position. Accordingly, the Company recorded a charge of $732,000 which is included in the provision for income taxes. During fiscal 2019, the Company did not recognize an income tax benefit on its U.S. net operating loss.

We believe that we will continue to be profitable in fiscal 2020. Intevac expects that HDD equipment sales will be down from 2019 levels as a HDD manufacturer takes delivery of the two 200 Lean HDD systems in backlog. In 2020, Intevac expects higher sales of new TFE products as we expect to: (i) convert at least one of the two systems under evaluation at customer factories to revenue and (ii) obtain follow on production orders for our VERTEX coating system for DCPs and our solar implant ENERG*i* system. The second evaluation system at a customer factory is expected to convert to revenue in 2021. In 2020, we expect Increased product revenue in Photonics as we continue to deliver product shipments of the Apache camera and the night-vision camera modules for the F35 Joint Strike Fighter program. In 2020, we expect increased contract R&D revenue as development work continues on the multi-year IVAS contract award for the development and production of digital night-vision cameras to support the U.S. Army's IVAS program. For fiscal 2020, Intevac expects that Photonics profits will be higher than fiscal 2019 as Photonics results will reflect higher revenue levels.

Results of Operations

Net revenues

	2019	2018	Change 2019 vs. 2018
		(in thousands)	
TFE	$ 73,678	$69,348	$ 4,330
Photonics			
Products	15,550	15,972	(422)
Contract R&D	19,657	9,794	9,863
	35,207	25,766	9,441
Total net revenues	$108,885	$95,114	$ 13,771

Net revenues consist primarily of sales of equipment used to manufacture thin-film disks, PV cells, DCPs and related equipment and system components; sales of low-light imaging products; and revenue from contract R&D related to the development of electro-optical sensors, cameras and systems.

The increase in TFE revenues in fiscal 2019 versus fiscal 2018 was due primarily to higher systems sales as TFE recognized revenue on four 200 Lean HDD systems and nine solar implant ENERG*i* systems, offset in part by decreases in revenue recognized on technology upgrades, service and spare parts. In fiscal 2018, TFE revenue recognized four 200 Lean HDD systems and three solar implant ENERG*i* systems as well as technology upgrades, service and spare parts.

Photonics revenues increased by 36.6% to $35.2 million in fiscal 2019 versus fiscal 2018. Photonics product revenue reflected the resumption of the Apache camera shipments and higher unit shipments for the F35 Joint Strike Fighter program night-vision camera. Contract R&D revenue in fiscal 2019 increased as a result of development on the IVAS program.

Backlog

	December 28, 2019	December 29, 2018
	(in thousands)	
TFE	$ 21,391	$ 64,803
Photonics	71,015	43,711
Total backlog	$ 92,406	$ 108,514

TFE backlog at December 28, 2019 included two 200 Lean HDD systems. TFE backlog at December 29, 2018 included six 200 Lean HDD systems and nine ENERG*i* solar ion implant systems.

Significant portions of Intevac's revenues in any particular period have been attributable to sales to a limited number of customers. The following customers accounted for at least 10 percent of Intevac's consolidated net revenues in fiscal 2019 and 2018.

	2019	2018
Seagate Technology	49%	52%
U.S. Government	20%	*
Jolywood (Hongkong) Industrial Holdings Co., Limited	14%	*
HGST	*	13%

* Less than 10%

Revenue by geographic region

	2019			2018		
	(in thousands)					
	TFE	Photonics	Total	TFE	Photonics	Total
United States	$ 1,306	$ 34,664	$ 35,970	$ 4,050	$ 23,862	$27,912
Asia	72,372	—	72,372	65,298	31	65,329
Europe	—	543	543	—	1,648	1,648
Rest of World	—	—	—	—	225	225
Total net revenues	$73,678	$ 35,207	$108,885	$69,348	$ 25,766	$95,114

International sales include products shipped to overseas operations of U.S. companies. The increase in sales to the U.S. region in 2019 versus 2018 reflected higher Photonics contract R&D work. There were no TFE systems sold to factories in the U.S. in 2019 or 2018.

The increase in sales to the Asia region in 2019 versus 2018 reflected higher system sales, offset in part by lower technology upgrade, service and spare parts sales. Sales to the Asia region in 2019 included four 200 Lean HDD systems and nine solar implant ENERG*i* systems. Sales to the Asia region in 2018 included four 200 Lean HDD systems and three solar implant ENERG*i* systems.

Sales to the Europe region and Rest of World in 2019 and 2018 were not significant.

Gross margin

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands, except percentages)		
TFE gross profit	$27,377	$25,328	$ 2,049
% of TFE net revenues	37.2%	36.5%	
Photonics gross profit	$13,491	$ 7,366	$ 6,125
% of Photonics net revenues	38.3%	28.6%	
Total gross profit	$40,868	$32,694	$ 8,174
% of net revenues	37.5%	34.4%	

Cost of net revenues consists primarily of purchased materials and costs attributable to contract R&D, and also includes assembly, test and installation labor and overhead, customer-specific engineering costs, warranty costs, royalties, provisions for inventory reserves and scrap.

TFE gross margin was 37.2% in fiscal 2019 compared to 36.5% in fiscal 2018. Fiscal 2019 gross margins improved over fiscal 2018 as higher margins on upgrades were offset in part by lower margins on the sale of nine solar implant ENERG*i* systems. Gross margins in the TFE business vary depending on a number of factors, including product mix, product cost, system configuration and pricing, factory utilization, and provisions for excess and obsolete inventory.

Photonics gross margin was 38.3% in fiscal 2019 compared to 28.6% in fiscal 2018. The improvement in gross margin for fiscal 2019 over fiscal 2018 is due primarily to higher revenue levels and improved margins on contract R&D work. Manufacturing costs for digital night-vision products decreased in fiscal 2019 and 2018 as a result of cost reductions and yield improvements.

Research and development

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands)		
Research and development expense	$14,309	$16,862	$ (2,553)

Research and development expense consists primarily of salaries and related costs of employees engaged in and prototype materials used in ongoing research, design and development activities for PV cell manufacturing equipment, DCP manufacturing equipment, HDD disk sputtering equipment, semiconductor Fan-out equipment and Photonics products.

TFE research and development spending in fiscal 2019 decreased compared to fiscal 2018 due to lower spending on semiconductor Fan-out development.

Research and development spending for Photonics increased during 2019 as compared to fiscal 2018 primarily related to the development of the next generation of our low light level CMOS camera. Research and development expenses do not include costs of $12.3 million and $9.1 million in 2019 and 2018, respectively, which are related to customer-funded contract R&D programs and therefore included in cost of net revenues.

Selling, general and administrative

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands)		
Selling, general and administrative expense	$22,627	$20,188	$ 2,439

Selling, general and administrative expense consists primarily of selling, marketing, customer support, financial and management costs. All domestic sales and the majority of international sales of HDD disk sputtering products in Asia are made through Intevac's direct sales force. Intevac also sells its TFE products through distributors in Japan and China. Intevac has offices in Singapore, Malaysia and China to support Intevac's TFE customers in Asia.

Selling, general and administrative expenses increased in 2019 over the amount spent in 2018 due to higher variable compensation costs, increased spending to support a customer evaluation of a next generation product and the lapse of the 2018 cost containment initiatives which included temporary salary reductions for executive management.

Acquisition-related (benefit), net

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands)		
Acquisition-related (benefit), net	$ 7	$(139)	$ 146

Acquisition-related (benefit), net, represents the change in the fair value of a contingent consideration earnout arrangement related to the SIT acquisition. The earnout period terminated on June 30, 2019.

Cost reduction plan

During the first quarter of fiscal 2018, Intevac substantially completed implementation of the 2018 cost reduction plan (the "2018 Plan"), which reduced expenses and reduced its workforce by 6 percent. The total cost of implementing the 2018 Plan was $95,000 of which $61,000 was reported under cost of net revenues and $34,000 was reported under operating expenses. Substantially all cash outlays in connection with the 2018 Plan were completed in fiscal 2018. Implementation of the 2018 Plan reduced salary, wages and other employee-related expenses by approximately $1.8 million on an annual basis.

Interest income and other income (expense), net

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands)		
Interest income and other income (expense), net	$582	$622	$ (40)

Interest income and other income (expense), net in fiscal 2019 included $574,000 of interest income on investments and $20,000 earnout income from a divestiture, offset in part by $85,000 of foreign currency losses. Interest income and other, net in fiscal 2018 included $516,000 of interest income on investments and $135,000 earnout income from a divestiture, offset in part by $80,000 of foreign currency losses. The increase in interest income in 2019 over 2018 reflected higher interest rates on Intevac's investments and higher invested balances.

Provision for (benefit from) income taxes

	Fiscal Year		Change
	2019	2018	2019 vs. 2018
	(in thousands)		
Provision for (benefit from) income taxes	$3,359	$(7,176)	$ 10,535

During fiscal 2018 the Company reversed the valuation allowance recorded against the deferred tax assets related to its Singapore operations. This reversal resulted in the recognition of a non-cash income tax benefit of $7.9 million.

During 2019 the Company received an unfavorable decision on its appeal to a tax audit in Singapore and although management plans to pursue an appeal to the Singapore High Court, management determined that the Company could no longer support a more likely than not position. Accordingly, the Company recorded a charge of $732,000 in provision for income taxes.

Intevac's effective income tax rate was 74.5% for fiscal 2019 and 199.6% for fiscal 2018. Our effective income tax rate in 2018, excluding the impact of the reduction in our deferred income tax asset valuation allowance was (20.4%). Intevac's tax rate differs from the applicable statutory rates due primarily to establishment and reversal of a valuation allowance, the utilization of deferred and current credits and the effect of permanent differences, adjustments of prior permanent differences and changes in estimates of uncertain tax positions. Intevac's future effective income tax rate depends on various factors including, the level of

Intevac's projected earnings, the geographic composition of worldwide earnings, tax regulations governing each region, net operating loss carry forwards, availability of tax credits and the effectiveness of Intevac's tax planning strategies. Management carefully monitors these factors and timely adjusts the effective income tax rate accordingly.

In fiscal 2014, a valuation allowance of $9.4 million was established on a portion of the Singapore deferred tax asset. The Company concluded that, as of December 29, 2018, it is more likely than not that the Company will generate sufficient taxable income in Singapore to realize its deferred tax assets and reversed the valuation allowance during the fourth quarter of 2018. This reversal resulted in the recognition of a non-cash income tax benefit of $7.9 million for fiscal 2018. The Company has considered all positive and negative evidence regarding the ability to fully realize the deferred tax asset, including past operating results and the forecast of future taxable income. This conclusion, and the resulting reversal of the deferred tax asset valuation allowance, is based upon consideration of a number of factors, including the Company's completion of 7 consecutive quarters of profitability and its forecast of future profitability under multiple scenarios that support the utilization of net operating loss carryforwards. After recognizing the reversal, the Company does not have a remaining valuation allowance against the deferred tax assets in Singapore at December 28, 2019.

In fiscal 2012, a valuation allowance of $23.4 million was established to record the portion of the U.S. federal deferred tax asset that more likely than not will not be realized. For fiscal 2019 a valuation allowance decrease of $689,000 and for fiscal 2018 a valuation allowance increase of $930,000, respectively, were recorded for the U.S. federal deferred tax asset. A valuation allowance is recorded against the entire state deferred tax asset which consists of state income tax temporary differences and deferred research and other tax credits that are not realizable in the foreseeable future. The amount of the deferred tax asset considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are reduced or increased, or if objective negative evidence in the form of cumulative losses is no longer present and additional weight may be given to subjective evidence such as our projections for growth.

Liquidity and Capital Resources

At December 28, 2019, Intevac had $42.8 million in cash, cash equivalents, restricted cash and investments compared to $40.3 million at December 29, 2018. During fiscal 2019, cash, cash equivalents, restricted cash and investments increased by $2.5 million due primarily to cash generated by operating activities and cash received from the sale of Intevac common stock to Intevac's employees through Intevac's employee benefit plans, offset in part by cash used for repurchases of common stock, purchases of fixed assets and tax payments related to the net share settlement of restricted stock units.

Cash, cash equivalents, restricted cash and investments consist of the following:

	December 28, 2019	December 29, 2018
	(in thousands)	
Cash and cash equivalents	$ 19,767	$ 18,715
Restricted cash	787	1,169
Short-term investments	16,720	16,076
Long-term investments	5,537	4,372
Total cash, cash-equivalents, restricted cash and investments	$ 42,811	$ 40,332

Cash generated by operating activities totaled $4.9 million in 2019. Cash used in operating activities totaled $1.7 million in 2018. Improved operating cash flow in 2019 was a result of net income and improved working capital.

Accounts receivable totaled $28.6 million at December 28, 2019 compared to $27.7 million at December 29, 2018. Customer advances for products that had not been shipped to customers and included in accounts receivable were $201,000 at December 28, 2019 compared to $3.7 million at December 29, 2018. The number of days outstanding for Intevac's accounts receivable was 72 at December 28, 2019 compared to 78 at December 29, 2018. Net inventories totaled $24.9 million at December 28, 2019 compared to $30.6 million at December 29, 2018. Net inventories at December 28, 2019 included one VERTEX SPECTRA system for DCP under evaluation in a customer's factory and one MATRIX PVD system for advance semiconductor packaging under evaluation in a customer's factory. Net inventories at December 29, 2018 included three ENERG*i* implant systems in finished goods and one ENERG*i* implant system in work in process that were virtually complete and shipped to the customer in January 2019. Inventory turns were 2.5 in fiscal 2019 and were 2.2 in fiscal 2018. Accounts payable decreased to $4.2 million at December 28, 2019 compared to $6.1 million at December 29, 2018 due to lower manufacturing activities at the end of the year. Other accrued liabilities decreased to $3.6 million at December 28, 2019 compared to $5.0 million at December 29, 2018 primarily due to lower deferred revenue balances. Other accrued liabilities at December 29, 2018 included $1.1 million in deferred revenue related to the recognition of the ASC 606 transition adjustment. Accrued payroll and related liabilities increased to $6.5 million at December 28, 2019 compared to $4.7 million at December 29, 2018 as a result of higher variable compensation accruals. Customer advances decreased from $14.3 million at December 29, 2018 to $4.0 million at December 28, 2019 as a result of recognition of revenue.

Investing activities used cash of $5.8 million in 2019 and $1.0 million in 2018. Purchases of investments net of proceeds from sales and maturities of investments, totaled $1.7 million in 2019. Proceeds from sales and maturities of investments net of purchases of investments, totaled $2.2 million in 2018. Capital expenditures were $4.1 million in 2019 and $3.2 million in 2018.

Financing activities generated cash of $1.5 million in 2019 and $1.8 million in 2018. The sale of Intevac common stock to Intevac's employees through Intevac's employee benefit plans provided $2.3 million in 2019 and $3.2 million in 2018. Tax payments related to the net share settlement of restricted stock units were $404,000 in 2019 and $831,000 in 2018. In November 2013, Intevac's Board of Directors approved a stock repurchase program authorizing up to $30 million in repurchases. On August 15, 2018, Intevac's Board of Directors approved a $10.0 million increase to the original stock repurchase program authorizing up to $40.0 million in repurchases. Cash used to repurchase common stock totaled $111,000 in 2019 and $558,000 in 2018.

In connection with the acquisition of SIT, Intevac agreed to pay to the selling shareholders in cash a revenue earnout on Intevac's net revenue from commercial sales of certain solar implant products over a specified period up to an aggregate of $9.0 million. The earnout period terminated on June 30, 2019. Payments made associated with the revenue earnout obligation were $230,000 in 2019.

Intevac's investment portfolio consists principally of investment grade money market mutual funds, U.S. treasury and agency securities, certificates of deposit, commercial paper, municipal bonds and corporate bonds. Intevac regularly monitors the credit risk in its investment portfolio and takes measures, which may include the sale of certain securities, to manage such risks in accordance with its investment policies.

As of December 28, 2019, approximately $11.6 million of cash and cash equivalents and $3.4 million of short term investments were domiciled in foreign tax jurisdictions. Intevac expects a significant portion of these funds to remain off shore in the short term. If the Company chose to repatriate these funds to the United States, it would be required to accrue and pay additional taxes on any portion of the repatriation subject to foreign withholding taxes.

Intevac believes that its existing cash, cash equivalents and investments will be sufficient to meet Intevac's cash requirements for the next 12 months. Intevac intends to undertake approximately $6.0 million in capital expenditures during the next 12 months.

Off-Balance Sheet Arrangements

Off-balance sheet firm commitments relating to outstanding letters of credit amounted to approximately $787,000 as of December 28, 2019. These letters of credit and bank guarantees are collateralized by $787,000 of restricted cash. We do not maintain any other off-balance sheet arrangements, transactions, obligations, or other relationships that would be expected to have a material current or future effect on the consolidated financial statements.

Critical Accounting Policies

The preparation of consolidated financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, assumptions and estimates that affect the amounts reported. Note 1 of Notes to Consolidated Financial Statements describes the significant accounting policies used in the preparation of the consolidated financial statements. Certain of these significant accounting policies are considered to be critical accounting policies.

A critical accounting policy is defined as one that is both material to the presentation of Intevac's consolidated financial statements and requires management to make difficult, subjective or complex judgments that could have a material effect on Intevac's financial condition or results of operations. Specifically, these policies have the following attributes: (1) Intevac is required to make assumptions about matters that are highly uncertain at the time of the estimate; and (2) different estimates Intevac could reasonably have used, or changes in the estimate that are reasonably likely to occur, would have a material effect on Intevac's financial condition or results of operations.

Estimates and assumptions about future events and their effects cannot be determined with certainty. Intevac bases its estimates on historical experience and on various other assumptions believed to be applicable and reasonable under the circumstances. These estimates may change as new events occur, as additional information is obtained and as Intevac's operating environment changes. These changes have historically been minor and have been included in the consolidated financial statements as soon as they became known. In addition, management is periodically faced with uncertainties, the outcomes of which are not within its control and will not be known for prolonged periods of time. These uncertainties are discussed in the section above entitled "Risk Factors." Based on a critical assessment of its accounting policies and the underlying judgments and uncertainties affecting the application of those policies, management believes that Intevac's consolidated financial statements are fairly stated in accordance with accounting principles generally accepted in the United States of America, and provide a meaningful presentation of Intevac's financial condition and results of operations.

Management believes that the following are critical accounting policies:

Revenue Recognition

In our TFE segment, a majority of our equipment sales revenue continues to be recognized when products are shipped from our manufacturing facilities. Revenue recognition for our equipment sales arrangements, which includes systems, technology upgrades, service and spare parts, remains materially consistent with our historical practice.

In our TFE segment, we recognize revenue for equipment sales at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. Our contracts with customers may include multiple performance obligations. For such arrangements, under the new revenue standard we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or by using expected cost plus margin. Under the new revenue standard, the expected costs associated with our base warranties continue to be recognized as expense when the equipment is sold.

In our Photonics segment, we recognize revenue for cost plus fixed fee ("CPFF") and firm fixed price ("FFP") government contracts over time under the cost-to-cost method for the majority of our government contracts, which is consistent with our historical revenue recognition model. Revenue on the majority of our government contracts will continue to be recognized over time because of the continuous transfer of control to the customer. For U.S. government contracts, this continuous transfer of control to the customer is supported by clauses in the contract that allow the customer to unilaterally terminate the contract for convenience, pay us for costs incurred plus a reasonable profit and take control of any work in process. Similarly, for non-U.S. government contracts, the customer typically controls the work in process as evidenced either by contractual termination clauses or by our rights to payment for work performed to date to deliver products or services that do not have an alternative use to the Company. Under the new standard, the cost-to-cost measure of progress continues to best depict the transfer of control of assets to the customer, which occurs as we incur costs.

The majority of our contracts in our Photonics segment have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts and, therefore, not distinct. Some of our contracts have multiple performance obligations, most commonly due to the contract covering multiple phases of the product lifecycle (development and production). For contracts with multiple performance obligations, we allocate the contract's transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. The primary method used to estimate standalone selling price is the expected cost plus a margin approach, under which we forecast our expected costs of satisfying a performance obligation and then add an appropriate margin for that distinct good or service.

In our Photonics segment, we recognize revenue for homogenous manufactured military products sold to the U.S. government and its contractors over time under the units-of-delivery method because of the continuous transfer of control to the customer. Intevac believes that the units-of-delivery method is an appropriate measure for measuring progress for the manufactured units as an equal amount of value is individually transferred to the customer upon delivery. The Company previously recognized revenue for substantially all manufactured military products sold to the U.S. government and its contractors when the customers took delivery of the products, which was generally upon shipment.

The nature of our contracts in our Photonics segment gives rise to several types of variable consideration including tiered pricing. Allocation of contract revenues among Photonics military products, and the timing of the recognition of those revenues, is impacted by agreements with tiered pricing or variable rate structures. We include variable consideration in the estimated transaction price when there is a basis to reasonably estimate the amount of the consideration. These estimates are based on historical experience, anticipated performance and our best judgment at the time. Because of our certainty in estimating these amounts, they are included in the transaction price of our contracts and the associated remaining performance obligations.

Accounting for CPFF and FFP contracts and programs involves the use of various techniques to estimate total contract revenue and costs. For these contracts, we estimate the profit on a contract as the difference between the total estimated revenue and expected costs to complete a contract and recognize that profit over the life of the contract. Contract estimates are based on various assumptions to project the outcome of future events. These assumptions include the complexity of the work to be performed; the cost and availability of materials; the performance of subcontractors; and the availability and timing of funding from the customer.

As a significant change in one or more of these estimates could affect the profitability of our contracts, we review and update our contract-related estimates regularly. We recognize adjustments in estimated profit on contracts under the cumulative catch-up method. Under this method, the impact of the adjustment on profit recorded to date on a contract is recognized in the period the adjustment is identified. Revenue and profit in future periods of contract performance are recognized using the adjusted estimate. If at any time the estimate of contract profitability indicates an anticipated loss on the contract, we recognize the total loss in the quarter it is identified.

Inventories

Inventories are valued using average actual costs and are stated at the lower of cost or net realizable value. The carrying value of inventory is reduced for estimated obsolescence by the difference between its cost and the net realizable value based upon assumptions about future demand. Intevac evaluates the inventory carrying value for potential excess and obsolete inventory exposures by analyzing historical and anticipated demand. In addition, inventories are evaluated for potential obsolescence due to the effect of known and anticipated engineering change orders and new products. If actual demand were to be substantially lower than estimated, additional inventory adjustments for excess or obsolete inventory might be required, which could have a material adverse effect on Intevac's business, financial condition and results of operations.

Warranty

Intevac estimates the costs that may be incurred under the warranty it provides and records a liability in the amount of such costs at the time the related revenue is recognized. Estimated warranty costs are determined by analyzing specific product and historical configuration statistics and regional warranty support costs. Intevac's warranty obligation is affected by product failure rates, material usage, and labor costs incurred in correcting product failures during the warranty period. As Intevac's customer service engineers and process support engineers are highly trained and deployed globally, labor availability is a significant factor in determining labor costs. The quantity and availability of critical replacement parts is another significant factor in estimating warranty costs. Unforeseen component failures or exceptional component performance can also result in changes to warranty costs. If actual warranty costs differ substantially from our estimates, revisions to the estimated warranty liability would be required.

Income Taxes

Intevac accounts for income taxes by recognizing deferred tax assets and liabilities using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities, net operating losses and tax credit carryforwards. Deferred tax assets are also reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized. Management has determined that it is more likely than not that its future taxable income will not be sufficient to realize its entire deferred tax assets.

In determining whether to establish or maintain a valuation allowance against a deferred tax asset, the Company reviews available evidence to determine whether it is more likely than not that all or a portion of the Company's net deferred tax assets will be realized in future periods. Consideration is given to various positive and negative factors that could affect the realization of the net deferred tax assets. In making such a determination, the Company considers, among other things, future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, historical financial performance, the length of statutory carry forward periods, experience with operating loss and tax credit carry forwards not expiring unused. If the Company determines that it would be able to realize its deferred tax assets in the future in excess of their net recorded amount, the Company would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The effective tax rate is highly dependent upon the geographic composition of worldwide earnings, tax regulations governing each region, non-tax deductible expenses and availability of tax credits. Management carefully monitors the changes in many factors and adjusts the effective income tax rate as required. If actual results differ from these estimates, Intevac could be required to record additional valuation allowances on deferred tax assets or adjust its effective income tax rate, which could have a material adverse effect on Intevac's business, financial condition and results of operations.

The calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with Intevac's expectations could have a material impact on Intevac's results of operations and financial condition.

Valuation of Acquisition-Related Contingent Consideration

Contingent consideration related to a business combination is recorded at the acquisition date at the estimated fair value of the contingent payments. The acquisition date fair value is measured based on the consideration expected to be transferred (probability-weighted), discounted back to present value. The discount rate used is determined at the time of the acquisition in accordance with accepted valuation methods. The fair value of the acquisition-related contingent consideration is remeasured at the estimated fair value at each reporting period with the change in fair value recognized as income or expense in the consolidated statements of income.

Equity-Based Compensation

Intevac records compensation expense for equity-based awards using the Black-Scholes option pricing model. This model requires Intevac to estimate the expected volatility of the price of Intevac's common stock and the expected life of the equity-based awards. Estimating volatility and expected life requires significant judgment and an analysis of historical data. Intevac accounts for forfeitures as they occur rather than estimating expected forfeitures. Intevac may have to increase or decrease compensation expense for equity-based awards if actual results differ significantly from Intevac's estimates.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

Not applicable for smaller reporting companies.

Item 8. ***Financial Statements and Supplementary Data***

INTEVAC, INC.

CONSOLIDATED FINANCIAL STATEMENTS

Contents

	Page
Report of Independent Registered Public Accounting Firm	32
Consolidated Balance Sheets	33
Consolidated Statements of Income	34
Consolidated Statements of Comprehensive Income	35
Consolidated Statements of Stockholders' Equity	36
Consolidated Statements of Cash Flows	37
Notes to Consolidated Financial Statements	38

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Intevac, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Intevac, Inc. (a Delaware corporation) and its subsidiaries (the "Company") as of December 28, 2019 and December 29, 2018, and the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the two years in the period ended December 28, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 28, 2019 and December 29, 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 28, 2019, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 28, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated February 12, 2020, expressed an unqualified opinion.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for leases in 2019 due to the adoption of the new lease standard.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ BPM LLP

We have served as the Company's auditor since 2015.

San Jose, California
February 12, 2020

INTEVAC, INC.
CONSOLIDATED BALANCE SHEETS

	December 28, 2019	December 29, 2018
	(In thousands, except par value)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 19,767	$ 18,715
Short-term investments	16,720	16,076
Trade and other accounts receivable, net of allowances of $0 at both December 28, 2019 and December 29, 2018	28,619	27,717
Inventories	24,907	30,597
Prepaid expenses and other current assets	1,504	2,528
Total current assets	91,517	95,633
Property, plant and equipment, net	11,598	11,198
Operating lease right-of-use-assets	10,279	—
Long-term investments	5,537	4,372
Restricted cash	787	1,169
Intangible assets, net of amortization of $8,113 and $7,498 at December 28, 2019 and December 29, 2018, respectively	274	889
Deferred income taxes and other long-term assets	6,330	8,809
Total assets	$ 126,322	$ 122,070
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current operating lease liabilities	$ 2,524	$ —
Accounts payable	4,199	6,053
Accrued payroll and related liabilities	6,488	4,689
Other accrued liabilities	3,593	4,952
Customer advances	4,007	14,314
Total current liabilities	20,811	30,008
Noncurrent liabilities:		
Noncurrent operating lease liabilities	9,532	—
Other long-term liabilities	186	2,438
Total noncurrent liabilities	9,718	2,438
Commitments and contingencies		
Stockholders' equity:		
Undesignated preferred stock, $0.001 par value, 10,000 shares authorized, no shares issued and outstanding	—	—
Common stock, $0.001 par value :		
Authorized shares—50,000 issued and outstanding shares—23,346 and 22,700 at December 28, 2019 and December 29, 2018, respectively	23	23
Additional paid-in capital	188,290	183,204
Treasury stock, 4,989 shares at December 28, 2019 and 4,965 shares at December 29, 2018	(29,158)	(29,047)
Accumulated other comprehensive income	424	378
Accumulated deficit	(63,786)	(64,934)
Total stockholders' equity	95,793	89,624
Total liabilities and stockholders' equity	$ 126,322	$ 122,070

See accompanying notes.

INTEVAC, INC.
CONSOLIDATED STATEMENTS OF INCOME

	Year Ended, December 28, 2019	Year Ended, December 29, 2018
	(In thousands, except per share amounts)	
Net revenues:		
Systems and components	$ 89,228	$ 85,320
Technology development	19,657	9,794
Total net revenues	108,885	95,114
Cost of net revenues:		
Systems and components	55,678	53,334
Technology development	12,339	9,086
Total cost of net revenues	68,017	62,420
Gross profit	40,868	32,694
Operating expenses:		
Research and development	14,309	16,862
Selling, general and administrative	22,627	20,188
Acquisition-related (benefit), net	7	(139)
Total operating expenses	36,943	36,911
Operating income (loss)	3,925	(4,217)
Interest income	574	516
Other income (expense), net	8	106
Income (loss) before income taxes	4,507	(3,595)
Provision for (benefit from) income taxes	3,359	(7,176)
Net income	$ 1,148	$ 3,581
Net income per share:		
Basic	$ 0.05	$ 0.16
Diluted	$ 0.05	$ 0.16
Weighted average shares outstanding:		
Basic	23,063	22,519
Diluted	23,340	22,904

See accompanying notes.

INTEVAC, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended,	
	December 28, 2019	December 29, 2018
	(In thousands)	
Net income	$ 1,148	$ 3,581
Other comprehensive income (loss), before tax		
Change in unrealized net gain on available-for-sale investments	70	18
Foreign currency translation gains and (losses)	(24)	(130)
Other comprehensive income (loss), before tax	46	(112)
Income tax expense related to items in other comprehensive income (loss)	—	—
Other comprehensive income (loss), net of tax	46	(112)
Comprehensive income	$ 1,194	$ 3,469

See accompanying notes.

INTEVAC, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)

	Common Stock		Additional Paid-In Capital	Treasury Stock		Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount		Shares	Amount			
Balance at December 30, 2017	21,811	$ 22	$ 177,521	4,845	$ (28,489)	$ 490	$ (66,881)	$ 82,663
Cumulative effect of accounting change	—	—	—	—	—	—	(1,634)	(1,634)
Shares issued in connection with:								
Exercise of stock options	323	—	1,573	—	—	—	—	1,573
Settlement of RSUs	434	—	—	—	—	—	—	—
Employee stock purchase plan	411	1	1,634	—	—	—	—	1,635
Shares withheld in connection with net share settlement of RSUs	(159)	—	(831)	—	—	—	—	(831)
Equity-based compensation expense	—	—	3,307	—	—	—	—	3,307
Net income	—	—	—	—	—	—	3,581	3,581
Other comprehensive loss	—	—	—	—	—	(112)	—	(112)
Common stock repurchases	(120)	—	—	120	(558)	—	—	(558)
Balance at December 29, 2018	22,700	$ 23	$ 183,204	4,965	$ (29,047)	$ 378	$ (64,934)	$ 89,624
Shares issued in connection with:								
Exercise of stock options	175	—	799	—	—	—	—	799
Settlement of RSUs	199	—	—	—	—	—	—	—
Employee stock purchase plan	370	—	1,466	—	—	—	—	1,466
Shares withheld in connection with net share settlement of RSUs	(74)	—	(404)	—	—	—	—	(404)
Equity-based compensation expense	—	—	3,225	—	—	—	—	3,225
Net income	—	—	—	—	—	—	1,148	1,148
Other comprehensive income	—	—	—	—	—	46	—	46
Common stock repurchases	(24)	—	—	24	(111)	—	—	(111)
Balance at December 28, 2019	23,346	$ 23	$ 188,290	4,989	$ (29,158)	$ 424	$ (63,786)	$ 95,793

See accompanying notes.

INTEVAC, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 28, 2019	Year Ended December 29, 2018
	(In thousands)	
Operating activities		
Net income	$ 1,148	$ 3,581
Adjustments to reconcile net income to net cash and cash equivalents provided by (used in) operating activities:		
Depreciation & amortization	2,976	3,999
Net amortization (accretion) of investment premiums and discounts	(75)	(97)
Amortization of intangible assets	615	615
Equity-based compensation	3,225	3,307
Straight-line rent adjustment and amortization of lease incentives	(289)	(31)
Deferred income taxes	1,661	(7,909)
Change in the fair value of acquisition-related contingent consideration	7	(139)
Loss on disposal of equipment	120	442
Changes in assets and liabilities:		
Accounts receivable	(902)	(7,243)
Inventories	6,301	3,278
Prepaid expenses and other assets	1,621	(141)
Accounts payable	(1,850)	2,104
Accrued payroll and other accrued liabilities	694	(6,770)
Customer advances	(10,307)	3,288
Total adjustments	3,797	(5,297)
Net cash and cash equivalents provided by (used in) operating activities	4,945	(1,716)
Investing activities		
Purchase of investments	(23,306)	(27,353)
Proceeds from sales and maturities of investments	21,642	29,567
Purchase of leasehold improvements and equipment	(4,107)	(3,244)
Net cash and cash equivalents used in investing activities	(5,771)	(1,030)
Financing activities		
Proceeds from issuance of common stock	2,265	3,208
Common stock repurchases	(111)	(558)
Taxes paid related to net share settlement	(404)	(831)
Payment of acquisition-related contingent consideration	(230)	—
Net cash and cash equivalents provided by financing activities	1,520	1,819
Effect of exchange rate changes on cash	(24)	(130)
Net increase (decrease) in cash, cash equivalents and restricted cash	670	(1,057)
Cash, cash equivalents and restricted cash at beginning of period	19,884	20,941
Cash, cash equivalents and restricted cash at end of period	$ 20,554	$ 19,884
Cash paid (received) for:		
Income taxes	$ 1,016	$ 991
Income tax refund	$ (157)	$ —

See accompanying notes.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Summary of Significant Accounting Policies

Principles of Consolidation and Basis of Presentation

The consolidated financial statements include the accounts of Intevac, Inc. and its subsidiaries (Intevac or the Company) after elimination of inter-company balances and transactions.

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

Fiscal Year End Date

Intevac operates under a 52-53 week fiscal year ending on the Saturday nearest to December 31 of each year in order to improve the alignment of financial and business processes and to streamline financial reporting. Each fiscal quarter consists of 13 weeks, with an occasional fourth quarter extending to 14 weeks, if necessary, for the fiscal year to end on the Saturday nearest to December 31. The Company's fiscal 2019 and fiscal 2018 years ended on December 28, 2019 and December 29, 2018, respectively.

Cash, Cash Equivalents and Investments

Intevac considers all highly liquid investments with original maturities of three months or less when purchased to be cash equivalents. Available-for-sale securities, comprised of certificates of deposit, commercial paper, obligations of the U.S. government and its agencies, corporate debt securities, asset backed securities and municipal bonds, are carried at fair value, with unrealized gains and losses recorded within other comprehensive income (loss) as a separate component of stockholders' equity. Realized gains and losses and declines in value judged to be other than temporary, if any, on available-for-sale securities are included in earnings. Purchases and sales of investment securities are recognized on a trade date basis. The cost of investment securities sold is determined by the specific identification method.

Restricted Cash

Restricted cash of $600,000 as of December 28, 2019 secures a standby letter of credit obligation associated with a lease obligation and the restriction on the cash will be removed when the letter of credit expires. In addition, Intevac pledged $187,000 as collateral for various guarantees with its bank.

Derivative Instruments and Hedging Arrangements

Foreign Exchange Exposure Management—Intevac enters into forward foreign currency contracts that economically hedge the gains and losses generated by the re-measurement of certain recorded assets and liabilities in a non-functional currency and to offset certain operational exposures from the impact of changes in foreign currency exchange rates. Such exposures result from the portion of the Company's operations, assets and liabilities that are denominated in currencies other than the U.S. dollar, primarily the Singapore dollar. These foreign currency exchange contracts are entered into to support transactions made in the normal course of business, and accordingly, are not speculative in nature. The contracts are for periods consistent with the terms of the underlying transactions, generally one year or less. Changes in the fair value of these undesignated hedges are recognized in other income (expense), net immediately as an offset to the changes in the fair value of the asset or liability being hedged.

Fair Value Measurement—Definition and Hierarchy

Intevac reports certain financial assets and liabilities at fair value. Intevac defines fair value as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Fair value measurements are classified and disclosed in one of the following three categories:

Level 1—Valuations based on quoted prices in active markets for identical assets or liabilities.

Level 2—Valuations based on other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3—Valuations based on inputs that are generally unobservable and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability.

Trade Accounts Receivables and Doubtful Accounts

Intevac evaluates the collectibility of trade accounts receivable on an ongoing basis and provides reserves against potential losses when appropriate. Management analyzes historical bad debts, customer concentrations, customer creditworthiness, changes in customer payment tendencies and current economic trends when evaluating the adequacy of the allowance for doubtful accounts. Customer accounts are written off against the allowance when the amount is deemed uncollectible.

Inventories

Inventories are generally stated at the lower of cost or net realizable value, with cost determined on an average cost basis.

Property, Plant and Equipment

Equipment and leasehold improvements are stated at cost. Depreciation is computed using the straight-line method over the estimated useful lives of the assets as follows: computers and software, 3 years; machinery and equipment, 5 years; furniture, 7 years; vehicles, 4 years; and leasehold improvements, remaining lease term.

Contingent Consideration and Purchased Intangible Assets

Contingent consideration related to a business combination is recorded at the acquisition date at the estimated fair value of the contingent payments. The acquisition date fair value is measured based on the consideration expected to be transferred (probability-weighted), discounted back to present value. The discount rate used is determined at the time of the acquisition in accordance with accepted valuation methods. The fair value of the acquisition-related contingent consideration is remeasured at the estimated fair value at each reporting period with the change in fair value recognized as income or expense in the consolidated statements of income.

Purchased intangible assets other than goodwill are amortized over their useful lives unless these lives are determined to be indefinite. Purchased intangible assets are carried at cost, less accumulated amortization. Amortization is computed over the estimated useful lives of the respective assets, generally one to thirteen years using the straight line method. In 2012, as a result of its impairment analysis, Intevac wrote off all of the goodwill in both its TFE and Photonics reporting units.

Impairment of Long-Lived Assets

Long-lived assets and certain identifiable finite-lived intangible assets to be held and used are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Determination of recoverability of long-lived assets is based on an estimate of undiscounted future cash flows resulting from the use of the asset and its eventual disposition. Measurement of an impairment loss for long-lived assets and certain identifiable intangible assets that management expects to hold and use is based on the fair value of the asset. When an impairment loss is recognized, the carrying amount of the asset is reduced to its estimated fair value. No impairment charges were recognized in fiscal 2019 and 2018.

Income Taxes

Deferred tax assets and liabilities are recognized using enacted tax rates for the effect of temporary differences between book and tax bases of recorded assets and liabilities. Deferred tax assets are reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized.

In determining whether to establish or maintain a valuation allowance against a deferred tax asset, the Company reviews available evidence to determine whether it is more likely than not that all or a portion of the Company's net deferred tax assets will be realized in future periods. Consideration is given to various positive and negative factors that could affect the realization of the net deferred tax assets. In making such a determination, the Company considers, among other things, future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, historical financial performance, the length of statutory carry forward periods, experience with operating loss and tax credit carry forwards not expiring unused. If the Company determines that it would be able to realize its deferred tax assets in the future in excess of their net recorded amount, the Company would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

On a quarterly basis, Intevac provides for income taxes based upon an annual effective income tax rate. The effective tax rate is highly dependent upon the level of Intevac's projected earnings, the geographic composition of worldwide earnings, tax regulations governing each region, net operating loss carryforwards, availability of tax credits and the effectiveness of Intevac's tax planning strategies. Intevac carefully monitors the changes in many factors and adjust its effective income tax rate on a timely basis. If actual results differ from the estimates, this could have a material effect on Intevac's business, financial condition and results of operations.

The calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with Intevac's expectations could have a material effect on Intevac's business, financial condition and results of operations.

Intevac recognizes accrued interest and penalties related to unrecognized tax benefits in the provision for income taxes.

Sales and Value Added Taxes

Taxes collected from customers and remitted to governmental authorities are presented on a net basis in the accompanying consolidated statements of income.

Revenue Recognition

On December 31, 2017, we adopted the new accounting standard ASC 606, Revenue from Contracts with Customers and all the related amendments ("new revenue standard") to all contracts using the modified retrospective method. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of the accumulated deficit.

In our TFE segment, a majority of our equipment sales revenue continues to be recognized when products are shipped from our manufacturing facilities. Revenue recognition for our equipment sales arrangements, which includes systems, technology upgrades, service and spare parts, remains materially consistent with our historical practice.

In our TFE segment, we recognize revenue for equipment sales at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. Our contracts with customers may include multiple performance obligations. For such arrangements, under the new revenue standard we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or by using expected cost plus margin. Under the new revenue standard, the expected costs associated with our base warranties continue to be recognized as expense when the equipment is sold.

In our Photonics segment, we recognize revenue for CPFF and FFP government contracts over time under the cost-to-cost method for the majority of our government contracts, which is consistent with our historical revenue recognition model.

Revenue on the majority of our government contracts will continue to be recognized over time because of the continuous transfer of control to the customer. For U.S. government contracts, this continuous transfer of control to the customer is supported by clauses in the contract that allow the customer to unilaterally terminate the contract for convenience, pay us for costs incurred plus a reasonable profit and take control of any work in process. Similarly, for non-U.S. government contracts, the customer typically controls the work in process as evidenced either by contractual termination clauses or by our rights to payment for work performed to date to deliver products or services that do not have an alternative use to the Company. Under the new standard, the cost-to-cost measure of progress continues to best depict the transfer of control of assets to the customer, which occurs as we incur costs.

The majority of our contracts in our Photonics segment have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts and, therefore, not distinct. Some of our contracts have multiple performance obligations, most commonly due to the contract covering multiple phases of the product lifecycle (development and production). For contracts with multiple performance obligations, we allocate the contract's transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. The primary method used to estimate standalone selling price is the expected cost plus a margin approach, under which we forecast our expected costs of satisfying a performance obligation and then add an appropriate margin for that distinct good or service.

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The nature of our contracts in our Photonics segment gives rise to several types of variable consideration including tiered pricing. Allocation of contract revenues among Photonics military products, and the timing of the recognition of those revenues, is impacted by agreements with tiered pricing or variable rate structures. We include variable consideration in the estimated transaction price when there is a basis to reasonably estimate the amount of the consideration. These estimates are based on historical experience, anticipated performance and our best judgment at the time. Because of our certainty in estimating these amounts, they are included in the transaction price of our contracts and the associated remaining performance obligations.

Accounting for CPFF and FFP contracts and programs involves the use of various techniques to estimate total contract revenue and costs. For these contracts, we estimate the profit on a contract as the difference between the total estimated revenue and expected costs to complete a contract and recognize that profit over the life of the contract. Contract estimates are based on various assumptions to project the outcome of future events. These assumptions include the complexity of the work to be performed; the cost and availability of materials; the performance of subcontractors; and the availability and timing of funding from the customer.

As a significant change in one or more of these estimates could affect the profitability of our contracts, we review and update our contract-related estimates regularly. We recognize adjustments in estimated profit on contracts under the cumulative catch-up method. Under this method, the impact of the adjustment on profit recorded to date on a contract is recognized in the period the adjustment is identified. Revenue and profit in future periods of contract performance are recognized using the adjusted estimate. If at any time the estimate of contract profitability indicates an anticipated loss on the contract, we recognize the total loss in the quarter it is identified.

Adoption of New Accounting Standards

We adopted ASU No. 2016-02, Leases (Topic 842), as of December 30, 2018, using the modified retrospective approach. The modified retrospective approach provides a method for recording existing leases at the beginning of the period of adoption. In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to carry forward the historical lease classification, and we elected the hindsight practical expedient to determine the lease term for existing leases. We determined that most renewal options would not be reasonably certain in determining the expected lease term. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

Adoption of the new standard resulted in the recording of net lease assets of $11.6 million and lease liabilities of $13.7 million, as of December 30, 2018. The standard did not have an impact on our consolidated results of operations or cash flows.

The effect of the changes made to our consolidated December 30, 2018 balance sheet for the adoption of the new lease standard was as follows (in thousands):

	Balance at December 29, 2018	Adjustments Due to ASC 842		Balance at December 30, 2018
Prepaid expenses and other current assets	$ 2,528	$ (221)	1	$ 2,307
Total current assets	$ 95,633	$ (221)	1	$ 95,412
Operating lease right-of-use assets	$ —	$ 11,635	1,2,3	$ 11,635
Total assets	$ 122,070	$ 11,414	1,2,3	$ 133,484
Current operating lease liabilities	$ —	$ 2,581	5	$ 2,581
Accounts payable	$ 6,053	$ (4)	4	$ 6,049
Other accrued liabilities	$ 4,952	$ (13)	3	$ 4,939
Total current liabilities	$ 30,008	$ 2,564	3,4,5	$ 32,572
Noncurrent operating lease liabilities	$ —	$ 11,120	5	$ 11,120
Other long-term liabilities	$ 2,438	$ (2,270)	3	$ 168
Total non-current liabilities	$ 2,438	$ 8,850	3,4,5	$ 11,288
Total liabilities and stockholders' equity	$ 122,070	$ 11,414	4,5	$ 133,484

1 Represents prepaid rent reclassified to operating lease right-of-use assets.

2 Represents capitalization of operating lease right-of-use assets and reclassification of straight-line rent accrual, and tenant incentives.

3 Represents reclassification of straight-line rent accrual to operating lease right-of-use assets.

4 Represents accrued rent reclassified to operating lease right-of-use assets.

5 Represents recognition of operating lease liabilities.

Upon adoption of the new revenue standard, we recorded a cumulative effect adjustment to the beginning balance of our consolidated December 31, 2017 balance sheet for the impact of the allocation and the timing of the recognition of revenues for an open Photonics military product agreement with a tiered pricing structure. This change will also result in increased revenue in subsequent periods from this agreement. The cumulative effect of the changes made to our consolidated December 31, 2017 balance sheet were as follows (in thousands):

	Balance at December 30, 2017	Adjustments Due to ASC 606	Balance at December 31, 2017
Other accrued liabilities	$ 7,688	$ 1,634	$ 9,322
Accumulated deficit	$ (66,881)	$ (1,634)	$ (68,515)

Advertising Costs

Advertising costs are expensed as incurred. Advertising costs were not material for all periods presented.

Foreign Currency Translation

The functional currency of Intevac's foreign subsidiaries in Singapore and Hong Kong and the Taiwan branch is the U.S. dollar. The functional currency of Intevac's foreign subsidiaries in China, Malaysia and Korea is the local currency of the country in which the respective subsidiary operates. Assets and liabilities recorded in foreign currencies are translated at year-end exchange rates; revenues and expenses are translated at average exchange rates during the year. The effect of foreign currency translation adjustments are included in stockholders' equity as a component of accumulated other comprehensive income in the accompanying consolidated balance sheets. The effects of foreign currency transactions are included in other income in the determination of net income (loss). Gains (losses) from foreign currency transactions were ($85,000) and ($80,000) in 2019 and 2018, respectively.

Comprehensive Income

The changes in accumulated other comprehensive income by component, were as follows for the years ended December 28, 2019 and December 29, 2018:

	Foreign currency	Unrealized holding gains (losses) on available-for-sale investments	Total
		(in thousands)	
Balance at December 30, 2017	$ 535	$ (45)	$ 490
Other comprehensive income (loss) before reclassification	(130)	18	(112)
Amounts reclassified from other comprehensive income (loss)	—	—	—
Net current-period other comprehensive income (loss)	(130)	18	(112)
Balance at December 29, 2018	$ 405	$ (27)	$ 378
Other comprehensive income (loss) before reclassification	(24)	70	46
Amounts reclassified from other comprehensive income (loss)	—	—	—
Net current-period other comprehensive income (loss)	(24)	70	46
Balance at December 28, 2019	$ 381	$ 43	$ 424

Employee Stock Plans

Intevac has equity-based compensation plans that provide for the grant to employees of equity-based awards, including incentive or non-statutory stock options, restricted stock, stock appreciation rights, restricted stock units ("RSUs"), performance units and performance bonus awards. In addition, these plans provide for the grant of non-statutory stock options and RSUs to non-employee directors and consultants. Intevac also has an employee stock purchase plan, which provides Intevac's employees with the opportunity to purchase Intevac common stock at a discount through payroll deductions. See Note 3 for a complete description of these plans and their accounting treatment.

Recent Accounting Pronouncements Not Yet Adopted

In January 2017, the Financial Accounting Standards Board ("FASB") issued Accounting Standard Update ("ASU") 2017-04, *Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*. ASU 2017-04 eliminates Step 2 from the goodwill impairment test. Under Step 2, an entity had to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities (including unrecognized assets and liabilities) following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. Instead, under the amendments in ASU 2017-04, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An entity should recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. Additionally, an entity should consider income tax effects from any tax deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss, if applicable. An entity still has the option to perform the qualitative assessment for a reporting unit to determine if the quantitative impairment test is necessary. This update becomes effective and will be adopted by Intevac in the first quarter of fiscal 2020. Intevac does not expect the adoption of this update to have a material impact on its consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326)*. This ASU amends the impairment model to utilize an expected loss methodology in place of the currently used incurred loss methodology, which will result in the more-timely recognition of losses. This update becomes effective and will be adopted by Intevac in the first quarter of fiscal 2023. We are currently assessing how the adoption of this standard will impact our consolidated financial statements.

2. Revenue

The following tables represent a disaggregation of revenue from contracts with customers for fiscal 2019 and 2018 along with the reportable segment for each category.

Major Products and Service Lines

TFE	2019				2018			
	(in thousands)							
	HDD	DCP	PV	Total	HDD	DCP	PV	Total
Systems, upgrades and spare parts	$52,759	$—	$15,653	$68,412	$55,793	$ 1	$5,253	$61,047
Field service	5,210	2	54	5,266	8,255	—	46	8,301
Total TFE net revenues	$57,969	$ 2	$15,707	$73,678	$64,048	$ 1	$5,299	$69,348

Photonics	2019	2018
	(in thousands)	
Products:		
Military products	$12,480	$13,828
Commercial products	640	335
Repair and other services	2,430	1,809
Total Photonics product net revenues	15,550	15,972
Technology development:		
FFP	12,521	2,463
CPFF	7,134	7,258
Time and materials	2	73
Total technology development net revenues	19,657	9,794
Total Photonics net revenues	$35,207	$25,766

Primary Geography Markets

	2019			2018		
	(in thousands)					
	TFE	Photonics	Total	TFE	Photonics	Total
United States	$ 1,306	$ 34,664	$ 35,970	$ 4,050	$ 23,862	$27,912
Asia	72,372	—	72,372	65,298	31	65,329
Europe	—	543	543	—	1,648	1,648
Rest of World	—	—	—	—	225	225
Total net revenues	$73,678	$ 35,207	$108,885	$69,348	$ 25,766	$95,114

Timing of Revenue Recognition

	2019			2018		
	(in thousands)					
	TFE	Photonics	Total	TFE	Photonics	Total
Products transferred at a point in time	$73,678	$ 2,430	$ 76,108	$69,348	$ 1,809	$71,157
Products and services transferred over time	—	32,777	32,777	—	23,957	23,957
Total net revenues	$73,678	$ 35,207	$108,885	$69,348	$ 25,766	$95,114

The following table reflects the changes in our contract assets, which we classify as accounts receivable, unbilled or retainage and our contract liabilities which we classify as deferred revenue and customer advances for fiscal 2019:

	December 28, 2019	December 29, 2018	Change
	(In thousands)		
TFE:			
Contract assets:			
Accounts receivable, unbilled	$ 760	$ 514	$ 246
Contract liabilities:			
Deferred revenue	$ 320	$ 633	$ (313)
Customer advances	4,007	14,314	(10,307)
	$ 4,327	$ 14,947	$(10,620)
Photonics:			
Contract assets:			
Accounts receivable, unbilled	$ 3,210	$ 1,493	$ 1,717
Retainage	99	157	(58)
	$ 3,309	$ 1,650	$ 1,659
Contract liabilities:			
Deferred revenue	$ —	$ 1,101	$ (1,101)

Accounts receivable, unbilled in our TFE segment represents a contract asset for revenue that has been recognized in advance of billing the customer. For our system and certain upgrade sales, our TFE customers generally pay in three installments, with a portion of the system price billed upon receipt of an order, a portion of the price billed upon shipment, and the balance of the price due upon completion of installation and acceptance of the system at the customer's factory. Accounts receivable, unbilled in our TFE segment generally represents the balance of the system price that is due upon completion of installation and acceptance less the amount that has been deferred as revenue for the performance of the installation tasks. During fiscal 2019, contract assets in our TFE segment increased by $246,000 primarily due to the accrual of revenue under a vendor managed inventory arrangement.

Customer advances in our TFE segment generally represent amounts billed to the customer prior to transferring goods which represents a contract liability. The Company has elected to use the practical expedient to disregard the effect of the time value of money in a significant financing component when its payment terms are less than one year. These contract advances are liquidated when revenue is recognized. Deferred revenue in our TFE segment generally represents amounts billed to a customer for completed systems at the customer site that are undergoing installation and acceptance testing where transfer of control has not yet occurred as Intevac does not yet have a demonstrated history of meeting the acceptance criteria upon the customer's receipt of product and represents a contract liability. During fiscal 2019, we recognized revenue in our TFE segment of $14.3 million and $527,000 that was included in customer advances and deferred revenue, respectively, at the beginning of the period. Customer advances included in accounts receivable were $201,000 at December 28, 2019.

Accounts receivable, unbilled in our Photonics segment represents a contract asset for revenue that has been recognized in advance of billing the customer, which is common for contracts in the defense industry. In our Photonics segment, amounts are billed as work progresses in accordance with agreed-upon contractual terms, either at periodic intervals (e.g., monthly) or upon achievement of contractual milestones. Generally, billing occurs subsequent to revenue recognition, resulting in contract assets. Our contracts with the U.S. government may also contain retainage provisions. Retainage represents a contract asset for the portion of the contract price earned by us for work performed, but held for payment by the U.S. government as a form of security until satisfactory completion of the contract. The retainage is billable upon completion of the contract performance and approval of final indirect expense rates by the government. During fiscal 2019, contract assets in our Photonics segment increased by $1.7 million primarily due to the revenue recognized on FFP contracts in advance of billing and the accrual of revenue incurred costs under CPFF contracts, offset in part by the completion of certain CPFF contracts and the final settlement of retainage amounts under certain CPFF contracts.

Customer advances in our Photonics segment generally represent deposits from customers upon contract execution and upon achievement of contractual milestones which represents a contract liability. These deposits are liquidated when revenue is recognized. Deferred revenue in our Photonics segment included amounts deferred for the impact of the allocation and the timing of the recognition of revenues for a military product agreement with a tiered pricing structure. During fiscal 2019, we recognized revenue in our Photonics segment of $1.1 million related to the above mentioned military product agreement that was included in deferred revenue at the beginning of the period.

On December 28, 2019 we had $92.4 million of remaining performance obligations, which we also refer to as total backlog. Backlog at December 28, 2019 consisted of $21.4 million of TFE backlog and $71.0 million of Photonics backlog. We expect to recognize approximately 62% of our remaining performance obligations as revenue in 2020, 20% in 2021, 13% in 2022 and 5% in 2023.

3. Equity-Based Compensation

Intevac accounts for share-based awards in accordance with the provisions of the accounting guidance which requires the measurement and recognition of compensation expense for all share-based payment awards made to employees, consultants and directors based upon the grant-date fair value of those awards. The estimated fair value of Intevac's equity-based awards is amortized over the awards' service periods using the graded vesting attribution method.

Descriptions of Plans

Equity Incentive Plans

At December 28, 2019, Intevac had equity-based awards outstanding under the 2012 Equity Incentive Plan and the 2004 Equity Incentive Plan (the "Plans") and the 2003 Employee Stock Purchase Plan (the "ESPP"). Intevac's stockholders approved all of these plans.

The Plans are a broad-based, long-term retention program intended to attract and retain qualified management and employees, and align stockholder and employee interests. The Plans permit the grant of incentive or non-statutory stock options, restricted stock, stock appreciation rights, RSUs and performance shares. Option price, vesting period, and other terms are determined by the administrator of the Plans, but the option price shall generally not be less than 100% of the fair market value per share on the date of grant. As of December 28, 2019, 6.5 million shares of common stock were authorized for future issuance under the Plans. The 2012 Plan expires no later than May 8, 2022.

2003 Employee Stock Purchase Plan

In 2003, Intevac's stockholders approved adoption of the ESPP, which serves as the successor to the Employee Stock Purchase Plan originally adopted in 1995. Upon adoption of the ESPP, all shares available for issuance under the prior plan were transferred to the ESPP. The ESPP provides that eligible employees may purchase Intevac common stock through payroll deductions at a price equal to 85% of the lower of the fair market value at the beginning of the applicable offering period or at the end of each applicable purchase interval. Offering periods are generally two years in length, and consist of a series of six-month purchase intervals. Eligible employees may join the ESPP at the beginning of any six-month purchase interval. Under the terms of the ESPP, employees can choose to have up to 15% of their base earnings withheld to purchase Intevac common stock. As of December 28, 2019, 555,000 shares remained available for issuance under the ESPP.

The effect of recording equity-based compensation for fiscal 2019 and 2018 was as follows (in thousands):

	2019	2018
Equity-based compensation by type of award:		
Stock options	$ 819	$ 775
RSUs	1,657	1,251
Employee stock purchase plan	749	1,281
Total equity-based compensation	$3,225	$3,307

Equity-based compensation expense is based on awards which vest. Intevac accounts for forfeitures as they occur, rather than estimating expected forfeitures.

Stock Options

The exercise price of each stock option equals the market price of Intevac's stock on the date of grant. Most options are scheduled to vest over three and/or four years and expire no later than ten years after the grant date. The fair value of each option grant is estimated on the date of grant using the Black-Scholes option pricing model. This model was developed for use in estimating the value of publicly traded options that have no vesting restrictions and are fully transferable. Intevac's employee stock options have characteristics significantly different from those of publicly traded options. The weighted-average assumptions used in the model are outlined in the following table:

	2019	2018
Stock Options:		
Weighted-average fair value of grants per share	$ 2.06	$ 1.97
Expected volatility	43.23%	43.83%
Risk free interest rate	1.86%	2.58%
Expected term of options (in years)	4.6	4.4
Dividend yield	None	None

The computation of the expected volatility assumption used in the Black-Scholes calculations for new grants is based on historical volatility of Intevac's stock price. The risk-free interest rate is based on the yield available on U.S. Treasury Strips with an equivalent remaining term. The expected life of employee stock options represents the weighted-average period that the stock options are expected to remain outstanding and was determined based on historical experience of similar awards, giving consideration to the contractual terms of the stock-based awards and vesting schedules. The dividend yield assumption is based on Intevac's history of not paying dividends and the assumption of not paying dividends in the future.

Performance stock options ("PSOs") vest upon the achievement of certain market conditions (our stock performance) during a set performance period (typically 4 years) subject to the grantee's continued service with Intevac through the date the applicable market condition is achieved. The fair value is based on the values calculated under the Monte Carlo simulation model on the grant date. Compensation cost is not adjusted in future periods for subsequent changes in the expected outcome of market related conditions. The compensation expense is recognized over the derived service period. We granted 37,500 of such stock options to the chief executive officer in 2019. These PSOs have a derived service period of 1.1 years.

Intevac estimated the weighted-average fair value of PSO's using the following weighted-average assumptions:

	2019
Weighted-average fair value of grants per share	$ 1.75
Expected volatility	43.43%
Risk free interest rate	1.96%
Expected term (in years)	4.60
Dividend yield	None

A summary of the stock option activity is as follows:

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Options outstanding at December 29, 2018	2,070,749	$ 6.76	3.78	$ 339,821
Options granted	372,500	$ 5.46		
Options cancelled and forfeited	(171,268)	$ 7.82		
Options exercised	(175,371)	$ 4.55		
Options outstanding at December 28, 2019	2,096,610	$ 6.63	3.75	$2,048,964
Options exercisable at December 28, 2019	1,294,681	$ 6.73	2.65	$1,097,036

The total intrinsic value of options exercised during fiscal years 2019 and 2018 was $249,000 and $431,000, respectively. At December 28, 2019, Intevac had $895,000 of total unrecognized compensation expense related to stock option plans that will be recognized over the weighted-average period of 1.31 years.

RSUs

A summary of the RSU activity is as follows:

	Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Non-vested RSUs at December 29, 2018	462,409	$ 6.92	1.47	$2,362,910
Granted	319,743	$ 5.59		
Vested	(198,065)	$ 7.08		
Cancelled	(30,732)	$ 5.96		
Non-vested RSUs at December 28, 2019	553,355	$ 6.15	1.30	$3,713,012

Time-based RSUs are converted into shares of Intevac common stock upon vesting on a one-for-one basis. Time-based RSUs typically are scheduled to vest over three and/or four years. Vesting of time-based RSUs is subject to the grantee's continued service with Intevac. The compensation expense related to these awards is determined using the fair market value of Intevac common stock on the date of the grant, and the compensation expense is recognized over the vesting period. At December 28, 2019, Intevac had $1.5 million of total unrecognized compensation expense related to RSUs that will be recognized over the weighted-average period of 1.30 years.

ESPP

The fair value of the employee stock purchase right is estimated on the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

	2019	2018
Stock Purchase Rights:		
Weighted-average fair value of grants per share	$ 1.73	$ 2.24
Expected volatility	45.81%	47.64%
Risk free interest rate	2.28%	2.01%
Expected term of purchase rights (in years)	0.91	1.33
Dividend yield	None	None

The expected life of purchase rights is the period of time remaining in the current offering period.

The ESPP activity during fiscal 2019 and 2018 is as follows:

	2019	2018
	(in thousands, except per share amounts)	
Shares purchased	370	411
Weighted-average purchase price per share	$ 3.96	$ 3.98
Aggregate intrinsic value of purchase rights exercised	$ 513	$ 750

As of December 28, 2019, Intevac had $156,000 of total unrecognized compensation expense related to purchase rights that will be recognized over the weighted-average period of 0.5 years.

4. Earnings Per Share

Intevac calculates basic earnings per share ("EPS") using net income and the weighted-average number of shares outstanding during the reporting period. Diluted EPS includes the effect from potential issuance of common stock pursuant to the exercise of employee stock options and vesting of RSUs.

The following table sets forth the computation of basic and diluted net income per share:

	2019	2018
	(in thousands, except per share amounts)	
Net income	$ 1,148	$ 3,581
Weighted-average shares—basic	23,063	22,519
Effect of dilutive potential common shares	277	385
Weighted-average shares—diluted	23,340	22,904
Net income per share—basic	$ 0.05	$ 0.16
Net income per share—diluted	$ 0.05	$ 0.16

The potentially dilutive securities were excluded (as common stock equivalents) from the computation of diluted net income per share for the periods presented as their effect would have been antidilutive:

	2019	2018
	(in thousands, except per share amounts)	
Stock options to purchase common stock	1,235	1,612
RSUs	5	124
Employee stock purchase plan	3	254

5. Concentrations

Credit Risk and Significant Customers

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist of cash equivalents, short- and long-term investments, restricted cash, and accounts receivable. Intevac generally invests its excess cash in money market funds, certificates of deposit, commercial paper, obligations of the U.S. government and its agencies, corporate debt securities, asset backed securities and municipal bonds. The Company has adopted an investment policy and established guidelines relating to credit quality, diversification and maturities of its investments in order to preserve principal and maintain liquidity. All investment securities in Intevac's portfolio have an investment grade credit rating.

Intevac's accounts receivable tend to be concentrated in a limited number of customers. The following customers accounted for at least 10 percent of Intevac's accounts receivable at December 28, 2019 and December 29, 2018.

	2019	2018
Seagate Technology	60%	45%
U.S. Government	25%	*
HGST	*	25%

* Less than 10%

Intevac's largest customers tend to change from period to period. Historically, a significant portion of Intevac's revenues in any particular period have been attributable to sales to a limited number of customers. Intevac performs credit evaluations of its customers' financial condition and generally requires deposits on system orders but does not generally require collateral or other security to support customer receivables.

The following customers accounted for at least 10 percent of Intevac's consolidated net revenues in fiscal 2019 and/or 2018.

	2019	2018
Seagate Technology	49%	52%
U.S. Government	20%	*
Jolywood (Hongkong) Industrial Holdings Co., Limited	14%	*
HGST	*	13%

* Less than 10%

Products

Disk manufacturing products contributed a significant portion of Intevac's revenues in fiscal 2019 and 2018. Intevac expects that the ability to maintain or expand its current levels of revenues in the future will depend upon continuing market demand for its products; its success in enhancing its existing systems and developing and manufacturing competitive disk manufacturing equipment, such as the 200 Lean; its success in utilizing Intevac's expertise in complex manufacturing equipment to develop and sell new manufacturing equipment products for PV, DCP and advanced semiconductor packaging and Intevac's success in developing military products based on its low-light technology.

6. Balance Sheet Details

Balance sheet details were as follows as of December 28, 2019 and December 29, 2018:

Trade and Other Accounts Receivable, Net

	December 28, 2019	December 29, 2018
	(in thousands)	
Trade receivables and other	$ 24,472	$ 25,397
Unbilled costs and accrued profits	4,069	2,164
Income tax receivable	78	156
Less: allowance for doubtful accounts	—	—
	$ 28,619	$ 27,717

Inventories

Inventories are stated at the lower of average cost or net realizable value and consist of the following:

	December 28, 2019	December 29, 2018
	(in thousands)	
Raw materials	$ 15,286	$ 16,354
Work-in-progress	4,748	9,134
Finished goods	4,873	5,109
	$ 24,907	$ 30,597

Finished goods inventory at December 28, 2019 included one VERTEX SPECTRA system for DCP under evaluation at a customer's factory and one MATRIX PVD system for advanced semiconductor packaging under evaluation at a customer's factory. Finished goods inventory at December 29, 2018 included three completed ENERG*i* implant systems at Intevac's factory pending customer shipment.

Property, Plant and Equipment

	December 28, 2019	December 29, 2018
	(in thousands)	
Leasehold improvements	$ 15,037	$ 14,923
Machinery and equipment	46,674	45,032
	61,711	59,955
Less accumulated depreciation and amortization	50,113	48,757
Total property, plant and equipment, net	$ 11,598	$ 11,198

Deferred Income Taxes and Other Long-Term Assets

	December 28, 2019	December 29, 2018
	(in thousands)	
Deferred income taxes	$ 6,252	$ 7,913
Income tax receivable	78	157
Contested tax deposits	—	723
Other	—	16
	$ 6,330	$ 8,809

Accounts Payable

Included in accounts payable is $512,000 and $423,000 of book overdraft at December 28, 2019 and December 29, 2018, respectively.

Other Accrued Liabilities

	December 28, 2019	December 29, 2018
	(in thousands)	
Deferred revenue	$ 320	$ 1,734
Other taxes payable	1,155	928
Accrued product warranties	846	839
Income taxes payable	403	389
Provision for estimated losses on uncompleted contracts	—	278
Acquisition-related contingent consideration	—	223
Other	869	561
Total other accrued liabilities	$ 3,593	$ 4,952

Other Long-Term Liabilities

	December 28, 2019	December 29, 2018
	(in thousands)	
Deferred rent	$ —	$ 2,270
Accrued product warranties	176	158
Accrued income taxes	10	10
Total other long-term liabilities	$ 186	$ 2,438

7. Purchased Intangible Assets, Net

Information regarding acquisition-related intangible assets is as follows:

	December 28, 2019			December 29, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
			(in thousands)			
Customer relationships	$ 3,119	$ 3,083	$ 36	$ 3,119	$ 3,040	$ 79
Purchased technology	5,148	4,910	238	5,148	4,338	810
Covenants not to compete	40	40	—	40	40	—
Backlog	80	80	—	80	80	—
Total amortizable intangible assets	$ 8,387	$ 8,113	$ 274	$ 8,387	$ 7,498	$ 889

Intangible assets by segment as of December 28, 2019 are as follows: TFE; $238,000 and Photonics; $36,000.

Total amortization expense of purchased intangibles for both fiscal 2019 and 2018 was $615,000.

Estimated future amortization expense related to finite-lived purchased intangible assets as of December 28, 2019, is as follows.

(in thousands)	
2020	$274

8. Contingent Consideration

In connection with the acquisition of SIT, Intevac agreed to pay to the selling shareholders in cash a revenue earnout on Intevac’s net revenue from commercial sales of certain products over a specified period up to an aggregate of $9.0 million.

The earnout period terminated on June 30, 2019. There is no remaining contingent consideration obligation associated with the earnout agreement at December 28, 2019.

The following table represents a reconciliation of the change in the fair value measurement of the contingent consideration liability for fiscal 2019 and 2018:

	2019	2018
	(in thousands)	
Beginning balance	$ 223	$ 362
Changes in fair value	7	(139)
Cash payments made	(230)	—
Ending balance	$ —	$ 223

9. Financial Instruments

Cash, Cash Equivalents and Investments

Cash and cash equivalents, short-term investments and long-term investments consist of:

	December 28, 2019			
	Amortized Cost	Unrealized Holding Gains	Unrealized Holding Losses	Fair Value
	(in thousands)			
Cash and cash equivalents:				
Cash	$ 16,512	$ —	$ —	$ 16,512
Money market funds	3,255	—	—	3,255
Total cash and cash equivalents	$ 19,767	$ —	$ —	$ 19,767
Short-term investments:				
Certificates of deposit	$ 3,000	$ 1	$ —	$ 3,001
Commercial paper	1,891	2	—	1,893
Corporate bonds and medium-term notes	6,383	25	—	6,408
U.S. treasury and agency securities	5,417	1	—	5,418
Total short-term investments	$ 16,691	$ 29	$ —	$ 16,720
Long-term investments:				
Certificates of deposit	$ 499	$ 1	$ —	$ 500
Corporate bonds and medium-term notes	2,530	12	—	2,542
U.S. treasury and agency securities	2,494	1	—	2,495
Total long-term investments	$ 5,523	$ 14	$ —	$ 5,537
Total cash, cash equivalents, and investments	$ 41,981	$ 43	$ —	$ 42,024

	December 29, 2018			
	Amortized Cost	Unrealized Holding Gains	Unrealized Holding Losses	Fair Value
	(in thousands)			
Cash and cash equivalents:				
Cash	$ 13,334	$ —	$ —	$13,334
Money market funds	3,335	—	—	3,335
U.S. treasury and agency securities	2,046	—	—	2,046
Total cash and cash equivalents	$ 18,715	$ —	$ —	$18,715
Short-term investments:				
Certificates of deposit	$ 5,299	$ 1	$ 1	$ 5,299
Commercial paper	2,242	—	1	2,241
Corporate bonds and medium-term notes	4,759	—	13	4,746
Municipal bonds	500	—	2	498
U.S. treasury and agency securities	3,297	—	5	3,292
Total short-term investments	$ 16,097	$ 1	$ 22	$16,076
Long-term investments:				
Certificates of deposit	$ 500	$ —	$ —	$ 500
Corporate bonds and medium-term notes	2,879	4	4	2,879
U.S. treasury and agency securities	999	—	6	993
Total long-term investments	$ 4,378	$ 4	$ 10	$ 4,372
Total cash, cash equivalents, and investments	$ 39,190	$ 5	$ 32	$39,163

The contractual maturities of available-for-sale securities at December 28, 2019 are presented in the following table.

	Amortized Cost	Fair Value
	(in thousands)	
Due in one year or less	$ 19,946	$ 19,975
Due after one through five years	5,523	5,537
	$ 25,469	$ 25,512

All prices for the fixed maturity securities including U.S. treasury and agency securities, certificates of deposit, commercial paper, corporate bonds, asset backed securities and municipal bonds are received from independent pricing services utilized by Intevac's outside investment manager. This investment manager performs a review of the pricing methodologies and inputs utilized by the independent pricing services for each asset type priced by the vendor. In addition, on at least an annual basis, the investment manager conducts due diligence visits and interviews with each pricing vendor to verify the inputs utilized for each asset class. The due diligence visits include a review of the procedures performed by each vendor to ensure that pricing evaluations are representative of the price that would be received to sell a security in an orderly transaction. Any pricing where the input is based solely on a broker price is deemed to be a Level 3 price. Intevac uses the pricing data obtained from its outside investment manager as the primary input to make its assessments and determinations as to the ultimate valuation of the above-mentioned securities and has not made, during the periods presented, any material adjustments to such inputs.

The following table represents the fair value hierarchy of Intevac's available-for-sale securities measured at fair value on a recurring basis as of December 28, 2019.

	Fair Value Measurements at December 28, 2019		
	Total	Level 1	Level 2
	(in thousands)		
Recurring fair value measurements:			
Available-for-sale securities			
Money market funds	$ 3,255	$ 3,255	$ —
U.S. treasury and agency securities	7,913	7,913	—
Certificates of deposit	3,501	—	3,501
Commercial paper	1,893	—	1,893
Corporate bonds and medium-term notes	8,950	—	8,950
Total recurring fair value measurements	$25,512	$11,168	$14,344

Derivatives

The Company uses foreign currency forward contracts to mitigate variability in gains and losses generated from the re-measurement of certain monetary assets and liabilities denominated in foreign currencies and to offset certain operational exposures from the impact of changes in foreign currency exchange rates. These derivatives are carried at fair value with changes recorded in interest income and other, net in the consolidated statements of income. Changes in the fair value of these derivatives are largely offset by re-measurement of the underlying assets and liabilities. Cash flows from such derivatives are classified as operating activities. The derivatives have maturities of approximately 30 days.

The following table summarizes the Company's outstanding derivative instruments on a gross basis as recorded in its consolidated balance sheets as of December 28, 2019 and December 29, 2018:

	Notional Amounts		Derivative Liabilities			
Derivative Instrument	December 28, 2019	December 29, 2018	December 28, 2019		December 29, 2018	
			Balance Sheet Line	Fair Value	Balance Sheet Line	Fair Value
	(In thousands)					
Undesignated Hedges:						
Forward Foreign Currency Contracts	$ 1,035	1,764	*	$ 4	*	$ 8
Total Hedges	$ 1,035	1,764		$ 4		$ 8

* Other accrued liabilities

10. Equity

Stock Repurchase Program

On November 21, 2013, Intevac's Board of Directors approved a stock repurchase program authorizing up to $30.0 million in repurchases. On August 15, 2018, Intevac's Board of Directors approved a $10.0 million increase to the original stock repurchase program authorizing up to $40.0 million. Under this authorization, Intevac purchases shares of its common stock under a systematic stock repurchase program and may also make supplemental stock repurchases from time to time, depending on market conditions, stock price and other factors.

At December 28, 2019, $10.8 million remains available for future stock repurchases under the repurchase program.

The following table summarizes Intevac's stock repurchases for fiscal 2019 and 2018:

	2019	2018
	(in thousands, except per share amounts)	
Shares of common stock repurchased	24	120
Cost of stock repurchased	$ 111	$ 558
Average price paid per share	$ 4.67	$ 4.63

Intevac records treasury stock purchases under the cost method using the first-in, first-out (FIFO) method. Upon reissuance of treasury stock, amounts in excess of the acquisition cost are credited to additional paid-in capital. If Intevac reissues treasury stock at an amount below its acquisition cost and additional paid-in capital associated with prior treasury stock transactions is insufficient to cover the difference between the acquisition cost and the reissue price, this difference is recorded against retained earnings.

11. Income Taxes

The provision for (benefit from) income taxes on income (loss) from operations for fiscal 2019 and 2018 consists of the following (in thousands):

	2019	2018
Federal:		
Current	$ —	$ (313)
Deferred	—	—
	—	(313)
State:		
Current	4	5
Deferred	—	—
	4	5
Foreign:		
Current	1,694	1,041
Deferred	1,661	(7,909)
	3,355	(6,868)
Total	$3,359	$(7,176)

Income (loss) before income taxes for fiscal 2019 and 2018 consisted of the following (in thousands):

	2019	2018
U.S	$(4,875)	$(11,634)
Foreign	9,382	8,039
	$ 4,507	$ (3,595)
Effective tax rate	74.5%	199.6%

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for income tax purposes. Significant components of deferred tax assets are as follows (in thousands):

	December 28, 2019	December 29, 2018
Deferred tax assets:		
Vacation, warranty and other accruals	$ 635	$ 515
Depreciation and amortization	89	656
Intangible amortization	804	902
Inventory valuation	1,288	1,401
Deferred income	—	256
Equity-based compensation	1,593	1,411
Net operating loss, research and other tax credit carryforwards	54,818	53,595
Other	43	545
	59,270	59,281
Valuation allowance for deferred tax assets	(52,099)	(50,804)
Total deferred tax assets	7,171	8,477
Deferred tax liabilities:		
Purchased technology	(45)	(181)
Unbilled revenue	(874)	(383)
Total deferred tax liabilities	(919)	(564)
Net deferred tax assets	$ 6,252	$ 7,913
As reported on the balance sheet:		
Non-current deferred tax assets	$ 6,252	$ 7,913

Intevac accounts for income taxes in accordance with accounting standards for such taxes, which requires that deferred tax assets and liabilities be recognized using enacted tax rates for the effect of temporary differences between the financial reporting and tax bases of recorded assets and liabilities.

Accounting standards also require that deferred tax assets be reduced by a valuation allowance if it is more likely than not that some portion of or all of the deferred tax asset will not be realized. Management assesses the available positive and negative evidence to estimate if sufficient future taxable income will be generated to use the existing deferred tax assets. In fiscal 2014, a valuation allowance of $9.4 million was established to record the portion of the Singapore deferred tax asset that more likely than not will not be realized. The Company concluded that, as of December 29, 2018, it is more likely than not that the Company will generate sufficient taxable income in Singapore to realize its deferred tax assets and reversed the valuation allowance during the fourth quarter of 2018. This reversal resulted in the recognition of a non-cash income tax benefit of $7.9 million for fiscal 2018. The Company has considered all positive and negative evidence regarding the ability to fully realize the deferred tax asset, including past operating results and the forecast of future taxable income. This conclusion, and the resulting reversal of the deferred tax asset valuation allowance, was based upon consideration of a number of factors, including the Company's completion of 7 consecutive quarters of profitability and its forecast of future profitability under multiple scenarios that support the utilization of net operating loss carryforwards. After recognizing the reversal, the Company does not have a remaining valuation allowance against the deferred tax assets in Singapore at December 28, 2019.

In fiscal 2012, a valuation allowance of $23.4 million was established to record the portion of the U.S. federal deferred tax asset that more likely than not will not be realized. For fiscal 2019 a valuation allowance decrease of $689,000 and for fiscal 2018 a valuation allowance increase of $930,000, respectively, were recorded for the U.S. federal deferred tax asset. A valuation allowance is recorded against the entire state deferred tax asset which consists of state income tax temporary differences and deferred research and other tax credits that are not realizable in the foreseeable future. The amount of the deferred tax asset considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are reduced or increased, or if objective negative evidence in the form of cumulative losses is no longer present and additional weight may be given to subjective evidence such as our projections for growth.

As of December 28, 2019, our federal, foreign and state net operating loss carryforwards for income tax purposes were approximately $70.5 million, $35.3 million and $70.5 million, respectively. The federal and state net operating loss carryforwards are subject to various limitations under Section 382 of the Internal Revenue Code and applicable state tax laws. If not utilized, the federal net operating loss carryforwards and the state net operating loss carryforwards will begin to expire in 2028. The foreign net operating loss carryforwards do not expire. As of December 28, 2019, our federal and state tax credit carryforwards for income tax purposes were approximately $18.0 million and $16.1 million, respectively. If not utilized, the federal tax credit carryforwards will begin to expire in 2020 and the state tax credits carry forward indefinitely.

The U.S. federal corporate alternative minimum tax ("AMT") has been repealed for tax years beginning after December 31, 2017. Intevac has recorded income tax receivables of $156,000 for unused AMT credit carryforwards. On the consolidated balance sheets, the short-term portion of the income tax receivable is included in trade and other accounts receivable, net, while the long-term portion is included in deferred income taxes and other long-term assets.

We account for Global Intangible Low-Taxed Income ("GILTI") earned by certain foreign subsidiaries in the year the tax is incurred.

The difference between the tax provision at the statutory federal income tax rate and the tax provision for fiscal 2019 and 2018 was as follows (in thousands):

	2019	2018
Income tax (benefit) at the federal statutory rate	$ 947	$ (756)
State income taxes, net of federal benefit	4	5
Change in valuation allowance:		
U.S	(689)	930
Foreign	—	(9,286)
Effect of foreign operations taxed at various rates	(397)	(254)
Research tax credits	(1,710)	(1,883)
Effect of tax rate changes, permanent differences and adjustments of prior deferrals	3,685	4,142
Unrecognized tax benefits	1,519	(74)
Total	$ 3,359	$(7,176)

Intevac has not provided for foreign withholding taxes on approximately $1.5 million of undistributed earnings from non-U.S. operations as of December 28, 2019 because Intevac intends to reinvest such earnings indefinitely outside of the United States. If Intevac were to distribute these earnings, foreign withholding tax would be payable. For all other undistributed foreign earnings, Intevac also intends to reinvest such earnings indefinitely outside of the United States.

The total amount of gross unrecognized tax benefits was $7.7 million as of December 28, 2019, of which $8,000 would affect Intevac's effective tax rate if realized. The aggregate changes in the balance of gross unrecognized tax benefits were as follows for fiscal 2019 and 2018:

	2019	2018
Beginning balance	$6,164	$5,678
Additions based on tax positions related to the current year	1,519	784
Settlements	—	(233)
Lapse of statute of limitations	—	(65)
Ending balance	$7,683	$6,164

The Company does not anticipate any changes in the amount of unrecognized tax benefits in the next twelve months. It is Intevac's policy to include interest and penalties related to unrecognized tax benefits in the provision for income taxes on the consolidated statements of income. During fiscal 2019 and 2018, Intevac recognized a net tax expense (benefit) for interest of $0 and $2,000, respectively. As of December 28, 2019 Intevac had $2,000 of accrued interest related to unrecognized tax benefits, which was classified as a long-term liability in the consolidated balance sheets. Intevac did not accrue any penalties related to these unrecognized tax benefits because Intevac has other tax attributes which would offset any potential taxes due.

Intevac is subject to income taxes in the U.S. federal jurisdiction, and various state and foreign jurisdictions. Tax regulations within each jurisdiction are subject to the interpretation of the related tax laws and regulations and require significant judgment to apply. Intevac has certain tax attributes that are subject to adjustment back to 1999. Intevac is subject to potential income tax return examination by tax authorities for tax years after 2009 in the following material jurisdictions: U.S. (Federal and California) and Singapore. Intevac has certain tax attributes that are subject to adjustment back to 1999.

The Inland Revenue Authority of Singapore (“IRAS”) conducted a review of the fiscal 2009 through 2010 tax returns of the Company’s wholly-owned subsidiary, Intevac Asia Pte. Ltd. IRAS challenged the Company’s tax position with respect to certain deductions. The Company paid all contested taxes and the related interest to have the right to defend its position under Singapore tax law. During 2019, the Company received an unfavorable decision on its appeal to the Singapore Income Tax Board of Review. Although management has decided to pursue an appeal to the Singapore High Court, management determined that the Company could no longer support a more likely than not position. Accordingly, the Company recorded a charge of $732,000 in provision for income taxes and fully reserved the contested tax deposits reported on its balance sheet. Presently, there are no other active income tax examinations in the jurisdictions where Intevac operates.

12. Employee Benefit Plans

Employee Savings and Retirement Plan

In 1991, Intevac established a defined contribution retirement plan with 401(k) plan features. The plan covers all United States employees eighteen years and older. Employees may make contributions by a percentage reduction in their salaries, not to exceed the statutorily prescribed annual limit. Intevac made cash contributions of $334,000 for fiscal 2019 and $345,000 for fiscal 2018. Employees may choose among several investment options for their contributions and their share of Intevac’s contributions, and they are able to move funds between investment options at any time. Intevac’s common stock is not one of the investment options. Administrative expenses relating to the plan are insignificant.

Employee Bonus Plans

Intevac has various employee bonus plans. A profit-sharing plan provides for the distribution of a percentage of pre-tax profits to substantially all of Intevac’s employees not eligible for other performance-based incentive plans, up to a maximum percentage of compensation. Other plans award annual cash bonuses to Intevac’s executives and key contributors based on the achievement of profitability and other specific performance criteria. Charges to expense under these plans were $2.8 million, and $1.4 million, respectively, for fiscal 2019 and 2018.

13. Commitments and Contingencies

Leases

Intevac leases certain manufacturing facilities, warehouses, office space, and equipment under non-cancelable operating leases that expire at various times up to March 2024 and has options to renew most leases, with rentals to be negotiated. Certain of Intevac’s leases contain provisions for rental adjustments. Operating lease rentals are expensed on a straight-line basis over the life of the lease beginning on the date we take possession of the property. At lease inception, we determine the lease term by assuming the exercise of those renewal options that are reasonably assured. The exercise of lease renewal options is at our sole discretion. The lease term is used to determine whether a lease is financing or operating and is used to calculate straight-line rent expense. Additionally, the depreciable life of leasehold improvements is limited by the expected lease term. Leases with an initial term of 12 months or less are not recorded on the balance sheet; we recognize lease expense for these leases on a straight-line basis over the lease term.

The following table reflects our lease assets and our lease liabilities at December 28, 2019 and December 30, 2018.

	December 28, 2019	December 30, 2018
	(In thousands)	
Assets:		
Operating lease right-of-use assets	$ 10,279	$ 11,635
Liabilities:		
Current operating lease liabilities	$ 2,524	$ 2,581
Noncurrent operating lease liabilities	9,532	11,120
	$ 12,056	$ 13,701

Lease Costs:

The components of lease costs were as follows (in thousands):

	2019	2018
	(In thousands)	
Operating lease cost	$3,112	$3,024
Short-term lease cost	78	82
Total lease cost	$3,190	$3,106

As of December 28, 2019 the maturity of operating lease liabilities was as follows:

(In thousands)	
2020	$ 3,219
2021	3,343
2022	3,428
2023	3,249
2024	529
Total lease payments	13,768
Less: Interest	(1,712)
Present value of lease liabilities	$12,056

Lease Term and Discount Rate:

	December 28, 2019
Weighted-average remaining lease term (in years)	4.08
Weighted-average discount rate	6.37%

Other information:

Supplemental cash flow information related to leases was as follows (in thousands):

	2019
Operating cash outflows from operating leases	$3,484
Right-of-use assets obtained in exchange for new operating lease liabilities	$ 934

Guarantees

Officer and Director Indemnifications

As permitted or required under Delaware law and to the maximum extent allowable under that law, Intevac has certain obligations to indemnify its current and former officers and directors for certain events or occurrences while the officer or director is, or was, serving at Intevac's request in such capacity. These indemnification obligations are valid as long as the director or officer acted in good faith and in a manner the person reasonably believed to be in, or not opposed to, the best interests of the Company and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful. The maximum potential amount of future payments Intevac could be required to make under these indemnification obligations is unlimited; however, Intevac has a director and officer insurance policy that mitigates Intevac's exposure and enables Intevac to recover a portion of any future amounts paid. As a result of Intevac's insurance policy coverage, Intevac believes the estimated fair value of these indemnification obligations is not material.

Other Indemnifications

As is customary in Intevac's industry, many of Intevac's contracts provide remedies to certain third parties such as defense, settlement, or payment of judgments for intellectual property claims related to the use of its products. Such indemnification obligations may not be subject to maximum loss clauses. Historically, payments made related to these indemnifications have been immaterial.

Letters of Credit

As of December 28, 2019, we had letters of credit and bank guarantees outstanding totaling $787,000, including the standby letter of credit outstanding under the Santa Clara, California facility lease and various other guarantees with its bank. These letters of credit and bank guarantees are collateralized by $787,000 of restricted cash.

Warranty

Intevac provides for the estimated cost of warranty when revenue is recognized. Intevac's warranty is per contract terms and for its HDD, PV and DCP manufacturing systems the warranty typically ranges between 12 and 24 months from customer acceptance. For systems sold through a distributor, Intevac offers a 3-month warranty. The remainder of any warranty period is the responsibility of the distributor. During this warranty period any defective non-consumable parts are replaced and installed at no charge to the customer. Intevac uses estimated repair or replacement costs along with its historical warranty experience to determine its warranty obligation. The provision for the estimated future costs of warranty is based upon historical cost and product performance experience. Intevac exercises judgment in determining the underlying estimates.

On the consolidated balance sheets, the short-term portion of the warranty provision is included in other accrued liabilities, while the long-term portion is included in other long-term liabilities. The expense associated with product warranties issued or adjusted is included in cost of net revenues on the consolidated statements of income.

The following table displays the activity in the warranty provision account for fiscal 2019 and 2018:

	2019	2018
	(in thousands)	
Beginning balance	$ 997	$ 994
Expenditures incurred under warranties	(625)	(561)
Accruals for product warranties	955	641
Adjustments to previously existing warranty accruals	(305)	(77)
Ending balance	$1,022	$ 997

Legal Matters

From time to time, Intevac receives notification from third parties, including customers and suppliers, seeking indemnification, litigation support, payment of money or other actions in connection with claims made against them. In addition, from time to time, Intevac receives notification from third parties claiming that Intevac may be or is infringing their intellectual property or other rights. Intevac also is subject to various other legal proceedings and claims, both asserted and unasserted, that arise in the ordinary course of business. Although the outcome of these claims and proceedings cannot be predicted with certainty, Intevac does not believe that any of these other existing proceedings or claims will have a material adverse effect on its consolidated financial condition or results of operations.

14. Segment and Geographic Information

Intevac's two reportable segments are: TFE and Photonics. Intevac's chief operating decision-maker has been identified as the President and CEO, who reviews operating results to make decisions about allocating resources and assessing performance for the entire Company. Segment information is presented based upon Intevac's management organization structure as of December 28, 2019 and the distinctive nature of each segment. Future changes to this internal financial structure may result in changes to the reportable segments disclosed.

Each reportable segment is separately managed and has separate financial results that are reviewed by Intevac's chief operating decision-maker. Each reportable segment contains closely related products that are unique to the particular segment. Segment operating profit is determined based upon internal performance measures used by the chief operating decision-maker.

Intevac derives the segment results from its internal management reporting system. The accounting policies Intevac uses to derive reportable segment results are substantially the same as those used for external reporting purposes. Management measures the performance of each reportable segment based upon several metrics, including orders, net revenues and operating income. Management uses these results to evaluate the performance of, and to assign resources to, each of the reportable segments. Intevac manages certain operating expenses separately at the corporate level. Intevac allocates certain of these corporate expenses to the segments in an amount equal to 3% of net revenues. Segment operating income excludes interest income/expense and other financial charges and income taxes according to how a particular reportable segment's management is measured. Management does not consider impairment charges, gains and losses on divestitures and sales of intellectual property, and unallocated costs in measuring the performance of the reportable segments.

The TFE segment designs, develops and markets vacuum process equipment solutions for high-volume manufacturing of small substrates with precise thin-film properties, such as for the hard drive, solar cell and DCP industries, as well as other adjacent thin-film markets.

The Photonics segment develops compact, cost-effective, high-sensitivity digital-optical products for the capture and display of low-light images. Intevac provides sensors, cameras and systems for government applications such as night vision.

Information for each reportable segment for fiscal 2019 and 2018 is as follows:

	2019	2018
	(in thousands)	
Net Revenues		
TFE	$ 73,678	$69,348
Photonics	35,207	25,766
Total segment net revenues	$108,885	$95,114

	2019	2018
	(in thousands)	
Operating Profit (Loss)		
TFE	$ 1,747	$(1,335)
Photonics	6,434	440
Total segment operating profit (loss)	8,181	(895)
Unallocated costs	(4,256)	(3,322)
Operating income (loss)	3,925	(4,217)
Interest income	574	516
Other income (expense), net	8	106
Income (loss) before income taxes	$ 4,507	$(3,595)

	2019	2018
	(in thousands)	
Depreciation and Amortization		
TFE	$1,909	$2,387
Photonics	1,310	1,870
Total segment depreciation and amortization	3,219	4,257
Unallocated costs	372	357
Total consolidated depreciation and amortization	$3,591	$4,614

	2019	2018
	(in thousands)	
Capital Additions		
TFE	$2,611	$1,640
Photonics	832	1,295
Total segment capital additions	3,443	2,935
Unallocated	664	309
Total consolidated capital additions	$4,107	$3,244

	2019	2018
	(in thousands)	
Segment Assets		
TFE	$ 51,153	$ 53,867
Photonics	22,071	16,721
Total segment assets	73,224	70,588
Cash and investments	42,024	39,163
Restricted cash	787	1,169
Deferred income taxes	6,252	7,913
Other current assets	752	1,341
Common property, plant and equipment	1,307	1,017
Common operating lease right-of-use assets	1,898	—
Other assets	78	879
Consolidated total assets	$126,322	$122,070

Net property, plant and equipment by geographic region at December 28, 2019 and December 29, 2018 was as follows:

	December 28, 2019	December 29, 2018
	(in thousands)	
United States	$ 11,420	$ 11,113
Asia	178	85
Net property, plant & equipment	$ 11,598	$ 11,198

15. Restructuring Charges

During the first quarter of fiscal 2018, Intevac substantially completed implementation of the 2018 cost reduction plan (the "2018 Plan"), which reduced expenses and reduced its workforce by 6 percent. The cost of implementing the 2018 Plan was reported under cost of net revenues and operating expenses in the consolidated statements of income. Substantially all cash outlays in connection with the 2018 Plan occurred in the first quarter of fiscal 2018. Implementation of the 2018 Plan reduced salary, wages and other employee-related expenses by approximately $1.8 million on an annual basis.

As of December 28, 2019, activities related to the 2018 Plan were complete.

The changes in restructuring reserves for severance and other employee-related costs associated with the cost reduction plan for fiscal 2018, are as follows.

	2018
	(in thousands)
Balance at the beginning of the year	$ —
Provision for restructuring charges	95
Cash payments made	(95)
Balance at the end of the year	$ —

16. Related Party Transaction

A Board member of the Company also serves as the Chief Executive Officer of a supplier. The Company made inventory purchases in the amount of $193,000 and $211,000, respectively, for fiscal 2019 and fiscal 2018, respectively, from this supplier.

Item 9. ***Changes In and Disagreements With Accountants on Accounting and Financial Disclosure***

None.

Item 9A. ***Controls and Procedures***

Management's Report on Assessment of Internal Controls Over Financial Reporting

Evaluation of Disclosure Controls and Procedures

Based on Intevac's management's evaluation with the participation of the Chief Executive Officer (the "CEO") and the Chief Financial Officer (the "CFO"), as of the end of the period covered by this report, Intevac's CEO and CFO have concluded that Intevac's disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended, (the "Exchange Act") are effective to ensure that information required to be disclosed by Intevac in reports that Intevac files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms and is accumulated and communicated to Intevac's management, including Intevac's CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting for Intevac. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting (as defined in Rule 13a-15(f) ender the Exchange Act) includes those policies and procedures that: (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management (with the participation of the CEO and CFO) conducted an evaluation of the effectiveness of Intevac's internal control over financial reporting based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that Intevac's internal control over financial reporting was effective as of December 28, 2019. BPM LLP, the independent registered public accounting firm that has audited the financial statements included in this report, has issued an attestation report on Intevac's internal control over financial reporting, which is included in their report on the following page.

Changes in Internal Control over Financial Reporting

Beginning December 30, 2018, we implemented ASC 842, Leases. We implemented changes to our processes related to lease recognition and the control activities within them. These included the development of new policies, ongoing lease review requirements, and gathering of information provided for disclosures.

There was no change in our internal control over financial reporting during our fourth quarter of fiscal 2019 that has materially affected, or is reasonably likely to materially affect, Intevac's internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Intevac, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Intevac, Inc. (a Delaware corporation) and its subsidiaries (the "Company") as of December 28, 2019, based on criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the "COSO criteria"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 28, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets as of December 28, 2019 and December 29, 2018 and the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the two years in the period ended December 28, 2019, and the related notes (collectively referred to as the "consolidated financial statements") of the Company, and our report dated February 12, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Assessment of Internal Controls Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ BPM LLP

San Jose, California
February 12, 2020

Item 9B. ***Other Information***

None.

PART III

Item 10. ***Directors, Executive Officers and Corporate Governance***

The information required by this item relating to the Company's directors and nominees, disclosure relating to compliance with Section 16(a) of the Securities Exchange Act of 1934, and information regarding Intevac's code of ethics, audit committee and stockholder recommendations for director nominees is included under the captions "Election of Directors," "Nominees," "Business Experience of Nominees for Election as Directors," "Board Meetings and Committees," "Corporate Governance Matters," "Section 16(a) Beneficial Ownership Reporting Compliance " and "Code of Business Conduct and Ethics" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders and is incorporated herein by reference. The information required by this item relating to the Company's executive officers and key employees is included under the caption "Executive Officers of the Registrant" under Item 1 in Part I of this Annual Report on Form 10-K.

Item 11. ***Executive Compensation***

The information required by this item is included under the caption "Executive Compensation and Related Information" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters***

The information required by this item is included under the caption "Ownership of Securities" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 13. ***Certain Relationships and Related Transactions, and Director Independence***

The information required by this item is included under the captions "Certain Transactions" and "Corporate Governance Matters" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders and is incorporated herein by reference.

Item 14. ***Principal Accountant Fees and Services***

The information required by this item is included under the caption "Fees Paid To Accountants For Services Rendered During 2019" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders and is incorporated herein by reference.

PART IV

Item 15. ***Exhibits and Financial Statements***

(a) The following documents are filed as part of this Annual Report on Form 10-K:

1. Financial Statements:

See "Index to Consolidated Financial Statements" in Part II, Item 8 of this Form 10-K.

All other schedules have been omitted since the required information is not present in amounts sufficient to require submission of the schedule or because the information required is included in the consolidated financial statements or notes thereto.

2. Exhibits

Exhibit Number	Description
3.1 (1)	Certificate of Incorporation of the Registrant
3.2 (2)	Bylaws of the Registrant, as amended
4.1	Description of the Registrant's Common Stock
10.1+ (4)	The Registrant's 2004 Equity Incentive Plan, as amended
10.2+ (5)	The Registrant's 2003 Employee Stock Purchase Plan, as amended
10.3+ (6)	The Registrant's 2012 Equity Incentive Plan, as amended
10.4+ (7)	Form of Restricted Stock Unit Agreement for 2012 Equity Incentive Plan
10.5+ (7)	Form of Restricted Stock Agreement for 2012 Equity Incentive Plan
10.6+ (7)	Form of Stock Option Agreement for 2012 Equity Incentive Plan
10.7+ (8)	Form of Performance Based Stock Option Agreement for 2012 Equity Incentive Plan
10.8+ (8)	Form of Outside Director Restricted Stock Unit Agreement for 2012 Equity Incentive Plan
10.9 (9)	Lease dated March 20, 2014 regarding the space located at 3544, 3560, 3570 and 3580 Bassett Street, Santa Clara, California
10.10+ (3)	The Registrant's 401(k) Profit Sharing Plan (P)
10.11 (10)	Director and Officer Indemnification Agreement
10.12+ (9)	The Registrant's Executive Incentive Plan
10.13+ (11)	Offer Letter with Wendell Blonigan
10.14+ (11)	Severance Agreement with Wendell Blonigan
10.15+ (12)	Change in Control Agreement with Jay Cho dated December 10, 2013
10.16+ (13)	Offer Letter with James Moniz
10.17+ (13)	Change in Control Agreement with James Moniz dated October 29, 2014
10.18+ (14)	Severance Agreement and Release of Claims with Andres Brugal dated February 15, 2018
10.19+ (14)	Change in Control Agreement with Timothy Justyn dated March 2, 2018
10.20+ (15)	Form of Change in Control Agreement
21.1	Subsidiaries of the Registrant
23.1	Consent of Independent Registered Public Accounting Firm
24.1	Power of Attorney (see page 70)
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Certification of Vice-President, Finance and Administration, Chief Financial Officer and Treasurer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

Exhibit Number	Description
32.1	Certifications Pursuant to U.S.C. 1350, adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

(1) Previously filed as an exhibit to the Company's Report on Form 8-K filed July 23, 2007
(2) Previously filed as an exhibit to the Company's Report on Form 8-K filed March 15, 2012
(3) Previously filed as an exhibit to the Registration Statement on Form S-1 (No. 33-97806)
(4) Previously filed as an exhibit to the Company's Form 10-Q filed May 3, 2011
(5) Previously filed as an exhibit to the Company's Definitive Proxy Statement filed April 10, 2019.
(6) Previously filed as an exhibit to the Company's Definitive Proxy Statement filed April 11, 2018
(7) Previously filed as an exhibit to the Company's Form 10-Q filed May 1, 2012
(8) Previously filed as an exhibit to the Company's Form 10-Q filed July 30, 2019
(9) Previously filed as an exhibit to the Company's Form 10-Q filed April 29, 2014
(10) Previously filed as an exhibit to the Company's Form 10-K filed March 14, 2008
(11) Previously filed as an exhibit to the Company's Report on Form 8-K filed July 9, 2013
(12) Previously filed as an exhibit to the Company's Form 10-Q filed October 28, 2014
(13) Previously filed as an exhibit to the Company's Report on Form 8-K filed October 31, 2014
(14) Previously filed as an exhibit to the Company's Form 10-Q filed May 1, 2018
(15) Previously filed as an exhibit to the Company's Report on Form 8-K filed November 15, 2016
(P) Paper exhibit.
\+ Management compensatory plan or arrangement required to be filed as an exhibit pursuant to Item 15(b) of Form 10-K

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, on February 12, 2020.

INTEVAC, INC.

/s/ JAMES MONIZ
James Moniz
Executive Vice President, Finance and Administration
Chief Financial Officer and Treasurer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Wendell T. Blonigan and James Moniz and each of them, 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 (including post-effective amendments) to this Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ WENDELL T. BLONIGAN (Wendell T. Blonigan)	President, Chief Executive Officer and Director (Principal Executive Officer)	February 12, 2020
/s/ JAMES MONIZ (James Moniz)	Executive Vice President, Finance and Administration, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 12, 2020
/s/ DAVID S. DURY (David S. Dury)	Chairman of Board	February 12, 2020
/s/ KEVIN D. BARBER (Kevin D. Barber)	Director	February 12, 2020
/s/ DOROTHY D. HAYES (Dorothy D. Hayes)	Director	February 12, 2020
/s/ STEPHEN A. JAMISON (Stephen A. Jamison)	Director	February 12, 2020
/s/ MICHELE F. KLEIN (Michele F. Klein)	Director	February 12, 2020
/s/ MARK P. POPOVICH (Mark P. Popovich)	Director	February 12, 2020
/s/ THOMAS M. ROHRS (Thomas M. Rohrs)	Director	February 12, 2020

DESCRIPTION OF REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

DESCRIPTION OF COMMON STOCK

The following description of the Common Stock, par value $0.001 per share ("Common Stock") of Intevac, Inc. (the "Company") is based upon the Company's certificate of incorporation as currently in effect (the "Certificate of Incorporation"), the Company's Amended and Restated Bylaws (the "Bylaws") and applicable provisions of law. We have summarized certain portions of the Certificate of Incorporation and Bylaws below. The summary is not complete and is subject to, and is qualified in its entirety by express reference to, the provisions of the Company's Certificate of Incorporation and Bylaws, each of which is filed as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.1 is a part.

Authorized Capital Stock

Under the Certificate of Incorporation, the Company's authorized capital stock consists of 50,000,000 shares of Common Stock and 10,000,000 shares of Preferred Stock, $0.001 par value per share ("Preferred Stock").

Common Stock

Common Stock Outstanding. The outstanding shares of the Common Stock are duly authorized, validly issued, fully paid and nonassessable.

Voting Rights. Each holder of shares of Common Stock is entitled to one vote for each share held of record on the applicable record date on all matters submitted to a vote of stockholders.

Dividend Rights. Subject to any preferential dividend rights granted to the holders of any shares of the Preferred Stock that may at the time be outstanding, holders of the Common Stock are entitled to receive dividends when, as and if declared from time to time by the Company's board of directors out of funds legally available therefor.

Rights upon Liquidation. Subject to any preferential liquidation rights granted to the holders of any shares of the Preferred Stock that may at the time be outstanding, holders of the Common Stock are entitled to share pro rata, upon any liquidation or dissolution of the Company, in all remaining assets available for distribution to stockholders after payment of or provision for the Company's liabilities.

Other Rights. Holders of Common Stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of the Common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that the Company may designate and issue in the future.

Preferred Stock

Under the Certificate of Incorporation, without further stockholder action, the Company's board of directors is authorized, subject to any limitations prescribed by the law of the State of Delaware, to determine the designation and to fix the number of shares of any series of the undesignated Preferred Stock, and to determine or alter the rights, preferences, privileges and restrictions granted to or imposed upon any wholly unissued series of undesignated Preferred Stock, including provisions with respect to dividends, liquidation, conversion, full, limited, or no voting powers, redemption and other rights and is further authorized to increase or decrease (but not below the number of shares of that series then outstanding) the number of shares of that series subsequent to the issue of shares of that series.

Certain Provisions of the Certificate of Incorporation and Bylaws

Provisions of the Certificate of Incorporation and Bylaws may have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from attempting to acquire, control of the Company. These provisions are expected to discourage coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of the Company to first obtain the prior approval of the Company's board of directors.

Stockholder Meetings. The Certificate of Incorporation and Bylaws vest the power to call special meetings of stockholders in the Company's President, chairman of the board, a majority of the authorized number of directors, or stockholders holding shares representing not less than 10% of the outstanding votes entitled to vote at the meeting. Stockholders are not permitted under the Certificate of Incorporation or Bylaws to act by written consent in lieu of a meeting. The Bylaws establish an advance notice procedure for stockholders who wish to present certain matters before an annual meeting of stockholders.

Requirements for Stockholder Nominations. In general, nominations for the election of directors may be made by or at the direction of the board of directors or by any stockholder entitled to vote in the election of directors who has delivered written notice to the Company's Secretary that is received not less than 120 days prior to the one-year anniversary of the date on which the Company first mailed its proxy materials to stockholders for the previous year's annual meeting of stockholders; provided, however, that if no annual meeting was held in the previous year or the date of the annual meeting has been changed by more than thirty (30) days from the date of the prior year's meeting, notice must be received not later than the close of business on the later of 120 days prior to such annual meeting and ten calendar days following the date on which public announcement of the date of the meeting is first made (the "Notice Deadline"). A stockholder's nomination must contain specified information concerning the nominees and concerning the stockholder proposing such nominations. With respect to director nominees, the Company may require any proposed nominee to furnish information concerning his or her eligibility to serve as an independent director or that could be material to a reasonable stockholder's understanding of the independence of the nominee and to provide a statement as to whether such nominee, if elected, intends to comply with the Company's policies and procedures as applicable to the board of directors.

Requirements for Stockholder Proposals. The Bylaws also provide that the only business that may be conducted at an annual meeting is business that is (1) specified in the notice of meeting given by or at the direction of the board of directors, (2) properly brought before the meeting by or at the direction of the board of directors, or (3) properly brought before the meeting by a stockholder who has delivered written notice to the Company's Secretary no later than the Notice Deadline. A stockholder's notice must contain specified information concerning the business being proposed and the stockholder proposing such business.

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

1. Intevac Photonics, Inc.
2. Intevac Pacific Group Holdings Ltd. Pte – Singapore
3. Lotus Technologies, Inc. – Santa Clara, California
4. IRPC, Inc. – Santa Clara, California
5. Solar Implant Technologies, Inc. – California
6. Intevac Foreign Sales Corporation – Barbados
7. Intevac Asia Private Limited – Singapore
8. Intevac Malaysia Sdn Bhd – Malaysia
9. Intevac Limited – Hong Kong
10. Intevac (Shenzhen) Co. Ltd. – China
11. IVAC Co. Ltd. – Korea

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-232730, 333-226262, 333-219405, 333-212647, 333-205368, 333-197700, 333-190250, 333-181929, 333-175979, 333-168505, 333-160596, 333-152773, 333-143418, 333-134422, 333-125523, 333-109260, 333-106960, 333-50166 and 333-65421) of Intevac, Inc. of our reports dated February 12, 2020 relating to the consolidated financial statements and internal control over financial reporting which appear in this Annual Report on Form 10-K.

/s/ BPM LLP

San Jose, California
February 12, 2020

Exhibit 31.1

Certifications

I, Wendell T. Blonigan, certify that:

1. I have reviewed this Annual Report on Form 10-K of Intevac, Inc.;

2. Based on my knowledge, this 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 report;

3. Based on my knowledge, the financial statements, and other financial information included in this 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 report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, 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 report is being prepared;

   (b) Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation;

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

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

   (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 12, 2020

/s/Wendell T. Blonigan

Wendell T. Blonigan
President, Chief Executive Officer and Director

Exhibit 31.2

Certifications

I, James Moniz, certify that:

1. I have reviewed this Annual Report on Form 10-K of Intevac, Inc.;
2. Based on my knowledge, this 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 report;
3. Based on my knowledge, the financial statements, and other financial information included in this 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 report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, 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 report is being prepared;

   (b) Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation;

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

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

   (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 12, 2020

/s/James Moniz

James Moniz
Executive Vice President, Finance and Administration
Chief Financial Officer and Treasurer

Exhibit 32.1

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Wendell T. Blonigan, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Intevac, Inc. on Form 10-K for the period ended December 28, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Form 10-K fairly presents in all material respects the financial condition and results of operations of Intevac, Inc.

Date: February 12, 2020

/s/ Wendell T. Blonigan
Wendell T. Blonigan
President, Chief Executive Officer and Director

I, James Moniz, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Intevac, Inc. on Form 10-K for the period ended December 28, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Form 10-K fairly presents in all material respects the financial condition and results of operations of Intevac, Inc.

Date: February 12, 2020

/s/ James Moniz
James Moniz
Executive Vice President, Finance and Administration
Chief Financial Officer and Treasurer

A signed original of this written statement required by Section 906 has been provided to Intevac, Inc. and will be retained by Intevac, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.