HARRODSBURG FIRST FINANCIAL BANCORP INC
Form 10KSB
December 23, 2003

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-KSB

(Mark One)

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

For the fiscal year ended September 30, 2003

- or -

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

For the transition period from ______ to ______

Commission Number: 0-26570

HARRODSBURG FIRST FINANCIAL BANCORP, INC.

(Exact name of Registrant as specified in its Charter)

Delaware	**61-1284899**
(State or other jurisdiction of incorporation)	**(I.R.S. Employer or Organization Identification No.)**
104 South Chiles Street, Harrodsburg, Kentucky	**40330-1620**
(Address of principal executive offices)	**Zip Code**

Registrant s telephone number, including area code:

(859) 734-5452

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

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

Common Stock, par value $.10 per share

(Title of Class)

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 x NO ¨

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

State issuer s revenues for its most recent fiscal year: $9.6 million.

The aggregate market value of the voting stock held by non-affiliates of the Registrant, based on the closing price of the Registrant s Common Stock as quoted on the NASDAQ National Market on December 1, 2003, was approximately $16.9 million.

As of December 1, 2003 there were issued and outstanding 1,222,978 shares of the Registrant s Common Stock.

DOCUMENTS INCORPORATED BY REFERENCE: NONE

PART I

Harrodsburg First Financial Bancorp, Inc. (the Company or Registrant) may from time to time make written or oral forward-looking statements, including statements contained in the Company s filings with the Securities and Exchange Commission (including this Annual Report on Form 10-KSB and the exhibits thereto), in its reports to Stockholders and in other communications by the Company, which are made in good faith by the Company pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995.

These forward-looking statements involve risks and uncertainties, such as statements of the Company s plans, objectives, expectations, estimates and intentions, that are subject to change based on various important factors (some of which are beyond the Company s control). The following factors, among others, could cause the Company s financial performance to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements: the strength of the United States economy in general and the strength of the local economies in which the Company conducts operations; the effects of, and changes in, trade, monetary and fiscal policies and laws, including interest rate policies of the Board of Governors of the Federal Reserve System (FRB), inflation, interest rate, market and monetary fluctuations; the timely development of and acceptance of new products and services of the company and the perceived overall value of these products and services by users, including the features, pricing and quality compared to competitors products and services; the willingness of users to substitute competitors products and services for the Company s products and services; the success of the Company in gaining regulatory approval of its products and services, when required; the impact of changes in financial services laws and regulations (including laws concerning taxes, banking, securities and insurance); technological changes; acquisitions; changes in consumer spending and savings habits; and the success of the Company at managing the risks involved in the foregoing.

The Company cautions that the foregoing list of important factors is not exclusive. The Company does not undertake to update any forward-looking statement, whether written or oral, that may be made from time to time by or on behalf of the company.

Item 1. Business

General

The Registrant is a bank holding company that serves as the holding company for First Financial Bank (First Financial), a federally-chartered stock savings bank of which it is the sole shareholder, and for Citizens Financial Bank, Inc. (Citizens), a state-chartered commercial bank in which it holds a 55.80% interest at September 30, 2003. The Registrant completed its acquisition of Citizens on July 15, 2001. First Financial and Citizens are referred to herein as the Banks. The Company conducts no significant business or operations of its own other than holding all or a majority of the outstanding stock of the Banks, and owning 22.5% of Independence Bancorp, New Albany, Indiana. References to the Company or Registrant generally refers to the consolidated entity including the Banks, unless the context indicates otherwise.

On June 30, 2003, the Company completed its Dutch Tender Offer and repurchased approximately 111,000 of its shares for $16.50 a shares, or approximately $1.9 million.

First Financial is a federally chartered stock savings bank headquartered in Harrodsburg, Kentucky. It is subject to examination and comprehensive regulation by the Office of Thrift Supervision (OTS) and its deposits are federally insured by the Savings Association Insurance Fund (SAIF). First Financial is a member of and owns capital stock in the Federal Home Loan Bank (FHLB) in Cincinnati, which is one of the 12 regional banks in the FHLB System.

First Financial operates a traditional savings bank business, attracting deposit accounts from the general public and using those deposits, together with other funds, primarily to originate and invest in loans secured by one- to four-family residential real estate, non-residential real estate, and commercial loans. To a lesser extent, First Financial also originates multi-family real estate loans and consumer loans.

Citizens, a newly organized de novo Kentucky-chartered commercial bank located in Glasgow, Kentucky, commenced operations on July 17, 2001. Citizens operates as a commercial bank, attracting deposit accounts from the general public and using these deposits, together with other funds primarily to originate residential and non-residential, commercial and consumer loans. It is subject to examination and regulation by the Federal Deposit Insurance Corporation (FDIC) and the Kentucky Department of Financial Institutions, and its deposits are insured by the Bank Insurance Fund (BIF). Citizens is a member of and owns capital stock in the FHLB in Cincinnati.

On September 16, 2003 (the Effective Date), in connection with a routine regulatory examination, Citizens entered into a memorandum of understanding between the Regional Director of the Federal Deposit Insurance Corporation, Chicago Region (the Regional Director) and the Commissioner of the Kentucky Department of Financial Institutions (the Commissioner). Pursuant to the understanding, Citizens may not increase its total assets by more than 5% during any consecutive three-month period without first providing at least 30 days advance written notice to the Regional Director and the Commissioner. Additionally, among other things, the understanding also required Citizens to revise certain of its loan policies and review procedures. The understanding will remain in place until terminated by the Regional Director and the Commissioner. See Loan Approval Authority and Underwriting and Management s Discussion and Analysis of Financial Condition and Results of Operation.

Competition

The competition for deposit products comes from other insured financial institutions such as commercial banks, thrift institutions, credit unions, and multi-state regional banks in the Registrant s market area of Mercer, Anderson and Barren Counties, Kentucky. Deposit competition also includes a number of insurance products sold by local agents and investment products such as mutual funds and other securities sold by local and regional brokers. Loan competition varies depending upon market conditions and comes from other insured financial institutions such as commercial banks, thrift institutions, credit unions, multi-state regional banks, and mortgage bankers.

Analysis of Loan Portfolio. The following table sets forth information concerning the composition of the Registrant s loan portfolio in dollar amounts and in percentages of the total loan portfolio (before deductions for loans in process, deferred loan origination fees and costs and allowance for loan losses) as of the dates indicated.

	At September 30,			
	2003		2002	
	Amount	Percent	Amount	Percent
	(Dollars in Thousands)			
Type of Loans:				
Real Estate:				
One-to four-family residential	$ 72,075	60.45%	$ 74,437	65.05%
Multi-family	2,220	1.86	2,419	2.12
Agricultural	14,317	12.07	7,283	6.36
Commercial	19,616	16.46	14,217	12.42
Construction	4,602	3.86	5,433	4.75
Consumer:				
Home equity	1,923	1.61	2,666	2.33
Other (1)	3,864	3.24	7,227	6.32
Savings account	533	0.45	741	0.65
Total loans receivable	119,150	100.00%	114,423	100.00%
Less:				
Deferred loan origination fees and costs, net	489		439	
Allowance for loan losses	1,006		632	
Loans receivable, net	$ 117,655		$ 113,352	

(1) Includes home improvement, personal loans, auto and commercial loans.

Loan Maturity Tables

The following table sets forth the maturity of the Banks loan portfolio at September 30, 2003. The table does not include prepayments or scheduled principal repayments. Prepayments and scheduled principal repayments on loans totaled approximately $39.1 million for the year ended September 30, 2003. Adjustable-rate mortgage loans are shown as maturing based on contractual maturities.

	Due within 1 year	Due after 1 through 5 years	Due after 5 years	Total
	(Dollars in Thousands)			
One- to four-family residential	$ 2,111	$ 5,596	$ 64,368	$ 72,075
Multi-family, agricultural and commercial	7,209	5,433	23,511	36,153
Construction	3,615	26	961	4,602
Consumer	2,614	3,663	43	6,320
Total	$ 15,549	$ 14,718	$ 88,883	$ 119,150

The following table sets forth as of September 30, 2003 the dollar amount of all loans, which have fixed rates of interest and floating or adjustable interest rates. At September 30, 2003, of the total loan maturity due within one year of $15.5 million, Citizens loan maturity was approximately $7.9 million.

	Fixed Rates	Floating or Adjustable Rates	Total
		(Dollars in Thousands)	
One- to four-family residential	$ 16,310	$ 55,765	$ 72,075
Multi-family, agricultural and commercial	6,046	30,107	36,153
Construction	3,916	686	4,602
Consumer	5,129	1,191	6,320
Total	$ 31,401	$ 87,749	$ 119,150

One- to Four-Family Residential Loans. First Financial s primary lending activity consists of the origination of one- to four-family residential mortgage loans secured by property located in their primary market area. First Financial generally originates one- to four-family residential mortgage loans without private mortgage insurance in amounts up to 85% of the lesser of the appraised value or selling price of the mortgaged property. Loans in excess of 89.9% of the value of the mortgaged property typically require private mortgage insurance in the amount of 25% to 30% of the loan amount.

First Financial offers three types of residential adjustable rate mortgage loans, all of which use the index value of the National Monthly Median Cost of Funds Ratio to SAIF-Insured Institutions plus a set margin added to it. The interest rates on these loans have an initial adjustment period of between one and five years, and generally adjust annually thereafter, with a maximum adjustment of 2% per year and a maximum increase of 5% over the life of the loan. The index margin on a non owner-occupied one- to four-family property loan is 50 basis points higher than on an owner-occupied property loan. First Financial s adjustable-rate one-to- four family mortgage loans are for terms of up to 30 years, amortized on a monthly basis, with principal and interest due each month. Borrowers may refinance or prepay loans at their option without penalty. First Financial originates, to a limited extent, 10 year, 15 year, 25 and 30 year term fixed-rate mortgages on one- to four-family, owner-occupied homes with loan to value ratios of 85% or less.

Loan originations are generally obtained from existing and walk-in customers, members of the local community, and referrals from realtors, depositors and borrowers within the Bank s lending area. Mortgage loans originated and held by First Financial in its portfolio generally include due-on-sale clauses which provide First Financial with the contractual right to deem the loan immediately due and payable in the event that the borrower transfers ownership of the property without the Registrant s consent.

During periods of rising interest rates, the risk of default on adjustable-rate loans may increase due to increases in interest costs to borrowers. Further, adjustable-rate loans that provide for initial rates of interest below the fully indexed rates may be subject to increased risk of delinquency or default as the higher, fully indexed rate of interest subsequently replaces the lower, initial rate.

Construction Loans. The Banks engage in construction lending involving loans to qualified borrowers for construction of one- to four-family dwellings, multi-family residential units, commercial buildings and churches, with the intent of such loans converting to permanent financing upon completion of construction. All construction loans are secured by a first lien on the property under construction. Loan proceeds are disbursed in increments as construction progresses and as inspections warrant.

Construction/permanent loans generally have adjustable or fixed interest rates and are underwritten in accordance with the same terms and requirements as permanent mortgages, except the loans generally provide for disbursement in stages during a construction period of up to twelve months, during which the borrower is not required to make monthly payments. If construction improvements are not completed at the end of six months, accrued interest must be paid to date. Accrued interest must be paid at completion of construction to the first day of the following month, and monthly payments start the first day of the following month if the loan is converted to permanent financing. Borrowers must satisfy all credit requirements that would apply to permanent mortgage loan financing for the subject property and must execute a construction loan agreement.

Construction financing generally is considered to involve a higher degree of risk of loss than long term financing on improved, occupied real estate. Risk of loss on a construction loan is dependent largely upon the accuracy of the initial estimate of the property s value at completion of construction or development and the estimated cost (including interest) of construction. During the construction phase, a number of factors could result in delays and cost overruns. If the estimate of construction cost proves to be inaccurate, the Banks may be required to advance funds beyond the amount originally committed to permit completion of the development. The Banks have sought to minimize this risk by requiring precise construction cost estimates, specifications, and drawing plans from qualified borrowers in their market area.

Multi-Family and Commercial Real Estate Loans. In order to serve its community and enhance yields on its assets, the Banks originate loans secured by commercial real estate and multi-family properties. The multi-family and commercial real estate loans originated have generally been made to individuals, small businesses and partnerships. They have primarily been secured by first mortgages on apartment buildings, office buildings, churches and other properties. The Banks benefit from originating such loans due to higher adjustable interest rates. Adjustable-rate loans for this type of lending have a margin that is 50 basis points higher than the margin added to single-family owner-occupied property loan. First Financial s multi-family residential and commercial real estate loans are adjustable-rate loans with terms of 30 years or less, with loan-to-value ratios not exceeding 80%. Citizens multi-family residential and commercial real estate loans are adjustable rate loans with a maximum maturity of twenty years, and loan- to-value ratios not exceeding 85%. As of September 30, 2003, loans on multi-family residential and commercial real estate properties constituted approximately $36.1 million, or 30% of the Banks total loan portfolio.

Multi-family and commercial real estate lending entails significant additional risks as compared to one- to four-family residential lending. For example, such loans typically involve large loans to single borrowers or related borrowers, the payment experience on such loans is typically dependent on the successful operation of the project, and these risks can be significantly affected by the supply and demand conditions in the market for commercial property and multi-family residential units.

Loans secured by commercial real estate generally involve a greater degree of risk than residential mortgage loans and carry larger loan balances. This increased credit risk is a result of several factors, including the concentration of principal in a limited number of loans and borrowers, the effects of general economic conditions on income producing properties, and the increased difficulty of evaluating and monitoring these types of loans. Furthermore, the repayment of loans secured by commercial real estate is typically dependent upon the successful operation of the related real estate project. If the cash flow from the project is reduced, the borrower s ability to repay the loan may be impaired. To minimize these risks, the Banks generally limits loans of this type to its market area and to borrowers with which it has substantial experience or who are otherwise well known to them. The Banks underwriting procedures require verification of the borrower s credit history, income, financial statements, banking relationships, credit references, and income projections for the property. It is their current practice to obtain personal guarantees from all principals obtaining this type of loan. For the small total dollar amount of loans secured by church real estate that are originated by the Banks, repayment is dependent upon the continuing financial support of the church s members. The Banks also obtain appraisals on each property. All appraisals on commercial and multi-family real estate are reviewed by the Banks management.

Agricultural Loans. The Banks engage in lending on improved farm land with no dwelling, building lots and building acreage sites. The Banks benefit from originating such loans due to higher origination fees and adjustable interest rates. These properties must have good road access. The loan to value ratio for this type of loan is generally 75% or less with a maximum loan term of 15 years for First Financial and 20 years for Citizens. An adjustable- rate loan for this type of lending has a margin that is 50 basis points higher than the margin added to one- to four-family owner-occupied property loans.

The Banks also engage in loans for improved farm land with dwellings. The-loan-to-value ratio for this type of loan is generally 85% or less with a maximum term of 30 years for First Financial and 20 years for Citizens. These loans can be set up with payment of interest collected semi-annually and principal yearly as well as monthly principal and interest payments.

Consumer Lending. The Banks originate consumer loans on either a secured or unsecured basis. These loans generally require a pre-existing relationship with the Banks. The Banks generally make certificate of deposit loans for terms of up to six months in amounts up to the face amount of the certificate. The interest rate charged on these loans is up to 2% higher than the rate paid on the certificate, and interest is billed on a quarterly basis. These loans are payable on demand and the account must be assigned to the Banks as collateral for the loan.

Consumer loans may entail greater risk than residential loans, particularly in the case of consumer loans that are unsecured or secured by assets that depreciate rapidly. Repossessed collateral for a defaulted consumer loan may not be sufficient for repayment of the outstanding loan, and the remaining deficiency may not be collectible.

Loan Approval Authority and Underwriting. First Financial has established various lending limits for its officers and maintains a loan committee. The loan committee consists of Arthur L. Freeman, Chairman of the Board and Chief Executive Officer, Jack D. Hood, Treasurer and Chief Financial Officer, and Wickliffe T. Asbury, Executive Vice President, Charles W. Graves, Jr., Senior Vice President, and Vice Presidents Gay Gaines and James Baxter. Messrs. Freeman, Graves, Hood, and Asbury, each have the authority to approve secured loan applications up to $300,000 and unsecured loans of up to $30,000. Messrs. Baxter and Gaines, each have the authority to approve secured loan applications up to $200,000 and unsecured loans of $20,000. Any two officers may join together to approve loans, but only to the limit of the higher authority of the two officers. The loan committee approves loans that exceed the limits established for individual officers and may approve secured loans of up to $500,000 and unsecured loans of $50,000. The Board of Directors must approve all loans that exceed the lending limit of the loan committee.

For all loans originated by First Financial, upon receipt of a completed loan application from a prospective borrower, a credit report is generally ordered, income and certain other information is verified and, if necessary, additional financial information is requested. An appraisal of the real estate intended to be used as security for the proposed loan is obtained. All appraisals are reviewed by officers of First Financial designated by the Board of Directors. An independent appraiser designated and approved by the Board of Directors of First Financial is utilized for all real estate mortgage loans. For construction/permanent loans, the funds advanced during the construction phase are held in a loan-in- process account and disbursed based upon various stages of completion in accordance with the results of inspection reports that are based upon physical inspection of the construction by an independent contractor hired by First Financial or in some cases by an officer of the Bank. For real estate loans First Financial will require either title insurance or a title opinion. Borrowers must also obtain fire and casualty, hazard or flood insurance (for loans on property located in a flood zone, flood insurance is required) prior to the closing of the loan.

Citizens has established various lending limits for its officers and maintains an officers loan committee. The officers loan committee consists of Terry Bunnell, President, Larry Ramey, Chief Operating Officer, and Vice Presidents, Nancy Hale, Jeff Constant and Jennie Wilson. In connection with the memorandum of understanding between the Regional Director and the Commissioner, the lending limits for Citizen s officers have been revised. Mr. Bunnell has the authority to approve secured loans up to $250,000 and unsecured loans up to $25,000. Mr. Ramey has the authority to approve secured loans up to $200,000 and unsecured loans up to $20,000. Ms. Hale and Mr. Constant each have the authority to approve secured loans up to $100,000 and unsecured loans up to $10,000. Ms. Wilson has the authority to approve secured loans up to $20,000 and unsecured loans up to $5,000.

Officers may not join authorities to approve loans but officers may have an officer with higher authority approve loans up to the limit of that officer. The loan committee approves loans exceeding officer limits up to the loan committee limit of $250,000 for secured loans and $25,000 for unsecured loans. The loan committee consists of officers Bunnell, Constant, Ramey, Hale and Wilson. The Board loan committee consists of Terry Bunnell, Larry Ramey, Henry H. Dickinson, Chairman of the Board, Thomas K. Lyons, Samuel D. Dickinson, Philip J. Rutledge and Arthur Freeman and approves loans in excess of $250,000 for secured loan and in excess of $25,000 for unsecured loans.

The Board of Directors approves all insider loans and other loans as presented by the Board loan committee for full board approval.

For all loans originated by Citizens, upon receipt of a completed loan application from a prospective borrower, a credit report is generally ordered, income and certain other information is verified and, if necessary additional financial information is requested. An appraisal of the real estate intended to be used as security for the proposed loan is obtained as required by regulations. For loans for which appraisals are not required, written evaluations of the real estate collateral are prepared. Officers of Citizens review all appraisals or written evaluations prepared. Independent appraisers as approved by the Board of Directors are utilized. For construction/permanent loans a line of credit is established and advances are drawn against the line based upon various stages of completion in accordance with the results of inspection reports based on physical inspection of the construction by an independent contractor or bank officer. For real estate loans Citizens requires either title insurance or a title opinion. Borrowers must also obtain fire and casualty, hazard or flood insurance if in a flood zone prior to closing the loan.

Loan Commitments. First Financial issues written commitments to prospective borrowers on all approved real estate loans. Generally, the commitment requires acceptance within 20 days of the date of issuance. At September 30, 2003, First Financial had approximately $0.9 million of commitments to cover originations, undisbursed funds for loans-in-process and unused lines of credit.

Citizens issues written commitments to prospective borrowers on all approved real estate loans. Generally, the commitment requires acceptance within 20 days of the date of issuance. At September 30, 2003, Citizens had approximately $2.9 million of commitments to cover unused lines of credit.

Non-Performing and Problem Assets

Loan Delinquencies. First Financial monitors delinquencies on all types of loans closely. If such loans later become delinquent, First Financial contacts and works with the borrower to resolve the delinquency before initiating foreclosure proceedings. First Financial s collection procedures provide that when a mortgage loan is 10 days past due, a notice of nonpayment is sent. Delinquent notices are sent if the loan becomes delinquent for more than 30 days. If payment is still delinquent after 60 days, the customer will receive a letter and/or telephone call and may receive a visit from a representative of the Registrant. If the delinquency continues, similar subsequent efforts are made to eliminate the delinquency. If the loan continues in a delinquent status for 90 days past due and no repayment plan is in effect, management will generally initiate legal proceedings.

Loans are reviewed on a monthly basis by management and are generally placed on a non-accrual status when the loan becomes more than 90 days delinquent and, in the opinion of management, the collection of additional interest is doubtful. Interest accrued and unpaid at the time a loan is placed on non- accrual status is charged against interest income. Subsequent interest payments, if any, are either applied to the outstanding principal balance or recorded as interest income, depending on the assessment of the ultimate collectibility of the loan.

Citizens monitors delinquencies on all types of loans closely. If such loans later become delinquent, Citizens contacts and works with the borrower to resolve the delinquency before initiation of foreclosure proceedings. Citizens collection procedures provide that when a mortgage loan is 15 days past due (10 days for other loans), a notice of nonpayment is sent. Delinquent notices are sent if the loan becomes delinquent for more than 30 days. At 30 days past due, the customer also receives a letter, phone call or officer visit to discuss the loan status. If the delinquency continues, similar subsequent efforts are made to eliminate the delinquency. If the loan continues in a delinquent status for up to 90 days past due and no repayment plan is in effect, management will generally initiate legal proceedings.

Loans are reviewed on a monthly basis by management and will be placed on non-accrual status when the loan becomes more than 90 days past due and, in the opinion of management, the collection of additional interest is doubtful. Interest accrued and unpaid at the time a loan is placed on non-accrual status is charged against interest income. Subsequent interest payments, if any, are either applied to principal then to interest that would have been contractually accrued.

Non-Performing Assets. The following table sets forth information regarding non-accrual loans, real estate owned and certain other repossessed assets and loans. As of the dates indicated, the Registrant had no loans categorized as troubled debt restructuring within the meaning of Statement of Financial Accounting Standards (SFAS) 15 and no impaired loans within the meaning of meaning of SFAS 114, as amended by SFAS 118.

	At September 30,	
	2003	2002
	(In Thousands)	
Loans accounted for on a non-accrual basis:		
Total	$ 425	$ 41
Accruing loans which are contractually past due 90 days or more:		
Mortgage loans:		
Permanent loans secured by 1 to 4 family dwelling units	189	217
All other mortgage loans	7	5
Non-mortgage loans:		
Commercial	85	
Consumer	129	112
Total	410	334
Total non-accrual loan	835	375
Real estate owned		233
Total non-performing assets	$ 835	$ 608
Total non-performing loans to net loans	.71%	.33%
Total non-performing loans to total assets	.48%	.25%
Total non-performing assets to total assets	.48%	.40%

Classified Assets. Federal regulations provide for a classification system for problem assets of insured institutions that covers all problem assets. Under this classification system, problem assets of insured institutions are classified as substandard, doubtful, or loss. An asset is considered substandard if it is inadequately protected by the current net worth and paying capacity of the obligor or of the collateral pledged, if any. Substandard assets include those characterized by the distinct possibility that the insured institution will sustain some loss if the deficiencies are not corrected. Assets classified as doubtful have all of the weaknesses inherent in those classified substandard, with the added characteristic that the weaknesses present make collection or liquidation in full, on the basis of currently existing facts, conditions, and values, highly questionable and improbable. Assets classified as loss are those considered uncollectible and of such little value that their continuance as assets without the establishment of a specific loss reserve is not warranted. Assets may be designated special mention because of potential weakness that do not currently warrant classification in one of the aforementioned categories.

When an insured institution classifies problem assets as either substandard or doubtful, it may establish general allowances for loan losses in an amount deemed prudent by management. General allowances represent loss allowances which have been established to recognize the inherent risk associated with lending activities, but which, unlike specific allowances, have not been allocated to particular problem assets. When an insured institution classifies problem assets as loss, it is required either to establish a specific allowance for losses equal to 100% of that portion of the asset so classified or to charge off such amount. First Financial and Citizens determination as to the classification of its assets and the amount of its valuation allowances is subject to review by the OTS and the FDIC, respectively, which may order the establishment of additional general or specific loss allowances. A portion of general loss allowances established to cover possible losses related to assets classified as substandard or doubtful may be included in determining an institution s regulatory capital, while specific valuation allowances for loan losses generally do not qualify as regulatory capital.

The following table sets forth the Registrant s classified assets in accordance with its classification system:

	At September 30, 2003
	(In Thousands)
Special Mention	$ 12
Substandard	2,465
Doubtful	1
Loss	1
Total	$ 2,479

Allowance for Loan Losses. It is management s policy to provide for losses on loans in its loan portfolio. A provision for loan losses is charged to operations based on management s evaluation of the losses that may be incurred in the Registrant s loan portfolio. Such evaluation, which includes a review of all loans of which full collectibility of interest and principal may not be reasonably assured, considers the Registrant s past loan loss experience, known and inherent risks in the portfolio, adverse situations that may affect the borrower s ability to repay, estimated value of any underlying collateral, current economic conditions, and the relationship of the allowance for loan losses to outstanding loans.

The following table sets forth information with respect to the Registrant s allowance for loan losses at the dates and for the periods indicated:

	At or for the Year Ended September 30,	
	2003	2002
	(Dollars In Thousands)	
Total Loans Outstanding	$ 119,150	$ 115,977
Average Loans Outstanding	$ 116,664	$ 109,011
Allowance balances (at beginning of period)	$ 632	$ 411
Provision (credit):		
Residential	428	241
Consumer		
Net Charge-offs (recoveries):		
Residential	54	20
Consumer		
Allowance balance (at end of period)	$ 1,006	$ 632
Allowance for loan losses as a percent of total loans outstanding	.84%	.54%
Net loans charged off as a percent of average loans outstanding	.05%	.02%

Management will continue to review the entire loan portfolio to determine the extent, if any, to which further additional loss provisions may be deemed necessary. There can be no assurance that the allowance for loan losses will be adequate to cover losses that may in fact be realized in the future and that additional provisions for losses will not be required.

Analysis of the Allowance for Loan Losses

The following table sets forth the allocation of the allowance by category, which management believes can be allocated only on an approximate basis. The allocation of the allowance to each category is not necessarily indicative of future loss and does not restrict the use of the allowance to absorb losses in any category.

	At September 30,			
	2003		2002	
	Amount	Percent of Loans to Total Loans	Amount	Percent of Loans to Total Loans
	(Dollars in Thousands)			
Real Estate Mortgage:				
One-to four-family residential	$ 323	60.45%	$ 414	65.05%
Multi-family		1.86	13	2.12
Agricultural	53	12.07	40	6.36
Commercial	556	16.46	77	12.42
Residential construction	9	3.86	30	4.75
Consumer	65	5.30	58	9.30
Total allowance for loan losses	$ 1,006	100.00%	$ 632	100.00%

Return On Equity And Assets Ratios

	At Or For The Years Ended September 30,	
	2003	2002
Average equity to average assets	13.08%	14.42%
Return on average equity	5.62%	3.02%
Return on average assets	.73%	.46%
Dividend payout ratio	54.92	100.83

Investment Activities

The Registrant is required under federal regulations to maintain a sufficient amount of liquid assets that may be invested in specified short-term securities and certain other investments. However, neither the OTS nor the FDIC prescribes by regulation to a minimum or percentage of liquid assets. The level of liquid assets varies depending upon several factors, including: (i) the yields on investment alternatives, (ii) management s judgment as to the attractiveness of the yields then available in relation to other opportunities, (iii) expectation of future yield levels, and (iv) management s projections as to the short-term demand for funds to be used in loan origination and other activities. Investment securities, including mortgage-backed securities, are classified at the time of purchase, based upon management s intentions and abilities, as securities held to maturity or securities available for sale. Debt securities acquired with the intent and ability to hold to maturity are classified as held to maturity and are stated at cost and adjusted for amortization of premium and accretion of discount, which are computed using the level yield method and recognized as adjustments of interest income. All other debt securities are classified as available for sale to serve principally as a source of liquidity.

Current regulatory and accounting guidelines regarding investment securities (including mortgage backed securities) require the Registrant to categorize securities as held to maturity, available for sale or trading. As of September 30, 2003, Registrant had securities (including mortgage-backed securities) classified as held to maturity and available for sale in the amount of $4.4 million and $31.7 million, respectively and had no securities classified as trading. Securities classified as available for sale are reported for financial reporting purposes at the fair market value with net changes in the fair market value from period to period included as a separate component of stockholders equity, net of income taxes. At September 30, 2003, the Registrant s securities available for sale had an amortized cost of $27.5 million and fair market value of $31.7 million. Changes in the fair market value of securities available for sale do not affect the Company s income. In addition, changes in the fair market value of securities available for sale do not affect the Bank s regulatory capital requirements or its loan-to-one borrower limit.

At September 30, 2003, the Registrant s investment portfolio policy allowed investments in instruments such as: (i) U.S. Treasury obligations, (ii) U.S. federal agency or federally sponsored agency obligations, (iii) local municipal obligations, (iv) mortgage-backed securities, (v) banker s acceptances, (vi) certificates of deposit, (vii) equity investments, and (viii) investment grade corporate bonds and commercial paper. The board of directors may authorize additional investments. In fiscal 2003, the Registrant purchased a 22.5% equity interest in Independence Bancorp. The investment was recorded using the equity method of accounting and accordingly, a proportionate share of the earnings of Independence Bancorp is recognized by the Registrant.

As a source of liquidity and to supplement Registrant s lending activities, the Registrant has invested in residential mortgage-backed securities. Mortgage-backed securities can serve as collateral for borrowings and, through repayments, as a source of liquidity. Mortgage-backed securities represent a participation interest in a pool of single-family or other type of mortgages. Principal and interest payments are passed from the mortgage originators, through intermediaries (generally quasi-governmental agencies) that pool and repackage the participation interests in the form of securities to investors. The quasi- governmental agencies guarantee the payment of principal and interest to investors and include FreddieMac, GinnieMae, and FannieMae.

Mortgage-backed securities typically are issued with stated principal amounts. The securities are backed by pools of mortgages that have loans with interest rates that are within a set range and have varying maturities. The underlying pool of mortgages can be composed of either fixed rate or adjustable rate mortgage loans. Mortgage-backed securities are generally referred to as mortgage participation certificates or pass-through certificates. The interest rate risk characteristics of the underlying pool of mortgages (i.e., fixed rate or adjustable rate) and the prepayment risk, are passed on to the certificate holder. The life of a mortgage-backed pass-through security is equal to the life of the underlying mortgages. Expected maturities will differ from contractual maturities due to scheduled repayments and because borrowers may have the right to call or prepay obligations with or without prepayment penalties. Mortgage-backed securities issued by FreddieMac, GinnieMae, and FannieMae, make up a majority of the pass-through certificates market.

At September 30, 2003, the Registrant s securities portfolio did not contain securities of any issuer, other than those issued by U.S. government or its agencies, with an aggregate book value in excess of 10% of the Registrant s equity.

Investment Portfolio. The following table sets forth the carrying value of the Registrant s investment securities at the dates indicated.

	At September 30,	
	2003	2002
	(In Thousands)	
Investment Securities available for sale:		
Mortgaged backed securities	$ 21,444	$ 8,034
U.S. government and federal agencies securities	6,209	4,932
FHLMC stock	4,036	4,309
Total	$ 31,689	$ 17,275
Investment securities held to maturity:		
U.S. government and federal agencies debt securities	$ 3,002	$ 2,007
Municipal bonds	1,402	214
Total	$ 4,404	$ 2,221
Total investment securities	$ 36,093	$ 19,496

Investment Portfolio Maturities. The following table sets forth information regarding the scheduled maturities, carrying values, market value and weighted average yields for the Registrant s investment securities portfolio at September 30, 2003. The following table does not include the Registrant s equity investment in Independence Bancorp and does not take into consideration the effects of scheduled repayments or the effects of possible prepayments.

	As of September 30, 2003										
	One Year or Less		More Than One to Five Years		More Than Five to Ten Years		More than ten years		Total Investment Securities		
	Carrying Value	Average Yield	Carrying Value	Average Yield	Carrying Value	Average Yield	Carrying Value	Average Yield	Carrying Value	Average Yield	Market Value
	(Dollars in Thousands)										
Investments securities available for sale:											
Mortgage-backed securities	$ 21,444	4.84%	$	%	$	%	$	%	$ 21,444	4.84%	$ 21,444
U.S. government and federal agencies debt securities	612	4.88	764	4.07	4,833	3.95			6,209	4.06	6,209
FHLMC stock	4,036	1.91							4,036	1.91	4,036
Total	$ 26,092	4.39%	$ 764	4.07%	$ 4,833	3.95%			$ 31,689	4.32%	$ 31,689
Investment securities held to maturity:											
U.S. government and federal agencies debt securities	$	%	$	%	$ 2,002	5.00%	$ 1,000	6.35%	$ 3,002	4.86%	$ 3,038
Municipal bonds	65	4.25					1,337	4.89	1,402	5.45	1,432
Total	65	4.25%			$ 2,002	5.00%	$ 2,337	5.52%	$ 4,404	5.26%	$ 4,470
Total investment securities	$ 26,157	4.39%	$ 764	4.07%	$ 6,835	4.26%	$ 2,337	5.52%	$ 36,093	4.43%	$ 36,159

Sources of Funds

General. Deposits are the major external source of the Registrant s funds for lending and other investment purposes. The Registrant derives funds from amortization and prepayment of loans and, to a much lesser extent, maturities of investment securities, borrowings, mortgage-backed securities and operations. Scheduled loan principal repayments are a relatively stable source of funds, while deposit inflows and outflows and loan prepayments are significantly influenced by general interest rates and market conditions.

Deposits. Consumer and commercial deposits are attracted principally from within the Registrant s primary market area through the offering of a selection of deposit instruments including regular savings accounts, money market accounts, and term certificate accounts. Deposit account terms vary according to the minimum balance required, the time period the funds must remain on deposit, and the interest rate, among other factors. At September 30, 2003, the Registrant had no brokered accounts.

Jumbo Certificates of Deposit. The following table indicates the amount of the Registrant s certificates of deposit of $100,000 or more by time remaining until maturity as of September 30, 2003.

	Certificates of Deposit (In Thousands)
Maturity Period	
Three months or less	$ 12,589
More than three through six months	8,154
More than six through twelve months	7,324
Over twelve months	2,985
Total	$ 31,052

The following table sets forth the average balances and interest rates based on month-end balances for interest-bearing demand deposits and time deposits as of the dates indicated.

	At September 30,			
	2003		2002	
	Average Balance	Average Rate	Average Balance	Average Rate
	(Dollars in Thousands)			
Deposit Category:				
Demand and Savings Accounts(1)	$ 24,615	1.25%	$ 23,155	1.59%
Certificates	107,218	3.54	92,385	3.98
	$ 131,833	3.11%	$ 115,540	3.50%

(1) Includes non-interest bearing and savings accounts, which represent less than 10% of total deposits.

Borrowings. Deposits are the primary source of funds of the Banks lending and investment activities and for its general business purposes. The Banks may obtain advances from the FHLB of Cincinnati to supplement its supply of lendable funds. Advances from the FHLB of Cincinnati are typically secured by a pledge of the Banks stock in the FHLB of Cincinnati and a portion of their first mortgage loans and certain other assets. The Banks, if the need arises, may also access the Federal Reserve Bank discount window to supplement its supply of lendable funds and to meet deposit withdrawal requirements. At September 30, 2003, the Registrant borrowings totaled $2.7 million, which $0.1 million was short-term and $2.6 million was long-term.

Personnel

As of September 30, 2003, the Registrant had 34 full-time employees and 2 part-time employees. None of the Registrant s employees are represented by a collective bargaining group. The Registrant believes that its relationship with its employees is good.

Regulation of the Company

General. The Company is a registered bank holding company subject to regulation under the Bank Holding Company Act of 1956, as amended (the BHC Act). In addition, the Company is subject to the provisions of Kentucky s banking laws regulating bank acquisitions and various activities of controlling bank shareholders. As a bank holding company, the Company is subject to regulation, supervision, and examination by the Board of Governors of the Federal Reserve System (the FRB) and is required to file periodic reports with the FRB. The Kentucky Department of Financial Institutions may also conduct examinations of the Company to determine whether it is in compliance with applicable Kentucky banking laws and regulations. In addition, the FRB has enforcement authority over the Company and any non- financial institution subsidiaries of the Company. This regulation and oversight is intended primarily for the protection of the depositors of the Banks and not for the benefit of the Company s stockholders.

Regulatory Capital Requirements. The FRB has adopted capital adequacy guidelines pursuant to which it assesses the adequacy of capital in examining and supervising a bank holding company and in analyzing applications to it under the Bank Holding Company Act. The FRB s capital adequacy guidelines are similar to those imposed on the Banks by the OTS and the FDIC. See Regulation of the Banks - Regulatory Capital Requirements.

Restrictions on Dividends. The FRB has issued a policy statement on the payment of cash dividends by bank holding companies, which expresses the FRB s view that a bank holding company should pay cash dividends only to the extent that the holding company s net income for the past year is sufficient to cover both the cash dividends and a rate of earnings retention that is consistent with the holding company s capital needs, asset quality and overall financial condition. The FRB also indicated that it would be inappropriate for a company experiencing serious financial problems to borrow funds to pay dividends. Furthermore, under the federal prompt corrective action regulations, the FRB may prohibit a bank holding company from paying any dividends if the holding company s bank subsidiary is classified as undercapitalized.

Acquisition of Banks. The BHC Act also requires a bank holding company to obtain prior approval from the FRB before acquiring direct or indirect ownership or control of more than 5% of the voting shares of any bank which is not already majority owned or controlled by that bank holding company. Acquisition of any additional banks would require prior approval from both the FRB and the Kentucky Department of Financial Institutions.

Non-Banking Activities. The business activities of the Company, as a bank holding company, are restricted by the BHC Act. The Company is authorized by the BHC Act and the FRB s Regulation Y to acquire ownership or control of non-banking companies, provided the activities of the non-banking companies are so closely related to banking or managing or controlling banks that the FRB considers the activities to be proper to the operation and control of banks. Regulation Y sets forth a lengthy list of activities (including the operation of a savings institution such as First Financial) that the FRB has determined to be so closely related to the business of banking as to be a proper incident thereto regarded as closely related to banking or managing or controlling banks and, thus, are permissible activities for bank holding companies.

The Gramm-Leach-Bliley Act, which became effective in March 2001, permits greater affiliation among banks, securities firms, insurance companies, and other companies under a new type of financial services company known as a financial holding company. A financial holding company essentially is a bank holding company with significantly expanded powers. Financial holding companies are authorized by statute to engage in a number of financial activities previously impermissible for bank holding companies, including securities underwriting, dealing and market making; sponsoring mutual funds and investment companies; insurance underwriting and agency; and merchant banking activities. The act also permits the FRB and the Treasury Department to authorize additional activities for financial holding companies if they are financial in nature or incidental to financial activities. A bank holding company may become a financial holding company if each of its subsidiary banks is well capitalized, well managed, and has at least a satisfactory CRA rating. A financial holding company must provide notice to the FRB within 30 days after commencing activities previously determined by statute or by the FRB and the Department of the Treasury to be permissible. The Company has not submitted notice to the FRB of its intent to be deemed a financial holding company.

Regulation of the Banks

General. Set forth below is a brief description of certain laws that relate to the regulation of the Banks. The description does not purport to be complete and is qualified in its entirety by reference to applicable laws and regulations. First Financial, as a federal stock savings bank, is subject to regulation, supervision and regular examination by the OTS. Citizens, as a Kentucky commercial bank that is not a member of the FRB, is subject to regulation, supervision and regular examination both by the Kentucky Department of Financial Institutions and the FDIC. The deposits of both Banks are insured by the FDIC to the maximum extent provided by law (a maximum of $100,000 for each insured depositor).

Federal and Kentucky banking laws and regulations control, among other things, the Banks required reserves, investments, loans, mergers and consolidations, issuance of securities, payment of dividends and other aspects of the Banks operations. The regulatory structure also gives the respective regulatory authorities extensive discretion in connection with their supervisory and enforcement activities and examination policies, including polices with respect to the classification of assets and the establishment of adequate loan loss reserves for regulatory purposes. Supervision, regulation and examination of First Financial and Citizens by the bank regulatory agencies are intended primarily for the protection of depositors rather than for holders of the Company s stock or for the Company as the holder of the stock of the Banks.

Insurance of Deposit Accounts. The deposit accounts held by First Financial and Citizens are insured by the SAIF and the BIF, respectively, to a maximum of $100,000 for each insured member (as defined by law and regulation). Insurance of deposits may be terminated by the FDIC upon a finding that the institution has engaged in unsafe or unsound practices, is in an unsafe or unsound condition to continue operations or has violated any applicable law, regulation, rule, order or condition imposed by the FDIC or the institution s primary regulator.

The Banks are required to pay insurance premiums based on a percentage of their insured deposits to the FDIC for insurance of their deposits by the SAIF and the BIF. The FDIC s current deposit insurance assessment rates for SAIF and BIF member institutions are in a range from 0% to .027% of insured deposits on an annualized basis, with the assessment rate for most banks and thrifts set at 0%.

In addition, all FDIC-insured institutions are required through 2017 to pay assessments to the FDIC to fund interest payments on bonds issued by the Financing Corporation (FICO), an agency of the Federal government established to recapitalize the predecessor to the SAIF. For calendar 2003, the average annual assessment rate was .0162% of insured deposits.

Regulatory Capital Requirements. The OTS and the FDIC have adopted regulations requiring institutions under their respective jurisdictions maintain specified minimum ratios of capital to total assets and capital to risk-weighted assets. Specifically, all savings institutions and banks must maintain the following ratios: (1) Tier 1 or core capital equal to at least 4% (3% if the institution has received the highest rating, composite 1 CAMELS, on its most recent examination) of total adjusted assets; and (2) total capital (defined as Tier 1 capital plus supplementary (Tier 2) capital) equal to 8% of total risk-weighted assets. In addition, savings institutions are

17

required under applicable federal law to maintain tangible equity capital equal to at least 1.5% of total adjusted assets. The Banks were in compliance with the respective capital requirements of the FDIC and the OTS as of September 30, 2003.

Dividend and Other Capital Distribution Limitations. The OTS and the Kentucky Department of Financial Institutions impose restrictions on the ability of federal savings institutions and Kentucky commercial banks, respectively, to pay dividends and to make other capital distributions. In general, the Banks are prohibited from paying any dividends or other capital distributions if, after the distribution, they would be undercapitalized under applicable federal law.

The prior approval of the OTS would be required for any capital distribution (including a dividend) by First Financial if: (i) the total of its capital distributions, including the proposed distribution, were to exceed its net income for the calendar year to date plus its retained net income for the preceding two calendar years; (ii) First Financial was not eligible for expedited treatment of applications under applicable OTS regulations; (iii) First Financial would not remain adequately capitalized, as defined, after the distribution; or (iv) the capital distribution would violate an agreement between the OTS and First Financial or any OTS regulation. In addition, even if the above application requirement were inapplicable, First Financial would be required to give the OTS prior notice of any capital distribution if it would not remain well capitalized after the distribution.

In addition, under applicable provisions of Kentucky law, the prior approval of the Kentucky Department of Financial Institutions is required if the total of all dividends declared by Citizens in any calendar year exceeds Citizens net profits, as defined, for that year combined with its retained net profits for the preceding two calendar years, less any required transfers to surplus or a fund for the retirement of any preferred stock.

Federal Home Loan Bank System. First Financial and Citizens are members of the FHLB of Cincinnati, which is one of 12 regional FHLBs that administers the home financing credit function of savings associations. Each FHLB serves as a reserve or central bank for its members within its assigned region. It is funded primarily from proceeds derived from the sale of consolidated obligations of the FHLB System. It makes loans to members (i.e., advances) in accordance with policies and procedures established by the Board of Directors of the FHLB.

As members, First Financial and Citizens are required to purchase and maintain stock in the FHLB of Cincinnati in an amount equal to at least 1% of aggregate unpaid residential mortgage loans, home purchase contracts or similar obligations at the beginning of each year.

Federal Reserve System. The Federal Reserve Board requires all depository institutions to maintain non-interest bearing reserves at specified levels against their transaction accounts (primarily checking, NOW, and Super NOW checking accounts) and non-personal time deposits. At September 30, 2003, the Banks were in compliance with these Federal Reserve Board requirements.

Item 2. Description of Properties

(a) Properties

The Registrant operates from two main offices and two full service branch offices. The following table sets forth information regarding the Registrant s properties:

Location	Leased or Owned	Original Date Acquired or Leased
First Financial		
MAIN OFFICE:	Owned	1964
104 South Chiles Street		
Harrodsburg, Kentucky 40330		
BRANCH OFFICE:	Owned	1998
1015 Cross Road Drive		
Lawrenceburg, Kentucky 04342		
Citizens (1)		
MAIN OFFICE:	Leased	2001
113 West Public Square		
Glasgow, Kentucky 42142		

(1) Citizens also purchased property in 2003 located at 501 Happy Valley Road, Glasgow, Kentucky.

(b) Investment Policies. See Item 1. Description of Business above for a general description of the Registrant s investment policies and any regulatory or Board of Directors percentage of assets limitations regarding certain investments. The Registrant s investments are primarily acquired to produce income, and to a lesser extent, possible capital gain.

(1) Investments in Real Estate or Interests in Real Estate. See Item 1. Description of Business - Lending Activities and - Regulation of the Bank, and Item 2. Description of Property.

(2) Investments in Real Estate Mortgages. See Item 1. Description of Business - Lending Activities and - Regulation of the Bank.

(3) Investments in Securities of or Interests in Persons Primarily Engaged in Real Estate Activities. See Item 1. Description of Business - Lending Activities and - Regulation of the Bank.

(c) Description of Real Estate and Operating Data. Not Applicable.

Item 3. Legal Proceedings -

The Registrant, from time to time, is a party to ordinary routine litigation, which arises in the normal course of business, such as claims to enforce liens, condemnation proceedings on properties in which the Registrant holds security interests, claims involving the making and servicing of real property loans, and other issues incident to the business of the Registrant. There were no material lawsuits pending or known to be contemplated against the Banks or the Company at September 30, 2003.

Item 4. Submission of Matters to a Vote of Security Holders

None.

PART II

Item 5. Market for the Registrant s Common Equity and Related Stockholder Matters

The Registrant common stock is traded on the Nasdaq National Market under the trading symbol of HFFB , and began trading in October 1995, upon completion of the conversion of First Financial. The following table reflects high and low bid quotations. The quotations reflect inter-dealer prices, without retail mark-up, mark-down, or commission, and may not represent actual transactions.

	Fiscal 2003			Fiscal 2002		
	Stock Price Range			Stock Price Range		
			Per Share			Per Share
Quarter	High	Low	Dividend	High	Low	Dividend
1st	$ 13.75	$ 10.75		$ 12.11	$ 10.82	$
2nd	15.14	12.44	.30	12.03	11.00	.30
3rd	17.63	14.55		13.52	11.00	
4th	20.75	16.50	.30	12.49	10.95	.30

The number of shareholders of record of common stock as of December 1, 2003, was approximately 400. This does not reflect the number of persons or entities who held stock in nominee or street name through various brokerage firms. At December 1, 2003, there were approximately 1.2 million shares outstanding. The Registrant s ability to pay dividends to stockholders is dependent upon the dividends it receives from the Banks. The payment of cash dividends by First Financial and Citizens is limited by regulations of the OTS and the FDIC, respectively. See Regulations of the Banks - Dividend and Other Capital Distribution Limitations.

Item 6. Management s Discussion and Analysis of Financial Condition and Results of Operations

The Private Securities Litigation Reform Act of 1995 contains safe harbor provisions regarding forward-looking statements. When used in this discussion, the words believes, anticipates, contemplates, expects, and similar expressions are intended to identify forward-looking statements. Such statements are subject to certain risks and uncertainties, which could cause actual results to differ materially from those projected. Those risks and uncertainties include changes in interest rates, risks associated with the ability to control costs and expenses, and general economic conditions. Harrodsburg First Financial Bancorp, Inc. undertakes no obligation to publicly release the results of any revisions to those forward looking statements, which may be made to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

Harrodsburg First Financial Bancorp, Inc. (Company) is a bank holding company headquartered in Harrodsburg, Kentucky, which provides a full range of deposits and traditional mortgage loan products through its wholly owned subsidiary, First Financial Bank (First Financial), a federally chartered savings bank, and Citizens Financial Bank, Inc. (Citizens), a state chartered commercial bank, in which the Company has a 55.8% interest. All references to the Company generally refer to the consolidated entity including First Financial and Citizens, unless the context indicates otherwise. Banks refers to the combined operations of First Financial and Citizens, unless the context indicates otherwise.

On September 16, 2003 (Effective Date), in connection with a routine regulatory examination, Citizens entered into a memorandum of understanding between the Regional Director of the Federal Deposit Insurance Corporation, Chicago Region (the Regional Director) and the Commissioner of the Kentucky Department of Financial Institutions (Commissioner). Pursuant to the understanding, Citizens may not increase its total assets by more than 5% during any consecutive three-month period without first providing at least 30 days advance written notice to the Regional Director and the Commissioner. Additionally, among other things, the understanding requires Citizens to revise certain of its loan policies and review procedures. The restriction on Citizens asset growth is effective immediately and the revision of certain of its loan policies and review procedures must be completed within 60 days from the Effective Date.

Overview

On July 15, 2001, the Company converted from a unitary savings bank holding company to a bank holding company, and on the same date acquired a 56.27% interest in Citizens Financial Bank, Inc., which is a Kentucky chartered commercial bank. The Company paid a cash price of $2,816,300 for its controlling interest in Citizens. The acquisition was accounted for under the purchase method of accounting. As a result of the transaction, the Company recorded goodwill of $356,064 for the excess cost over the net assets acquired. The Company has determined that goodwill is not impaired as of September 30, 2003. The Company's investment in Citizens decreased to 55.8% in fiscal 2002 due to Citizens' issuance of 2,100 shares of stock in lieu of cash for rental of Citizens' banking office. Future rent is payable in cash.

In addition, on December 31, 2002, the Company purchased a 22.53% interest in Independence Bancorp of New Albany ("Independence"), located in New Albany, Indiana for $2.0 million. The investment is being accounted for using the equity method of accounting.

On September 16, 2003, (effective date) in connection with a routine examination, Citizens entered into a memorandum of understanding between the Regional Director of the Federal Deposit Insurance Corporation, Chicago Region (the Regional Director) and the Commissioner of the Kentucky Department of Financial

Institutions (Commissioner). Pursuant to the understanding, Citizens may not increase its total assets by more than 5% during any consecutive three-month period without first providing at least 30 days advance written notice to the Regional Director and the Commissioner. Additionally, among other things, the understanding required Citizens to also revise certain of its loan policies and review procedures. The understanding will remain in place until terminated by the Regional Director and the Commissioner.

Additional provisions of the agreement are as follows:

Citizens is required to formulate a written plan of action for reducing the principal balance of substandard loans greater than $100,000 and submit monthly progress reports to the board of directors.

Improve loan documentation.

Review and amend the loan policy.

Enhance its loan review function

Maintain tier I capital at a level at or exceeding 8% of Citizen s total assets.

Formulate and implement a written profit plan.

Formulate and implement a long range planning process.

Review the allowance for loan and lease losses for adequacy.

Provide quarterly progress reports to the Regional Director and Commissioner.

For the fiscal year ended September 30, 2003, net income was $1.3 million or $1.05 per diluted share, as compared to $670,000 or $.54 cents per diluted share for fiscal 2002. During fiscal 2003 assets increased $20.5 million to $173.5 million. Net loans increased by 3.8% to $117.7 million and asset quality remains strong. Net income increased by 95.1% or $637,000 during the year. Citizens, as a startup venture achieved profitability for the first time in fiscal 2003 primarily as a result of the reversal of an allowance totaling approximately $537,680 on the tax benefit related to prior year net operating losses. The Company's share of Citizens net income for fiscal 2003 was $136,000 compared to a net loss of $(289,000) for the year ended September 30, 2002. First Financial's net income increased by $59,000 in fiscal year 2003 compared to the year ended September 30, 2002.

Asset/Liability Management

Market Risk Analysis. The Banks, like many other financial institutions, are vulnerable to an increase in rates to the extent that interest-bearing liabilities generally mature or reprice more rapidly than interest-earning assets. Historically, the lending activities of savings institutions, such as First Financial, emphasized the origination of long-term, fixed rate loans secured by single-family residences, and the primary source of funds has been deposits with substantially shorter maturities. While having interest-bearing liabilities that reprice more frequently than interest-earning assets is generally beneficial to net interest income during a period of declining interest rates, such an asset/liability mismatch is generally detrimental during periods of rising interest rates.

Historically, the lending activities of commercial banks, such as Citizens, emphasized the origination of short to intermediate variable rate loans, secured by various types of collateral that are more closely matched with the deposit maturities and repricing of interest-earning assets occurs closer to the same general time period.

To reduce the effect of interest rate changes on net interest income the Banks have adopted various strategies to enable them to improve matching of interest-earning asset maturities to interest-bearing liability maturities. The principal elements of these strategies include:

Originate one-to-four family residential mortgage loans with adjustable rate features or fixed rate loans with short maturities;

Lengthen the maturities of our liabilities when it would be cost effective through the pricing and promotion of higher rate certificates of deposit and utilization of FHLB advances or other borrowings;

Attract low cost checking and transaction accounts, which tend to be less interest rate sensitive when interest rates rise;

Maintain interest-bearing deposits, federal funds, and U.S. government securities with short to intermediate terms to maturities; and

Maintain an investment portfolio that provides a stable cash flow, thereby providing investable funds in varying interest rate cycles.

The Banks also monitor their interest rate sensitivity through the use of a model, which estimates the change in its net portfolio value (NPV) in the event of a range of assumed changes in market interest rates. Net portfolio value is defined as the current market value of assets, less the current market value of liabilities, plus or minus the current value of off-balance sheet items. The change in NPV measures the Banks vulnerability to changes in interest rates by estimating the change in the market value of its assets, liabilities, and off-balance sheet items as a result of an instantaneous change in the general level of interest rates.

As market interest rates decrease, the average maturities of loans and investment securities shorten due to quicker prepayments, causing an increase in their value. Deposit accounts have only relatively minor movements in a declining interest rate environment since they are primarily short-term in nature, resulting in the value of deposits decreasing more quickly than the value of assets increase.

The NPV models used by the OTS and the FDIC have certain shortcomings. Based on the models, certain assumptions are made that may or may not actually reflect how actual yields and costs will react to market interest rates. For example, the NPV models assume that the makeup of the Banks interest rate sensitive assets and liabilities will remain constant over the period being measured. Thus, although using such models can be instructive in providing an indication of the Banks exposure to interest rate risk, the Banks cannot precisely forecast the effects of a change in market interest rates. Additionally, the results indicated by the models are likely to differ from actual results.

First Financial measures their interest rate risks, using the Office of Thrift Supervision NPV method. The OTS defines the sensitivity measure as the change in the NPV ratio with a 200 basis point shock. At September 30, 2003, if interest rates increased by 200 basis points, First Financial s NPV ratio would be 14.2% based on a 197 basis point decrease in its NPV. Additionally, if interest rates decline by 100 basis points, First Financial s NPV ratio would be 16.44% based on a 25 basis point increase in its NPV. Due to the abnormally low prevailing rate environment, the OTS does not currently provide NPV estimates for 200 basis point declines in interest rates.

The FDIC does not require a specific measurement tool for interest rate risk, but sets forth desirable interest rate risk management practices, including adequate risk measurement systems. Citizens measures its exposure to rate movements using a 200 up/down rate shock to determine 12-month impact on net interest margins for assets and liabilities repricing in one year. As of June 30, 2003, if rates increased 200 basis points, net interest margins would increase by 1.6%. If rates decreased 100 basis points, net interest margins would decline by 1.5%

COMPARISON OF FINANCIAL CONDITION AT SEPTEMBER 30, 2003 and 2002

The Company's consolidated assets increased $20.6 million, or 13.5% to $173.6 million at September 30, 2003. The increase in total assets is primarily due to the growth of Citizens, whose total assets increased $12.7 million, an increase of 45.8% over the prior year. In addition, the Company's consolidated assets increased a net $3.7 million resulting from the issuance of $5.0 million of subordinated preferred securities, with $1.9 million of the proceeds being used for the purchase of Company stock. Consolidated interest-bearing assets increased $17.7 million. Investment securities increased $16.7 million, or 78.4%, and loans outstanding increased $4.3 million, or 3.8% These increases in interest-bearing assets were offset by decreases in interest-bearing demand accounts with banks of $1.8 million and investments in certificates of deposits totaling $2.3 million. Non-interest bearing assets increased by $2.9 million. The most significant increase in non-interest bearing assets was for the purchase of a 22.53% interest in Independence Bancorp of New Albany, Indiana (Independence) for $2.0 million.

Securities available-for-sale increased $14.4 million or 83.2% at September 30, 2003 to $31.7 million compared to $17.3 million at September 30, 2002. The Company increased its investment in securities backed by U.S. Government agencies by a net $13.4 million, which was offset by the sale of mortgage derivative securities totaling $2.5 million. Securities held-to-maturity increased by a net $2.2 million. The Company purchased $5.0 million of U.S. Government agency-backed bonds and $4.7 million of municipal bonds during fiscal year 2003, which was offset by the maturity of $4.0 million of U.S. Government agency bonds and $3.6 million in municipal bonds.

Loans receivable, net increased $4.3 million or 3.8% at September 30, 2003 to $117.7 million compared to $113.4 million at September 30, 2002. The increase of $4.3 million was due to a net increase in loans of $13.0 million for Citizens offset by a net decrease of $8.7 million in loans for First Financial. The net increase in loans for Citizens was primarily related to an increase in commercial loans and loans secured by real estate and reflect their continued growth in their market area. The decrease in net loans for First Financial was due to less demand in their market area plus the refinancing of loans that were placed with other lending institutions.

On December 31, 2002, the Company purchased a 22.53% interest in Independence Bancorp of New Albany ("Independence"), located in New Albany, Indiana for $2.0 million. This investment is being accounted for using the equity method of accounting.

Total interest-bearing liabilities increased $22.4 million or 17.7% at September 30, 2003 to $149.5 million compared to $126.9 million at September 30, 2002. The increase in interest-bearing liabilities was due to an increase of $19.7 million in deposits, an increase of $5.0 million in subordinated preferred securities, offset by a $2.3 million decrease in borrowings from the Federal Home Loan Bank. Deposits for Citizens increased $11.1 million and deposits for First Financial increased by $8.6 million. These increases in deposits reflect the competitively priced product lines within the local market areas for First Financial and Citizens. In March of 2003, the Company capitalized a trust, the Harrodsburg Statutory Trust I for $155,000. The Trust in a private pooled transaction issued $5.0 million of fixed/floating rate trust preferred securities ("the Preferred Securities"). The Preferred Securities bear an initial fixed interest rate of 6.40% from March 26, 2003 until March 26, 2008. After March 26, 2008, the interest rate will adjust quarterly based on the three-month LIBOR rate, plus 315 basis points. The Preferred Securities mature in 30 years, but the Company may redeem them in whole or in part after March 26, 2008.

Stockholders' equity decreased by $1.3 million to $20.8 million at September 30, 2003 compared to $22.1 million at September 30, 2002. The Company completed a Dutch Tender offering on June 30, 2003, which resulted in the purchase of 111,038 shares of its common stock at a total cost of $1.9 million. The total cost of common shares purchased by the Company in fiscal 2003 was $2.0 million. Additional decreases to stockholders' equity included dividends declared of $718,000 and a decrease in the net unrealized appreciation on investment securities available-for-sale for $121,000, which were offset in part by net income of $1.3 million, plus and increase of $230,000 due to the release of ESOP shares during fiscal year 2003.

Average Balances, Interest, and Average Yields

Net interest income is affected by (i) the difference (interest rate spread) between rates of interest earned on interest-earning assets and rates of interest paid on interest-bearing liabilities and (ii) the relative amounts of interest-earning assets and interest-bearing liabilities. When interest-earning assets approximate or exceed interest-bearing liabilities, any positive interest rate spread will generate net interest income. Banks have traditionally used interest rate spreads as a measure of net interest income. Certificates of deposit constitute approximately 81.1% of the total deposits of the Banks at September 30, 2003 and generally pay higher rates of interest than core deposits. Certificates of deposits were 81.6% of total deposits at September 30, 2002. The emphasis on certificates of deposits may result in a higher average cost of deposits, which may adversely affect the interest rate spread. Another indication of an institution s net interest income is its net yield on interest-earning assets which is net interest income divided by average interest-earning assets. The following table sets forth certain information relating to the average interest-earning assets and interest-bearing liabilities of the Banks and reflects the average yield on assets and average cost of liabilities for the periods indicated. Such yields and costs are derived by dividing income or expense by the average monthly balance of assets or liabilities, respectively, for the periods presented. During the periods indicated, nonaccruing loans are included in the net loan category. Average balances are derived from month-end average balances. Management does not believe that the use of month-end average balances instead of average daily balances has caused any material difference in the information presented.

	Year Ended September 30, 2003 Average Balance	2003 Interest	2003 Average Yield/Cost	2002 Average Balance	2002 Interest	2002 Average Yield/Cost
Interest-earning assets:						
Loans receivable	$ 114,993	$ 7,737	6.73%	$ 109,011	$ 8,099	7.42%
Investment securities and other[1]	39,792	937	2.35%	29,215	638	2.18%
Total interest-earning assets	154,785	8,674	5.60%	138,226	8,737	6.32%
Non-interest earning assets	8,367			6,571		
Total assets	$ 163,152			$ 144,797		
Interest-bearing liabilities:						
Deposits	$ 133,551	4,092	3.06%	$ 115,540	4,632	4.01%
Borrowings	4,607	251	5.45%	3,625	109	3.01%
Total interest-bearing liabilities	138,158	4,343	3.14%	119,165	4,741	3.98%
Non-interest bearing liabilities:	2,615			1,691		
Total liabilities	140,773			120,856		
Minority interests	1,677			1,755		
Stockholders equity	20,702			22,186		
Total liabilities & stockholders equity	$ 163,152			$ 144,797		
Net interest income		$ 4,331			$ 3,996	
Interest rate spread [2]			2.46%			2.34%
Net yield on interest-earning assets[3]			2.80%			2.89%
Ratio of average interest-earning assets to average interest-bearing liabilities			118.09%			116.00%

Rate/Volume Analysis

The following table below sets forth certain information regarding changes in interest income and interest expense of the Banks for the periods indicated. For each category of interest-earning assets and interest-bearing liabilities, information is provided on changes attributable to (i) changes in volume (changes in average volume multiplied by old rate); (ii) changes in rates (changes in rate multiplied by old average volume); (iii) changes in rate-volume (changes in rate multiplied by the change in average volume). Average balances are derived from month-end balances. Management does not believe that the use of month-end balances instead of average daily balances has caused any material difference in the information presented.

[1] *Includes interest-bearing overnight deposits and term deposits with FHLB.*

[2] *Interest-rate spread represents the difference between the average yield on interest-earning assets cost of interest-bearing liabilities.*

[3] *Net yield on interest-bearing assets represents net interest income as a percentage of average interest-earning assets.*

	Year Ended September 30,			
	2003 vs. 2002			
	Increase (Decrease) Due to			
	Volume	Rate	Rate/ Volume	Net
	(In Thousands)			
Interest-earning assets:				
Loans receivable	$ 444	$ (763)	$ (43)	$ (362)
Investment securities[4]	230	50	19	299
Total	$ 674	$ (713)	$ (24)	$ (63)
Interest expense:				
Deposits	$ (722)	$ 1,098	$ 164	$ 540
Borrowings	(39)	88	(15)	(142)
Total	$ (761)	$ 1,010	$ 149	$ 398
Net change in interest income	$ (87)	$ 297	$ 125	$ 335

COMPARISON OF THE RESULTS OF OPERATIONS FOR THE YEARS ENDED SEPTEMBER 30, 2003 and 2002

Net Income

Net income increased by $637,000 or 92.2% for the year ended September 30, 2003 compared to the same period in 2002. Net interest income increased $774,000, non-interest income increased $448,000, and income tax expense decreased $805,000, which was offset by an increase in the provision for loan losses of $187,000, an increase of $427,000 in non-interest expense, plus an increase in the minority ownership's share of Citizens' operations totaling $337,000.

Net Interest Income

Net interest income increased $774,000 for the year ended September 30, 2003 to $4.3 million compared to $3.6 million for the same period in 2002. The increase in net interest income of $774,000 in the year ended September 30, 2003 compared to the same period in 2002 was due to a decrease in interest expense of $398,000, offset by a decrease in interest income of $63,000. Interest income in the 2003 period was $8.6 million with an average yield of 5.60% compared to $8.7 million with an average yield of 6.32% in the 2002 period. Interest expense in the 2003 period was $4.3 million with an average rate paid of 3.14% compared to $4.7 million with an average rate paid of 3.98% in the 2002 period.

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[4] *Includes interest-earning overnight deposits and term deposits with FHLB of Cincinnati.*

Interest Income

Interest income decreased $63,000 to $8.6 million, or 5.60% of average interest-earning assets for the year ended September 30, 2003 compared to $8.7 million, or 6.32% of average interest-earning assets for the same period in 2002. The decrease in interest income of $63,000 was due to the reduced yields earned in the year ended September 30, 2003 compared to the same period in 2002, offset in part by an increase in the average balance of interest-earning assets in 2003 compared to 2002. The average balance of interest-earning assets was $154.8 million for the year ended September 30, 2003 compared to $138.2 million for this same period in 2002.

Interest Expense

Interest expense decreased $398,000 to $4.3 million, or 3.14% of average interest-bearing liabilities for the year ended September 30, 2003 compared to $4.7 million, or 3.98% of average interest-bearing liabilities for the same period in 2002. The decrease in interest expense of $398,000 was due to the reduction in the rates paid on the average interest-bearing liabilities in the 2003 period compared to the same period in 2002, offset in part by an increase in the average balance of interest-bearing liabilities in 2003 compared to 2002. The average balance of interest-bearing liabilities was $138.2 million in the year ended September 30, 2003 compared to $119.2 million for the same period in 2002.

Provision for Loan Losses

The provision for loan losses is charged to operations to bring the total allowance for loan losses to a level that represents management's best estimate of the losses inherent in the portfolio based on:

- Historical experience;
- Volume;
- Type of lending conducted by the Banks;
- Industry standards;
- The level and status of past due and non-performing loans;
- The general economic conditions in the Bank's lending areas;
- Other factors affecting the collectibility of the loans in the portfolio.

For the year ended September 30, 2003, the provision for loan losses increased by $187,000 to $428,000 compared to $241,000 for the same period in 2002. The provision in 2003 of $428,000 was related to the continued growth of Citizens' loan portfolio, which increased by a net $13.0 million during the year ended September 30, 2003. The loan portfolio for First Financial decreased by a net $8.7 million in this same period.

The allowance for loan losses is maintained at a level that represents management's best estimates of losses in the loan portfolio at the balance sheet date. However, there can be no assurance that the allowance for losses will be adequate to cover losses, which may be realized in the future and that additional provisions for losses will not be required.

Non-Interest Income

Non-interest income was $934,000 and $486,000 for the year ended September 30, 2003 and 2002, respectively. The significant increases include a gain of $118,000 from the sale of premises and equipment related to the sale by First Financial of branch facilities, which had been replaced by new facilities in 2001, plus income of $156,520 recognized on the equity basis of accounting for the Company's interest in Independence Bancorp of New Albany.

Non-Interest Expense

Non-interest expense increased $427,000, or 12.9% to $3.7 million for the year ended September 30, 2003 compared to $3.3 million for the same period in 2002. Other non-interest expense increased $219,000 due to a $130,000 increase in legal and accounting expenses incurred in connection with the investment in Independence Bancorp of New Albany, Indiana and increased costs pertaining to compliance with normal regulatory filings, write-off of $30,000 in core deposit intangible assets related to the Independence investment and $59,000 in costs associated with the growth of Citizens.

Income Tax Expense

For the year ended September 30, 2003, the Company's income tax benefit totaled $311,000 compared to an income tax expense of $494,000 for the year ended September 30, 2002. The income tax benefit of $311,000 is due to the elimination of the allowance of approximately $537,680 placed on the tax benefit of the prior year net operating losses of Citizens, plus the recognition of approximately $86,000 in tax benefits for Citizen's net operating loss in fiscal year 2003. The income tax expense for fiscal year 2002 is higher than the maximum corporate tax rate of 34% due to the tax benefit of Citizen's net operating loss being fully reserved at September 30, 2002.

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 financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Crowe LLP

We have served as the Company's auditor since 2015.
Sherman Oaks, California
March 14, 2019

Table of Contents

RESONANT INC.
Consolidated Balance Sheets

	December 31, 2017	December 31, 2018
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$19,524,000	$4,394,000
Investments held-to-maturity	—	16,863,000
Accounts receivable	50,000	165,000
Prepaid expenses and other current assets	536,000	364,000
Restricted cash	100,000	—
TOTAL CURRENT ASSETS	20,210,000	21,786,000
PROPERTY AND EQUIPMENT		
Property and equipment	3,212,000	3,784,000
Less: Accumulated depreciation and amortization	(1,858,000)	(1,797,000)
PROPERTY AND EQUIPMENT, NET	1,354,000	1,987,000
NONCURRENT ASSETS		
Intangible assets, net	1,353,000	1,374,000
Restricted cash	—	211,000
Goodwill	824,000	817,000
Other assets	19,000	69,000
TOTAL NONCURRENT ASSETS	2,196,000	2,471,000
TOTAL ASSETS	$23,760,000	$26,244,000
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$708,000	$695,000
Accrued expenses	314,000	464,000
Accrued salaries and payroll related expenses	1,936,000	1,835,000
Deferred revenue	143,000	271,000
TOTAL CURRENT LIABILITIES	3,101,000	3,265,000
LONG-TERM LIABILITIES		
Deferred rent	10,000	81,000
Deferred income taxes	1,000	—
TOTAL LIABILITIES	3,112,000	3,346,000
Commitments and contingencies (Note 10)		
STOCKHOLDERS' EQUITY		
Common stock, $0.001 par value, 47,000,000 authorized and 19,511,276 outstanding as of December 31, 2017 and 27,391,290 outstanding as of December 31, 2018	20,000	27,000
Preferred stock, $0.001 par value, 3,000,000 shares authorized and none outstanding as of December 31, 2017 and December 31, 2018	—	—
Additional paid-in capital	88,447,000	115,450,000
Accumulated other comprehensive loss	(7,000)	(15,000)
Accumulated deficit	(67,812,000)	(92,564,000)
TOTAL STOCKHOLDERS' EQUITY	20,648,000	22,898,000
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$23,760,000	$26,244,000

See Notes to Consolidated Financial Statements

Table of Contents

RESONANT INC.
Consolidated Statements of Comprehensive Loss

	Year Ended December 31, 2017	Year Ended December 31, 2018
REVENUES	$653,000	$524,000
OPERATING EXPENSES		
Research and development	10,045,000	14,271,000
Sales, marketing and administration	9,644,000	11,546,000
TOTAL OPERATING EXPENSES	19,689,000	25,817,000
NET OPERATING LOSS	(19,036,000)	(25,293,000)
OTHER INCOME (EXPENSE)		
Interest and investment income	67,000	481,000
Warrant inducement expense	(2,688,000)	—
Other expense	(10,000)	(3,000)
TOTAL OTHER INCOME (EXPENSE)	(2,631,000)	478,000
LOSS BEFORE INCOME TAXES	(21,667,000)	(24,815,000)
Provision for (benefit from) income taxes	(14,000)	1,000
NET LOSS	$(21,653,000)	$(24,816,000)
Foreign currency translation adjustment, net of tax	$44,000	$(8,000)
COMPREHENSIVE LOSS	$(21,609,000)	$(24,824,000)
NET LOSS PER SHARE - BASIC AND DILUTED	$(1.44)	$(0.98)
Weighted average shares outstanding — basic and diluted	15,015,446	25,290,426

See Notes to Consolidated Financial Statements

40

Table of Contents

RESONANT INC.

Consolidated Statements of Stockholders’ Equity

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders’ Equity
	Shares	Amount				
Balance, January 1, 2017	12,468,647	$12,000	$56,331,000	$(46,159,000)	(51,000)	$10,133,000
Vesting of restricted stock units	649,359	1,000	(1,000)	—	—	—
Stock-based compensation	—	—	4,136,000	—	—	4,136,000
Sale of common stock, net of offering costs	3,603,817	4,000	15,946,000	—	—	15,950,000
Exercises of warrants, cashless	147,847	—	—	—	—	—
Exercises of warrants	2,608,678	3,000	11,957,000	—	—	11,960,000
Exercises of stock options, cashless	3,758	—	—	—	—	—
Exercises of stock options	29,170	—	78,000	—	—	78,000
Net loss	—	—	—	(21,653,000)	—	(21,653,000)
Foreign currency translation adjustment, net of tax	—	—	—	—	44,000	44,000
Balance, December 31, 2017	19,511,276	20,000	88,447,000	(67,812,000)	(7,000)	20,648,000
Cumulative effect due to adoption of new accounting standard, net of tax	—	—	—	64,000	—	64,000
Vesting of restricted stock units	1,051,939	1,000	—	—	—	1,000
Stock-based compensation	—	—	5,698,000	—	—	5,698,000
Sale of common stock, net of offering costs	6,571,428	6,000	21,183,000	—	—	21,189,000
Exercises of warrants	89,142	—	260,000	—	—	260,000
Common stock issued in exchange for warrants	242,913	—	—	—	—	—
Exercises of stock options	4,692	—	14,000	—	—	14,000
Repurchase and retirement of common stock	(80,100)	—	(152,000)	—	—	(152,000)
Net loss	—	—	—	(24,816,000)	—	(24,816,000)
Foreign currency translation adjustment, net of tax	—	—	—	—	(8,000)	(8,000)
Balance, December 31, 2018	27,391,290	$27,000	$115,450,000	$(92,564,000)	$ (15,000)	$22,898,000

See Notes to Consolidated Financial Statements

Table of Contents
RESONANT INC.
Consolidated Statements of Cash Flows

	Year Ended December 31, 2017	Year Ended December 31, 2018
CASH FLOWS FROM OPERATING ACTIVITIES		
Net loss	$(21,653,000)	$(24,816,000)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	721,000	840,000
Stock-based compensation	4,121,000	5,262,000
Non-cash warrant inducement expense	2,688,000	—
Non-cash interest and investment income	—	(153,000)
Non-cash patent write-off	—	96,000
(Gain) loss on sale of property and equipment	2,000	(7,000)
Changes in assets and liabilities:		
Accounts receivable	6,000	(115,000)
Prepaids and other current assets	(376,000)	239,000
Other assets	(3,000)	(50,000)
Deferred taxes	(14,000)	(1,000)
Accounts payable	(143,000)	107,000
Accrued expenses	163,000	(66,000)
Accrued salaries and payroll related expenses	208,000	334,000
Deferred revenue	(184,000)	128,000
Deferred rent	(10,000)	71,000
Net cash used in operating activities	(14,474,000)	(18,131,000)
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from sale of property and equipment	7,000	16,000
Purchases of property and equipment	(815,000)	(1,285,000)
Expenditures for patents and domain names	(332,000)	(219,000)
Redemptions of investments held-to-maturity	4,747,000	39,590,000
Purchases of investments held-to-maturity	—	(56,300,000)
Net cash provided by (used in) investing activities	3,607,000	(18,198,000)
CASH FLOWS FROM FINANCING ACTIVITIES		
Net proceeds from the sale of common stock from private placement offerings	15,950,000	—
Net proceeds from the sale of common stock from underwritten public offering	—	21,190,000
Acquisition of common stock under Repurchase Program	—	(152,000)
Proceeds from exercises of warrants	9,272,000	260,000
Proceeds from exercises of stock options	78,000	14,000
Net cash provided by financing activities	25,300,000	21,312,000
Effects of currency translation on cash, cash equivalents and restricted cash	7,000	(2,000)
NET INCREASE IN CASH, CASH EQUIVALENTS AND RESTRICTED CASH	14,440,000	(15,019,000)
CASH, CASH EQUIVALENTS AND RESTRICTED CASH — Beginning of year	5,184,000	19,624,000
CASH, CASH EQUIVALENTS AND RESTRICTED CASH — End of year	$19,624,000	$4,605,000
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION		
Cash paid for taxes	$1,000	$3,000
SUPPLEMENTAL DISCLOSURE OF NON-CASH ACTIVITIES		
Common stock issued in settlement of accrued salaries and payroll related expenses	$119,000	$436,000
Stock options issued in settlement of liability	$332,000	$—

Property and equipment included in accounts payable	$245,000	$95,000
Property and equipment included in accrued liabilities	$95,000	$305,000
Patents included in accounts payable	$9,000	$39,000
Patents included in accrued liabilities	$—	$6,000

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the Consolidated Balance Sheets to the total of the same such amounts shown above:

	December 31,	
	2017	2018
Cash and cash equivalents	$19,524,000	$4,394,000
Restricted cash	100,000	211,000
Total cash, cash equivalents and restricted cash	$19,624,000	$4,605,000

See Notes to Consolidated Financial Statements

Table of Contents

RESONANT INC.
Notes to Consolidated Financial Statements

NOTE 1—ORGANIZATION AND DESCRIPTION OF BUSINESS
Overview
Resonant Inc. is a late-stage development company located in Goleta, California. We were incorporated in Delaware in January 2012 as a wholly owned subsidiary of Superconductor Technologies Inc., or STI. Resonant LLC, a limited liability company, was formed in California in May 2012. We changed our form of ownership from a limited liability company to a corporation in an exchange transaction in June 2013, when we commenced business. We are the successor of Resonant LLC. We completed our initial public offering, or IPO, on May 29, 2014. On July 6, 2016 we acquired all of the issued and outstanding capital stock of GVR Trade S.A, or GVR. GVR is a wholly owned subsidiary of Resonant Inc.
We have created an innovative software, intellectual property, or IP, and services platform that has the ability to increase designer efficiency, reduce the time to market and lower unit costs in the designs of filters for radio frequency, or RF, front-ends for the mobile device industry. The RF front-end, or RFFE, is the circuitry in a mobile device responsible for analog signal processing and is located between the device's antenna and its digital circuitry. The software platform we continue to develop is based on fundamentally new technology that we call Infinite Synthesized Networks®, or ISN®, to configure and connect resonators, the building blocks of RF filters. Filters are a critical component of the RF front-end used to select desired radio frequency signals and reject unwanted signals. We believe licensing our designs is the most direct and effective means of validating our ISN® platform and related IP libraries. Our target customers make part or all of the RFFE. We intend to retain ownership of our designs, and we expect to be compensated through license fees and royalties based on sales of RFFE filters that incorporate our designs.
Capital Resources and Liquidity
We are using the net proceeds from the sale of our common stock for product development to commercialize our technology, research and development, the development of our patent strategy and expansion of our patent portfolio, as well as for working capital and other general corporate purposes.
We have earned minimal revenues since inception, and our operations have been funded with initial capital contributions and proceeds from the sale of equity securities and debt. At December 31, 2017 and December 31, 2018, we had incurred accumulated losses totaling $67.8 million and $92.6 million, respectively. The losses are primarily the result of research and development costs associated with commercializing our technology, combined with start-up, financing and public company costs. We expect to continue to incur substantial costs as we continue to engage customers, increase the number of devices under design and build the infrastructure to support our anticipated growth.
Our consolidated financial statements account for the continuation of our business as a going concern. We are subject to the risks and uncertainties associated with a new business. Our principal sources of liquidity as of December 31, 2018 consist of existing cash, cash equivalents and investments totaling $21.3 million. During the year ended December 31, 2018, we used $19.6 million of cash and investments for operating activities, the purchase of property and equipment, and expenditures for patents. Due to these conditions, along with anticipated growth, substantial doubt exists as to our ability to continue as a going concern. After evaluation of these conditions, we believe our current resources, in the absence of material revenues, will provide sufficient funding for planned operations into the second half of 2019. If necessary, we will seek to raise additional capital from the sale of equity securities or the incurrence of indebtedness to allow us to continue operations. There can be no assurance that additional financing will be available to us on acceptable terms, or at all. Additionally, if we issue additional equity securities to raise funds, whether to existing investors or others, the ownership percentage of our existing stockholders would be reduced. New investors may demand rights, preferences or privileges senior to those of existing holders of common stock. Additionally, we may be limited as to the amount of funds we can raise pursuant to SEC rules and the continued listing requirements of NASDAQ. If we cannot raise needed funds, we might be forced to make substantial reductions in our operating expenses, which could adversely affect our ability to implement our business plan and ultimately our viability as a

company. These consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts and classification of liabilities that might result from this uncertainty.

We have a Form S-3 universal shelf registration statement on file with the SEC. The universal shelf registration statement on Form S-3 permits us to sell, in one or more public offerings, shares of our common stock, shares of preferred stock or debt securities, or any combination of such securities and warrants to purchase securities, for proceeds in an aggregate amount of up to $50.0 million, subject to potential limitations on the amount of securities we may sell in any twelve-month period. The Form S-3 will expire in November 2021. No securities have been issued pursuant to the registration statement.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Use of Estimates—The accompanying financial statements have been prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. In the opinion of management, all adjustments (consisting of normal accruals) considered for a fair presentation have been included. Significant estimates made in preparing these financial statements include (a) assumptions to calculate the fair values of financial instruments, warrants and equity instruments and other liabilities and the deferred tax asset valuation allowance and (b) the useful lives for depreciable and amortizable assets. Actual results could differ from those estimates. In the opinion of management, all adjustments, including normal recurring accruals considered necessary for a fair presentation, have been included.

Consolidation - The accompanying financial statements include the accounts of the Company and its wholly-owned subsidiary, GVR. All significant intercompany balances and transactions have been eliminated.

Cash and Cash Equivalents—We consider all liquid instruments purchased with a maturity of three months or less to be cash equivalents.

Concentration of Credit Risk—We maintain bank accounts at one U.S. financial institution. The U.S. bank accounts are insured by the Federal Deposit Insurance Corporation (FDIC) for up to $250,000 per account owner. GVR, our wholly owned Swiss-based subsidiary maintains checking accounts at one major national financial institution. Additionally, we maintain a checking account with a very minimal balance at one bank in South Korea, which is used to fund payroll and rent in South Korea. Management believes we are not exposed to significant credit risk due to the financial position of the depository institutions in which our deposits are held.

Restricted Cash—Restricted cash at December 31, 2017 represented cash held within a certificate of deposit with a financial institution. The certificate of deposit served as collateral for our corporate credit card program, which was terminated in 2018. The restriction was lifted upon termination of the program. As of December 31, 2018 our restricted cash balance consists of a $211,000 pledged mutual fund account which is held as collateral against a letter of credit issued in May 2018 in connection with the lease of our corporate headquarters. Effective January 1, 2018, we adopted ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash, which requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Consequently, restricted cash is included in the beginning and ending cash balances on the statement of cash flows. See also Note 10- Commitments and Contingencies, for further details.

Investments—Securities held-to-maturity: Management determines the appropriate classification of debt securities at the time of purchase and reevaluates such designation as of each balance sheet date. Investment/debt securities are classified as held-to-maturity when we have the positive intent and ability to hold the securities to maturity. Held-to-maturity securities are stated at amortized cost, adjusted for amortization of premiums and accretion of discounts to maturity computed under the effective interest method. Such amortization is included in investment income. Interest on securities classified as held-to-maturity is included in interest and investment income.

When the fair value of an investment instrument classified as held-to-maturity is less than its amortized cost, management assesses whether or not: (i) we have the intent to sell the instrument or (ii) it is more likely than not that we will be required to sell the instrument before its anticipated recovery. If either of these conditions is met, we must recognize an other-than-temporary impairment for the difference between the instrument's amortized cost basis and its fair value, and include such amounts in other income (expense).

For investment instruments that do not meet the above criteria and are not expected to be recovered at the amortized cost basis, the instrument is considered other-than-temporarily impaired. For these instruments, we separate the total impairment into the credit loss component and the amount of the loss related to other factors. In order to determine the amount of the credit loss, we calculate the recovery value by performing a discounted cash flow analysis based on the current cash flows and future cash flows management expects to recover. The discount rate is the effective interest rate implicit in the underlying instrument. The amount of the total other-than-temporary impairment related to credit loss is recognized in earnings and is included in other income (expense). The amount of the total other-than-temporary impairment related to other factors is recognized in other comprehensive income. For investment instruments that have other-than-temporary impairment recognized through earnings, if through subsequent evaluation there is a significant increase in the cash flow expected, the difference between the amortized cost basis and the cash flows expected to be collected is accreted as interest income.

Fair Value of Financial Instruments—We measure certain financial assets and liabilities at fair value based on the exchange price that would be received for an asset or paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. The carrying amounts of our financial instruments, including cash equivalents, restricted cash, investments held-to-maturity, accounts payable, and accrued liabilities, approximate fair value due to their short maturities.
Accounts Receivable—Trade accounts receivable are stated net of allowances for doubtful accounts. Management estimates the allowance for doubtful accounts based on review and analysis of specific customer balances that may not be collectible, customer payment history and any other customer-specific information that may impact collectability of the receivable. Accounts are considered for write-off when they become past due and when it is determined that the probability of collection is remote. The was no allowance for doubtful accounts at December 31, 2017 and December 31, 2018.
Property and Equipment—Property and equipment consists of leasehold improvements associated with our corporate offices, software purchased during the normal course of business, equipment and office furniture and fixtures, all of which are recorded at cost. Depreciation and amortization is recorded using the straight-line method over the respective useful lives of the assets ranging from three to five years. Leasehold improvements are amortized over the shorter of lease term or useful life. Long-lived assets are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.
Intangible Assets, net—Intangible assets are recorded at cost and amortized over the useful life. In the case of business combinations, intangible assets are recorded at fair value. At December 31, 2017 and December 31, 2018, intangible assets, net, includes patents, domain name and other intangibles purchased from GVR, including customer relationships, technology and trademark. Intangible assets are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable. In certain cases, patents may expire or are abandoned as we no longer plan to pursue them. In such cases we write off the capitalized patent costs as patent abandonment costs which are included in research and development expenses.
Goodwill—At December 31, 2017 and December 31, 2018, goodwill represents the difference between the price paid to acquire GVR and the fair value of the assets acquired, net of assumed liabilities. We review goodwill for impairment annually and whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.
Revenue Recognition—As of January 1, 2018, we recognize revenue in accordance with Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 606, Revenue from Contracts with Customers.

Revenue is recognized upon the transfer of control of promised goods or services to the customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. Revenue consists primarily of upfront non-refundable fees received in connection with filter design projects with customers and royalties. Our performance obligation is to design a licensable filter in accordance with customer specifications. The license of the completed design is considered part of this performance obligation as the design and licensing of the filter are highly interdependent. We recognize revenue over the course of the design development phase as our customers are able to benefit from our design services as they are provided, primarily by marketing the in-process design to their customers. We recognize revenue from our design services based on efforts expended to date. At the end of each reporting period, we reassess our measure of progress and adjust revenue when appropriate.

In most cases, upfront non-refundable payments are recognized over a period of 12 to 18 months. Contracts generally include upfront non-refundable fees, intended to support our initial engineering product development efforts, and may include milestone payments based upon the successful completion of certain deliverables. Milestone payments represent variable consideration, and we use the "most likely amount" approach to determine the amount we ultimately expect to receive. At contract inception, we assess the likelihood of achieving milestones to estimate the total consideration we believe we will receive for our services. Our design service contracts also include a functional license over the completed design, which enables our customer to use our design in products marketed to their customers. We also earn royalties for each product shipped by our customer that incorporates one of our designs.

Royalty fees are recorded upon shipment by our customer, and payment is generally due within 30 days.
We record the expenses related to these projects in the periods incurred and they are generally included in research and development expense.
Research and Development—Costs and expenses that can be clearly identified as research and development are charged to expense as incurred in accordance with ASC Topic 730-10, Research and Development.

45

Operating Leases—We lease office space and research facilities under operating leases. Certain lease agreements contain free or escalating rent payment provisions. We recognize rent expense under such leases on a straight-line basis over the term of the lease. Lease renewal periods are considered on a lease-by-lease basis in determining the lease term.

Stock-Based Compensation—We account for employee stock options in accordance with ASC Topic 718, Compensation-Stock Compensation. For stock options issued to employees and directors we use the Black-Scholes option valuation model for estimating fair value at the date of grant. For stock options issued for services rendered by non-employees, we recognize compensation expense in accordance with the requirements of ASC Topic 505-50, Equity, or ASC 505-50, as amended. Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the vesting period. At the end of each financial reporting period prior to performance, the value of these options, as calculated using the Black-Scholes option valuation model, is determined, and compensation expense recognized or recovered during the period is adjusted accordingly. Since the fair market value of options granted to non-employees is subject to change in the future, the amount of the future compensation expense is subject to adjustment until the common stock options are fully vested.

We account for restricted stock units issued to employees at fair value, based on the market price of our stock on the date of grant, net of estimated forfeitures. Compensation expense is recognized for the portion of the award that is ultimately expected to vest over the period during which the recipient renders the required services to the Company generally using the straight-line single option method. The fair value of non-employee restricted stock units awarded are remeasured as the awards vest, and the resulting increase or decrease in fair value, if any, is recognized as an increase or decrease to compensation expense in the period the related services are rendered.

In the case of award modifications, we account for the modification in accordance with ASU No. 2017-09, Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting, whereby we recognize the effect of the modification in the period the award is modified.

Stock-based compensation expense is included in research and development expenses and sales, marketing and administration expenses.

Earnings Per Share, or EPS—EPS is computed in accordance with ASC Topic 260, Earnings per Share, and is calculated using the weighted average number of common shares outstanding during each period. Diluted EPS assumes the conversion, exercise or issuance of all potential common stock equivalents unless the effect is to reduce a loss or increase the income per share. Potential common shares consist of the incremental common shares issuable upon the exercise of stock options (using the treasury stock method), the exercise of warrants (using the if-converted method) and the vesting of restricted stock unit awards.

Income Taxes—We account for income taxes in accordance with ASC Topic 740, Income Taxes, or ASC 740, which requires the recognition of deferred tax assets and liabilities for the future consequences of events that have been recognized in our consolidated financial statements or tax returns. The measurement of the deferred items is based on enacted tax laws. In the event the future consequences of differences between financial reporting bases and the tax bases of our assets and liabilities result in a deferred tax asset, ASC 740 requires an evaluation of the probability of being able to realize the future benefits indicated by such asset. A valuation allowance related to a deferred tax asset is recorded when it is more likely than not that some portion or the entire deferred tax asset will not be realized. As part of the process of preparing our consolidated financial statements, we are required to estimate our income tax expense in each of the jurisdictions in which we operate. We also assess temporary differences resulting from differing treatment of items for tax and accounting differences. We record a valuation allowance to reduce the deferred tax assets to the amount of future tax benefit that is more likely than not to be realized. For the period when we were organized as a limited liability company, we were treated as a partnership for federal and state income tax purposes under the entity classification domestic default rules. As of December 31, 2017 and December 31, 2018, no liability for unrecognized tax benefits was required to be reported. We recognize interest and penalties related to income tax matters in income taxes, and there were none for the years ended December 31, 2017 and December 31, 2018, respectively.

We have filed, or are in the process of filing, tax returns that are subject to audit by the respective tax authorities. Although the ultimate outcome is unknown, we believe that any adjustments that may result from tax return audits are not likely to have a material, adverse effect on our consolidated results of operations, financial position or cash flows.

Business Combinations—We record business combinations using the acquisition method of accounting and, accordingly, allocate the fair value of purchase consideration to the assets acquired and liabilities assumed based on their fair values at the acquisition date. The excess of the fair value of the purchase consideration over the fair value of the assets acquired and liabilities assumed is recorded as goodwill. The results of operations of the business acquired are included in our consolidated results of operations beginning on the date of acquisition.

Foreign Currency Translation—The Swiss Franc has been determined to be the functional currency for the net assets of our Swiss-based subsidiary. We translate the assets and liabilities to U.S. dollars at each reporting period using exchange rates in effect at the balance sheet date and record the effects of the foreign currency translation in accumulated other comprehensive income (loss) in shareholders' equity. We translate the income and expenses to U.S. dollars at each reporting period using the average exchange rate in effect for the period and record the effects of the foreign currency translation as other comprehensive income (loss) in the consolidated statements of comprehensive loss. Gains and losses resulting from foreign currency transactions are included in net loss in the consolidated statements of comprehensive loss.

Recent Accounting Pronouncements

Leases—In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), a comprehensive new leases standard that amends various aspects of existing accounting guidance for leases. It will require recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. The main difference between previous U.S. GAAP and the amended standard is the recognition of lease assets and lease liabilities by lessees on the balance sheet for those leases classified as operating leases under previous U.S. GAAP. The accounting applied by a lessor is largely unchanged from that applied under previous U.S. GAAP. As a result, we will have to recognize a liability to make lease payments (the lease liability) and a right-of-use asset representing our right to use the underlying asset for the lease term on the balance sheet. In July 2018, the FASB issued ASU 2018-10, Codification Improvements to Topic 842, Leases, which provides clarity to certain narrow aspects of the new standard and ASU 2018-11, Leases (Topic 842): Targeted Improvements, which provides an optional transition method for adopting the new leases guidance that eliminates comparative period reporting under the new guidance in the year of adoption. The guidance is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. We plan to adopt the standard, as well as the practical expedients included therein, utilizing the optional transition method as of January 1, 2019. Therefore, we will not restate comparative periods in our 2019 financial statements. We have reviewed our leases and other agreements in order to determine the effects of the new guidance on our consolidated financial statements. We have determined that we have two facility leases that meet the criteria for recognition of lease assets and lease liabilities on the balance sheet under the new guidance. We are not party to any leases for which we are the lessor. We believe the adoption will cause us to recognize approximately $3.0 million in each, right-of-use assets and lease liabilities, in our consolidated financial statements.

Intangibles-Goodwill and Other—In January 2017, the FASB issued ASU No. 2017-04, Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment, which simplifies the accounting for goodwill impairments by eliminating step 2 from the goodwill impairment test. The amended guidance will become effective for us commencing in the first quarter of fiscal 2019. We plan to adopt the standard as of January 1, 2019 and we do not believe there will be any material impact to our consolidated financial statements.

Compensation-Stock Compensation—In June 2018, the FASB issued ASU No. 2018-07, Compensation-Stock Compensation (Topic 718): Improvements to Non-employee Share-Based Payment Accounting, which intends to align the accounting of share-based payment awards issued to employees and non-employees. This update will be effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2018. Early adoption is permitted. We plan to adopt the standard as of January 1, 2019 and we do not believe there will be any material impact to our consolidated financial statements as we have very few share-based payment arrangements with non-employees.

NOTE 3—REVENUE RECOGNITION

On January 1, 2018, we adopted ASC Topic 606, Revenue from Contracts with Customers, and all of the related amendments and applied it to all contracts using the modified retrospective method. We recognized the cumulative effect of the initial adoption as an adjustment to the opening balance of retained earnings. Comparative financial information has not been restated and continues to be reported under the accounting standards in effect for those periods.

The adoption of the guidance resulted in a change in the accounting for milestone payments. Previously, we recognized revenue upon the achievement of a milestone. Under ASC Topic 606, milestone payments are treated as variable consideration and included in the transaction price for our design services. The cumulative effect of the changes made to our consolidated balance sheet as of January 1, 2018 for the adoption of the new standard was as follows:

BALANCE SHEET	Balance as of December 31, 2017	Adjustments Due to ASC 606	Balance as of January 1, 2018
ASSETS			
Prepaid expenses and other current assets	$536,000	$ 67,000	$603,000
LIABILITIES AND STOCKHOLDERS' EQUITY			
Deferred revenue, current	$143,000	$ 3,000	$146,000
Accumulated deficit	$(67,812,000)	$ 64,000	$(67,748,000)

The following table summarizes the impact of the adoption on our Consolidated Balance Sheet and Consolidated Statement of Comprehensive Loss as of and for the year ended December 31, 2018:

BALANCE SHEET	As of December 31, 2018		
	As Reported	Balances Without Adoption of ASC 606	Effect of Change Increase/(Decrease)
ASSETS			
Prepaid expenses and other current assets	$364,000	$364,000	$ —
LIABILITIES AND STOCKHOLDERS' EQUITY			
Deferred revenue, current	$271,000	$264,000	$ 7,000
Accumulated deficit	$(92,564,000)	$(92,557,000)	$ (7,000)

STATEMENT OF COMPREHENSIVE LOSS	Year Ended December 31, 2018		
	As Reported	Activity Without Adoption of ASC 606	Effect of Change Increase/(Decrease)
Revenue	$524,000	$595,000	$ (71,000)
Net loss	$(24,816,000)	$(24,745,000)	$ 71,000

Our contracts with customers primarily relate to the design of filters for radio frequency, or RF, front-ends for the mobile device industry. Design service contracts generally include a modest upfront payment for the design services and a license over the completed design. We retain ownership of our designs, and therefore are also compensated for our design services through royalties based on sales of RFFE filters that incorporate our designs. We currently do not manufacture or sell any physical products or operate as a contract design company developing designs for a fee. Except for the royalty fees that are recognized as revenue upon use of one of our designs, we recognize revenue related to our design services over the estimated design development period, based on the level of effort expended, as the services are performed, which in most cases is 12 to 18 months but can vary depending upon the difficulty of the design.

Other Judgments and Assumptions - We apply the practical expedients available in ASC 606 to not disclose information about 1) remaining performance obligations that have original expected durations of one year or less and 2) variable consideration that is a sales-based or usage-based royalty.

Royalty Revenue - Upon completion of design services, our customers retain a license over the completed design. The license will typically last for a minimum of two years, and in many cases for the life of the design. Royalties are sales-based, and we recognize royalty revenue upon shipment, by our customer, of products that include our licensed design.

Contract Assets - Contract assets, other than accounts receivable, consist of unbilled revenue and generally arise when revenue is recognized on a contract whose transaction price includes an estimate of variable consideration from milestone payments. We do not have material amounts of contract assets as we have relatively few contracts, only modest design service fees and a small number of contracts containing milestone payments. Contract asset balances are included in Prepaid expenses and other current assets in our Consolidated Balance Sheet.

Contract Liabilities - Our contract liabilities consist of customer deposits and deferred revenue. We classify contract liabilities as current or noncurrent based on the timing of when we expect to recognize revenue. Generally, our contract liabilities are expected to be recognized in one year or less. Customer deposits and deferred revenue are separately stated in our Consolidated Balance Sheet.

Summary of changes in contract assets and liabilities for the period from January 1, 2018 to December 31, 2018:

Contract assets	
Contract assets, January 1, 2018	$67,000
Contract assets at beginning of year transferred to accounts receivable	(43,000)
Reversal of contract assets due to changes in transaction price	(24,000)
Contract assets recorded on contracts during the period	36,000
Contract assets, December 31, 2018	$36,000
Contract liabilities	
Contract liabilities, January 1, 2018	$146,000
Recognition of revenue included in beginning of year contract liabilities	(138,000)
Contract liabilities, net of revenue recognized on contracts during the period	263,000
Contract liabilities, December 31, 2018	$271,000

The following table presents our disaggregated revenue by geographic region and source:

	Year Ended December 31,	
	2017	2018
Revenue by geographic region:		
United States	$574,000	$447,000
Switzerland	79,000	77,000
Total revenue	$653,000	$524,000
Revenue by source:		
Design services	$613,000	$365,000
Royalties	40,000	159,000
Total revenue	$653,000	$524,000

NOTE 4—INVESTMENTS HELD-TO-MATURITY

We classify investments as held-to-maturity when we have the positive intent and ability to hold the securities to maturity.

During 2017, we invested in commercial papers and certificates of deposit that were classified as investments held-to-maturity. As of December 31, 2017, all of our investments held-to-maturity had matured and we had no investments classified as held-to-maturity.

During 2018, we invested in U.S. Treasury bills, commercial papers and a certificate of deposit that were classified as investments held-to-maturity. As of December 31, 2018, both amortized cost value and fair value were $16.9 million with zero unrealized gain or loss. U.S. Treasury bills totaling $25.0 million matured in April 2018 and certain commercial papers totaling $14.6 million matured during the year ended December 31, 2018. Remaining commercial papers totaling $16.9 million mature in January 2019, and the certificate of deposit for $100,000 matures in January 2019. We did not recognize an other-than-temporary impairment or a comprehensive gain or loss for the year ended December 31, 2018.

49

We recorded interest and investment income of $67,000 and $481,000 for the years ended December 31, 2017 and 2018, respectively, associated with our cash and investment accounts.

NOTE 5—PROPERTY AND EQUIPMENT, NET

Property and equipment, net, consists of the following:

	As of December 31, 2017	As of December 31, 2018
Cost:		
Computers, peripheral and scientific equipment	$1,016,000	$1,350,000
Software	1,367,000	1,749,000
Leasehold improvements	502,000	294,000
Office furniture and equipment	327,000	391,000
	3,212,000	3,784,000
Less: Accumulated depreciation and amortization	(1,858,000)	(1,797,000)
Property and equipment, net	$1,354,000	$1,987,000

Depreciation for the years ended December 31, 2017 and December 31, 2018 was $595,000 and $704,000, respectively. Cost basis of assets disposed for the years ended December 31, 2017 and December 31, 2018 was $21,000 and $773,000, respectively. The disposals in 2018 were primarily a result of relocating our corporate offices and writing off the fully amortized leasehold improvements related to our former office.

NOTE 6—INTANGIBLE ASSETS, NET, AND GOODWILL

Intangible assets include patents, domain name and other intangibles purchased from GVR, including customer relationships, technology and a trademark. Certain patents were acquired from STI as a result of an asset contribution and were recorded at their carryover basis. The fair value of the patents remained substantially the same as their carrying value at the exchange date. In addition, we acquired other patents and the domain name www.resonant.com through the normal course of business. Intangibles acquired as part of the purchase of GVR were initially recorded at their fair value. Issued patents are amortized over their approximate useful life of 17 years, or 20 years in the case of new patents, once they are approved by their respective regulatory agency. For the patents acquired from STI, we are amortizing them over the remaining useful life of 1 to 11 years as of December 31, 2018. The domain name is amortized over the approximate useful life of 10 years. The other intangibles acquired from GVR are amortized over their useful life of three to five years.

Intangible assets, net, consists of the following:

	As of December 31, 2017	As of December 31, 2018
Cost:		
Patents	$1,349,000	$1,507,000
Domain name	22,000	22,000
Client Base (1)	143,000	142,000
Trademark (1)	17,000	17,000
Backlog (1)	13,000	13,000
Technology	77,000	77,000
	1,621,000	1,778,000
Less: Accumulated amortization	(268,000)	(404,000)
Intangible assets, net	$1,353,000	$1,374,000

(1) Includes the impact of foreign currency translation. The total impact at December 31, 2017 was $2,000 and the total impact at December 31, 2018 was $1,000.

During the year ended December 31, 2017 and 2018, we wrote-off $8,000 and $96,000, respectively, of patents we are no longer pursuing. The write-offs are included in research and development expense. There were no impairments to any other intangibles.
Amortization of intangible assets was $126,000 and $136,000 for the years ended December 31, 2017 and 2018, respectively. The following table summarizes the estimated amortization expense relating to the intangible assets as of December 31, 2018:

Years ending December 31,	
2019	$112,000
2020	85,000
2021	76,000
2022	65,000
2023	63,000
2024 and thereafter	466,000
Total amortization expense	$867,000

Goodwill represents the excess of the purchase price over the fair value of the net assets acquired from GVR Trade. Goodwill is not amortized, but is subject to impairment tests on at least an annual basis and whenever circumstances suggest that goodwill may be impaired.

The following table summarizes goodwill arising from the acquisition of GVR Trade:

	Goodwill
Balance at January 1, 2017	$789,000
Effect of currency translation	35,000
Balance at December 31, 2017	$824,000
Effect of currency translation	(7,000)
Balance at December 31, 2018	$817,000

NOTE 7—WARRANTS
From time to time, we have issued warrants to purchase shares of common stock. These warrants have been issued in connection with financing transactions and for consulting services. Our warrants are subject to standard anti-dilution provisions applicable to shares of our common stock.

Bridge Warrants
In connection with and as an inducement to make the bridge loans in January and March 2013, Resonant LLC issued to each of our three founders 5-year warrants to purchase Class B units of Resonant LLC at an exercise price of $0.40 per unit, which we refer to as the Bridge Warrants. The Bridge Warrants were issued in two tranches, at the same time the bridge loan was funded, with each founder receiving warrants for 20,833 Class B units on each of January 31, 2013 (for a total of 62,499 Class B units) and March 19, 2013 (for a total of 62,499 Class B units). The founders paid an aggregate of $1,000 in cash for the Bridge Warrants.
On June 17, 2013, in connection with our acquisition of all of the outstanding membership interests of Resonant LLC in an exchange transaction, the founders exchanged their Bridge Warrants to purchase an aggregate of 124,998 Class B units of Resonant LLC for Bridge Warrants to purchase an aggregate of 249,999 shares of our common stock at an exercise price of $0.20 per share. All other terms of the Bridge Warrants remained the same.
In January 2018, we entered into an agreement with our founders to exchange all of the warrants for an amount of shares that would equal the number of shares they would have received if exercised under a cashless exercise. The effect of exchanging the warrants for shares of our common stock was considered a modification of the award which required us to record expense for the excess of the fair value of the common stock issued over the fair value of the exchanged warrants. On the date of the exchange the fair value of the warrants was determined to be $1.6 million and the fair value of the shares of

common stock issued were $1.6 million. There was a difference in fair value of $2,000 which was recorded to sales, marketing and administration expenses during the year ended December 31, 2018.

Consulting Warrant, Financing Warrant and Underwriting Warrant

Upon consummation of our Senior Convertible Note financing in June 2013, we issued warrants for business consulting services provided by MDB Capital Group, LLC, or MDB. We issued a 7-year warrant to purchase 222,222 shares of our common stock at an exercise price of $0.01 per share, which we refer to as the Consulting Warrant. The Consulting Warrant is exercisable six months after the completion of our initial public offering, or IPO, in 2014 and expires June 17, 2020.

In addition, for placement agent services provided by MDB in connection with our Senior Convertible Note financing, we issued to MDB a 7-year warrant to purchase 208,763 shares of our common stock at an exercise price of $3.35 per share, which we refer to as the Financing Warrant. The Financing Warrant is exercisable six months after the completion of our IPO and expires June 17, 2020.

In connection with the closing of our IPO, we also issued a third warrant to MDB related to their role as the sole underwriter for our IPO, which we refer to as the Underwriting Warrant. We issued them a 5-year warrant to purchase 310,500 shares of common stock at an exercise price of $7.50 per share. The warrant was not exercisable until November 24, 2014 (180-days from the date of the underwriting agreement) and expires May 28, 2019.

Investor Relations Warrant

In August 2014 and October 2014, we entered into agreements with our investor relations firm, or IR Firm, and an IR consultant to provide us with investor relations services. Pursuant to the IR Firm agreement, in addition to monthly cash compensation, we issued to the IR Firm a 3-year consulting warrant, or IR Consulting Warrant, for the purchase of 42,000 shares of common stock that became fully vested on July 21, 2015. The IR Consulting Warrant had an exercise price of $8.31 and expired, unexercised, on July 17, 2017.

Pursuant to our agreement with the IR consultant, in addition to monthly cash compensation, we issued to the IR consultant a 4-year consulting warrant, or IR Warrant, for the purchase of 6,000 shares of common stock that became fully vested on September of 2015. The IR Warrant had an exercise price of $6.50 and expired on September 30, 2018.

There was no expense recorded for the years ended December 31, 2017 or 2018 related to the investor relations warrants as they had been fully expensed as of December 31, 2015.

Private Placement Warrants - 2016

In April 2016, we issued warrants to purchase 1,996,880 shares of our common stock at an exercise price of $2.86 in connection with our private placement sale of 1,996,880 shares of common stock. The warrants are exercisable for a period
commencing October 2016 and expire on April 25, 2019. We also issued to the placement agents in the financing, warrants to purchase an aggregate of 99,844 shares of our common stock at an exercise price of $2.86 for a period commencing 6 months and ending 36 months after the closing. We refer to these warrants as Private Placement Warrants - 2016. We estimated the fair value of the Private Placement Warrants - 2016 at $2,500,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $2.90 per share, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rate of 0.97%. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

In December 2017, we entered into Warrant Exercise Agreements with certain holders of Private Placement Warrants - 2016 to induce the exercise of 836,780 warrants in full. Pursuant to the agreements, the warrant holders exercised in full the warrants and purchased an aggregate of 836,780 shares of our common stock at an exercise price of $2.86 per share, for an aggregate exercise price of approximately $2.4 million and we paid the warrant holders aggregated inducement fees of approximately $239,000, which resulted in net proceeds to us of $2.2 million. The inducement offer included in the Warrant Exercise Agreements was considered a modification to the warrants upon acceptance by the warrant holders. Upon modification of the warrants we were required to remeasure the fair value of the warrants. We estimated the fair value of the Private Placement Warrants - 2016 immediately prior to modification at $3.8

million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$6.96 to \$7.42 per share, time to maturity of 1.42 years, volatility of 60%, zero expected dividend rate and risk free rates of 1.70% to 1.74%. We estimated the fair value of the Private Placement Warrants - 2016 upon modification at \$3.9 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$6.96 to \$7.42 per share, time to maturity of 1 day, volatility of 10%, zero expected dividend rate and risk free rates of 1.14% to 1.21%. The change in fair value was \$166,000, and when combined with the cash inducement of \$239,000, resulted in \$73,000 of expense, which was recorded as warrant inducement expense.

Underwriting Warrants - Public Offering 2016

In September 2016, we issued warrants to purchase 135,750 shares of our common stock at an exercise price of $4.25 to the underwriter of our public offering of 2,715,000 shares of common stock. The warrants are exercisable for a 2 year period commencing September 9, 2017. We refer to these warrants as Underwriting Warrants - Public Offering 2016. We estimated the fair value of the Underwriting Warrants -Public Offering 2016 at $475,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $6.54 per share, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rate of 0.90%. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

Private Placement Warrants - February 2017

In February 2017, we issued warrants to purchase 1,626,898 shares of our common stock at an exercise price of $8.25 in connection with our private placement sale of 1,626,898 shares of common stock. The warrants were exercisable for a period commencing 6 months and ending 30 months after the closing of the financing. We refer to these warrants as Private Placement Warrants - February 2017. We estimated the fair value of the Private Placement Warrants - February 2017 at $2,084,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $4.91 per share, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rate of 1.50%. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

On December 19, 2017, we entered into a Warrant Exercise Agreement with the holder of Private Placement Warrants - February 2017 to induce the exercise of the 1,626,898 warrants in full. Pursuant to the agreement, the warrant holder exercised in full the warrant and purchased 1,626,898 shares of our common stock at an exercise price of $8.25 per share, for an aggregate exercise price of approximately $13.4 million and we paid the warrant holder an inducement fee of approximately $6.7 million, which resulted in net proceeds to us of $6.7 million. The inducement offer included in the Warrant Exercise Agreement was considered a modification to the warrant upon acceptance by the warrant holder. Upon modification of the warrant we were required to remeasure the warrant. We estimated the fair value of the Private Placement Warrants - February 2017 immediately prior to modification at $4.1 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $8.18 per share, time to maturity of 1.67 years, volatility of 60%, zero expected dividend rate and risk free rate of 1.78%. We estimated the fair value of the Private Placement Warrants - February 2017 upon modification at $6.7 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $8.18 per share, time to maturity of 1 day, volatility of 10%, zero expected dividend rate and risk free rate of 1.25%. The change in fair value was $4.1 million, and when combined with the cash inducement of $6.7 million, resulted in $2.6 million of expense, which was recorded as warrant inducement expense.

Private Placement Warrants - September 2017

In September and October 2017, we issued warrants to purchase an aggregate of 1,976,919 shares of our common stock at an exercise price of $4.85 in connection with our private placement sale of 1,976,919 shares of common stock. The sale was completed in two tranches with the first tranche, which closed on September 28, 2017, including 1,745,581 warrants, and the second tranche, which closed on October 2, 2017, including 231,338 warrants. The warrants are exercisable for a period commencing 6 months after the closing of the financing and expire on September 28, 2020. Collectively, we refer to these warrants as Private Placement Warrants - September 2017. We estimated the total fair value of the Private Placement Warrants - September 2017 at $3.6 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $4.49 for the first tranche and $4.69 per share for the second tranche, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rates of 1.59% for the first tranche and 1.63% for the second tranche. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

Placement Agent Warrants - 2017

In addition to the Private Placement Warrants - September 2017 issued in connection with our private placement sale of 1,976,919 shares of our common stock, we also issued to the placement agent, warrants to purchase a total of 98,846 shares of our common stock at an exercise price of $4.85 per share. Upon closing of the first tranche on September 28, 2017, we issued 87,279 warrants, and upon closing the second tranche, we issued 11,567 warrants. The warrants are exercisable for a period commencing 6 months after the closing of the financing and expire on September 28, 2020. Collectively, we refer to these warrants as Placement Agent Warrants - 2017. We estimated the fair value of the Placement Agent Warrants - 2017 at $174,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of $4.49

per share for the first tranche and $4.69 per share for the second tranche, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rates of 1.59% for the first tranche and 1.63% for the second tranche. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

A roll-forward of warrant activity from January 1, 2017 to December 31, 2017 is shown in the following table:

	Issued and Outstanding Warrants as of January 1, 2017	Warrants Issued	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of December 31, 2017
Bridge Warrants	249,999	—	—	249,999
Consulting Warrant	98,000	—	(85,777)(1)	12,223
Financing Warrant	78,186	—	(15,656)(2)	62,530
Underwriting Warrant	310,500	—	—	310,500
IR Consulting Warrant	48,000	—	(42,000)(3)	6,000
Private Placement Warrants - 2016	1,995,124	—	(1,104,061)(4)	891,063
Underwriting Warrants - Public Offering 2016	135,750	—	(13,575)(5)	122,175
Private Placement Warrants - February 2017	—	1,626,898	(1,626,898)(6)	—
Private Placement Warrants - September 2017	—	1,976,919	—	1,976,919
Placement Agent Warrants - 2017	—	98,846	—	98,846
	2,915,559	3,702,663	(2,887,967)	3,730,255

(1) During the year ended December 31, 2017, there were 85,777 warrants that were exercised through cashless exercises, which netted 85,620 shares being issued.

(2) During the year ended December 31, 2017, there were 15,656 warrants that were exercised through cashless exercises, which netted 6,842 shares being issued.

(3) During the year ended December 31, 2017, 42,000 warrants expired.

(4) During the year ended December 31, 2017, there were 122,281 warrants that were exercised through cashless exercises, which netted 49,063 shares being issued. Additionally, there were 981,780 warrants that were exercised for cash, which included 836,780 warrants exercised subject to inducement, which offered the warrant holder an inducement fee of $0.29/share to exercise the warrant in full for cash immediately.

(5) During the year ended December 31, 2017, there were 13,575 warrants that were exercised through cashless exercises, which netted 6,322 shares being issued.

(6) During the year ended December 31, 2017, there were 1,626,898 warrants that were exercised for cash. The warrants were exercised subject to inducement, which offered the warrant holder an inducement fee of $4.13/share to exercise the warrant in full for cash immediately.

A roll-forward of warrant activity from January 1, 2018 to December 31, 2018 is shown in the following table:

	Exercise Price	Expiration Date	Issued and Outstanding Warrants as of January 1, 2018	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of December 31, 2018
Bridge Warrants	NA	NA	249,999	(249,999) (1)	—
Consulting Warrant	$0.01	6/17/2020	12,223	(5,556) (2)	6,667
Financing Warrant	$3.35	6/17/2020	62,530	—	62,530
Underwriting Warrant	$7.50	5/28/2019	310,500	—	310,500
IR Consulting Warrant	NA	NA	6,000	(6,000) (3)	—
Private Placement Warrants - 2016	$2.86	4/25/2019	891,063	(73,000) (4)	818,063
Underwriting Warrants - Public Offering 2016	$4.25	9/9/2019	122,175	—	122,175
Private Placement Warrants - September 2017	$4.85	9/28/2020	1,976,919	(10,600) (5)	1,966,319
Placement Agent Warrants - 2017	$4.85	9/28/2020	98,846	—	98,846
			3,730,255	(345,155)	3,385,100

(1) During the year ended December 31, 2018, there were 249,999 warrants that were exchanged for 242,913 shares of common stock in an exchange transaction where the warrant holders exchanged the warrants for the same number of shares they would have been entitled to in a cashless exercise.

(2) During the year ended December 31, 2018, there were 5,556 warrants that were exercised through a cashless exercise, which netted 5,542 shares being issued.

(3) During the year ended December 31, 2018, 6,000 warrants expired.

(4) During the year ended December 31, 2018, there were 73,000 warrants exercised for cash.

(5) During the year ended December 31, 2018, there were 10,600 warrants exercised for cash.

NOTE 8—STOCKHOLDERS’ EQUITY AND EARNINGS PER SHARE

Common Stock

Pursuant to our amended and restated certificate of incorporation, we are authorized to issue 47,000,000 shares of common stock. Holders of our common stock are entitled to dividends as and when declared by the board of directors, subject to rights and holders of all classes of stock outstanding having priority rights to dividends. There have been no dividends declared to date. Each share of common stock is entitled to one vote.

On February 22, 2017, we completed the private placement sale of 1,626,898 units at a price of $4.61 per unit to one investor. Each unit consists of one share of our common stock and one warrant to purchase one share of our common stock at an exercise price of $8.25 for a period commencing 6 months and ending 30 months after the closing of the financing. Gross proceeds were $7.5 million. We incurred $29,000 of legal expenses in connection with the financing. We registered for resale by the investor the shares of common stock, and the shares of common stock issuable upon exercise of the warrants, purchased by the investor in the financing pursuant to a registration statement that was declared effective by the SEC in April 2017.

On October 2, 2017, we completed the private placement sale of 1,976,919 units. Each unit consisted of one share of our common stock and one warrant to purchase one share of our common stock at an exercise price of $4.85 per share for a period commencing 6 months and ending 36 months from September 28, 2017, the date of the first closing of the offering. The sale closed in two rounds with the first closing on September 28, 2017 which included the private placement sale of 1,745,581 units at a price of $4.70 per unit to institutional and individual investors. Gross proceeds in the first closing were $8.2 million with net proceeds of $7.5 million after deducting placement agent fees and offering expenses. The second closing, completed on October 2, 2017, was for 231,338 units and gross proceeds of $1.1 million with net proceeds of $1.0 million after deducting placement agent fees and offering expenses. We also issued to the placement agent, warrants to purchase an aggregate of 98,846 shares of our common stock at an exercise price of $4.85 per share for a period commencing 6 months and ending 36 months from September 28, 2017.

On March 27, 2018, we completed the sale of 5,714,286 shares of common stock at a price of $3.50 per share in an underwritten public offering. Gross proceeds were $20.0 million with net proceeds of $18.4 million after deducting underwriter fees and offering expenses. The shares were issued pursuant to a shelf registration statement that we filed with the SEC, which became effective in May 2016. On April 6, 2018, following exercise by the underwriter of its overallotment option, we sold an additional 857,142 shares at a price of $3.50, resulting in gross proceeds of $3.0 million and net proceeds of $2.8 million after deducting underwriter fees and offering expenses.

We have a Form S-3 universal shelf registration statement on file with the SEC. The universal shelf registration statement on Form S-3 permits us to sell, in one or more public offerings, shares of our common stock, shares of preferred stock or debt securities, or any combination of such securities and warrants to purchase securities, for proceeds in an aggregate amount of up to $50.0 million, subject to potential limitations on the amount of securities we may sell in any twelve-month period. The Form S-3 will expire in November 2021. No securities have been issued pursuant to the registration statement.

Preferred Stock

Pursuant to our amended and restated certificate of incorporation, we are authorized to issue 3,000,000 shares of preferred stock. The board of directors has the authority, without action by our stockholders, to designate and issue shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. To-date, no preferred shares have been issued.

Stock Repurchase Program

On November 26, 2018, we announced that our board of directors had authorized a program to repurchase up to $4.0 million of our common stock over a 12-month period, either in the open market or through privately negotiated transactions. During the year ended December 31, 2018, we repurchased and retired 80,100 shares of common stock, at an aggregate cost of approximately $152,000, including commissions, or an average price of $1.88 per share.

Earnings Per Share

The following table presents the number of shares excluded from the calculation of diluted net loss per share attributable to common stockholders for the periods below:

	Year Ended December 31, 2017	Year Ended December 31, 2018
Common stock warrants	3,730,255	3,385,100
Common stock options	1,082,490	1,255,280
Non-vested restricted stock unit awards	1,476,858	1,921,594
Total shares excluded from net loss per share attributable to common stockholders	6,289,603	6,561,974

NOTE 9— STOCK-BASED COMPENSATION

2014 Omnibus Incentive Plan

In January 2014, our board of directors approved the 2014 Omnibus Incentive Plan and amended and restated the plan in March 2014. Our stockholders approved the Amended and Restated 2014 Omnibus Incentive Plan, or the 2014 Plan, in March 2014. Our 2014 Plan initially permitted the issuance of equity-based instruments covering up to a total of 1,400,000 shares of common stock. In June 2016, our board of directors and stockholders approved an increase of 1,300,000 shares and in June 2017 approved an additional increase of 3,250,000 shares of common stock bringing the total shares allowed under the plan to 5,950,000. As of December 31, 2018, there were 1,189,389 shares available to issue under the 2014 Plan.

Option Valuation

We have computed the fair value of options granted to employees and non-employees using the Black-Scholes option valuation model. The compensation costs of non-employee arrangements are subject to re-measurement at each reporting period over the vesting terms as earned. Option forfeitures are estimated at the time of valuation and reduce expense ratably over the vesting period. This estimate will be adjusted periodically based on the extent to which actual option forfeitures differ, or are expected to differ, from the previous estimate, when it is material. The expected term used for options issued to non-employees is the contractual life and the expected term used for options issued to employees is the estimated period of time that options granted are expected to be outstanding. We have estimated the expected life of our employee stock options using the “simplified” method, whereby, the expected life equals the arithmetic average of the vesting term and the original contractual term of the option due to our lack of sufficient historical data. For non-employees we use an estimated expected life of the remaining term of the stock option grant, which is initially ten years. Since our stock has not been publicly traded for a sufficiently long period of time, we are utilizing an expected volatility figure based on a review of the historical volatilities, over a period of time, equivalent to the expected life of the instrument being valued, of similarly positioned public companies within our industry. The risk-free interest rate was determined from the U.S. Treasury's Daily Treasury Yield Curve Rate with a term that best approximates the expected term of the instrument being valued.

Stock Options to Employees and Non-Employees

During the years ended December 31, 2017 and 2018, we granted incentive stock options for the purchase of 488,300 and 252,500 shares, respectively, of our common stock to our employees and non-employees. The options granted in 2017 have an exercise price range of $4.36 to $7.80 per share with a term of ten years. The options granted in 2018 have an exercise price range of $1.80 to $5.96 per share with a term of ten years. The options vest over various periods, generally quarterly over sixteen quarters. The options granted in 2017 had an aggregate grant date fair value of $1.4 million and the options granted in 2018 had an aggregate grant date fair value of $779,000 utilizing the Black-Scholes option valuation model.

We estimated the fair value of stock options awarded during the years ended December 31, 2017 and 2018 using the Black-Scholes option valuation model. The fair values of stock options granted for the years were estimated using the following assumptions:

	Option Grants Awarded During the Year Ended December 31, 2017	Option Grants Awarded During the Year Ended December 31, 2018
Stock Price	$4.36 - $7.80	$1.80 - $5.96
Dividend Yield	0%	0%
Expected Volatility	60.0%	70.0%
Risk-free interest rate	1.95% - 2.37%	2.50% - 3.09%
Expected Term	7 to 10 years	7 years

Stock-based compensation expense related to stock options for employees was $435,000 and $469,000 for the years ended December 31, 2017 and 2018, respectively. We estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from our estimates. We use historical data to estimate pre-vesting option forfeitures and record stock-based compensation expense only for those awards that are expected to vest. To the extent that actual forfeitures differ from our estimates, the difference is recorded as a cumulative adjustment in the period the estimates were revised. For the years ended December 31, 2017 and 2018, we applied a forfeiture rate of six percent, which is reflected in our stock-based compensation expense related to stock options.

In January 2017, we modified certain stock options previously granted to a former executive. The modification was made in connection with the executive’s termination. The modification included accelerated vesting of stock options to purchase 8,752 shares of common stock as well as an extension of the exercise period for all vested shares, including stock options to purchase 17,504 shares of common stock. As a result of the modification, additional stock compensation expense of $19,000 was recognized for the year ended December 31, 2017. There was no expense related to the modification for the year ended December 31, 2018.

57

For stock options paid in consideration of services rendered by non-employees, we recognize compensation expense in accordance with the requirements of ASC 505-50. Non-employee stock option grants that do not vest immediately upon grant are recorded as an expense over the vesting period. At the end of each financial reporting period prior to performance, the value of these stock options, as calculated using the Black-Scholes option valuation model, is determined, and compensation expense recognized or recovered during the period is adjusted accordingly. Since the fair market value of stock options granted to non-employees is subject to change in the future, the amount of the future compensation expense is subject to adjustment until the common stock options are fully vested. Stock-based compensation expense related to stock options for non-employees was $9,000 and $7,000 for the years ended December 31, 2017 and 2018, respectively.

Stock Option Award Activity

The following is a summary of our stock option activity during the year ended December 31, 2017:

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Outstanding, January 1, 2017	801,690	$ 5.25	$ 3.32	7.40
Granted	488,300	4.62	2.79	9.51
Exercised	(32,928)	2.37	1.41	—
Canceled/Forfeited	(174,572)	6.40	4.18	—
Outstanding, December 31, 2017	1,082,490	$ 4.87	$ 3.00	8.38

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Exercisable, January 1, 2017	419,174	$ 5.94	$ 3.86	6.00
Vested	457,338	4.57	2.77	8.65
Exercised	(32,928)	2.37	1.41	—
Canceled/Forfeited	(139,281)	6.65	4.38	—
Exercisable, December 31, 2017	704,303	$ 5.08	$ 3.17	8.15

The following is a summary of our stock option activity during the year ended December 31, 2018:

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Outstanding, January 1, 2018	1,082,490	$ 4.87	$ 3.00	8.38
Granted	252,500	4.54	3.09	9.16
Exercised	(4,692)	2.10	1.75	—
Canceled/Forfeited	(75,018)	4.72	2.89	—
Outstanding, December 31, 2018	1,255,280	$ 4.82	$ 3.03	7.75

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Exercisable, January 1, 2018	704,303	$ 5.08	$ 3.17	8.15
Vested	161,404	4.69	2.89	7.56
Exercised	(4,692)	2.10	1.75	—
Canceled/Forfeited	(17,996)	4.72	2.84	—
Exercisable, December 31, 2018	843,019	$ 5.02	$ 3.13	7.23

The following table presents information related to stock options outstanding and exercisable at December 31, 2018:

Options Outstanding		Options Exercisable	
Exercise Price	Outstanding Number of Options	Weighted Average Remaining Life In Years	Exercisable Number of Options
$1.80 - $2.00	161,183	7.09	99,637
$3.25 - $4.92	652,297	8.41	393,944
$5.01 - $6.00	281,500	5.87	214,115
$6.18 – $7.20	70,000	5.97	55,004
$7.54 – $7.80	67,800	6.09	58,749
$8.06 - $12.98	22,500	6.05	21,570
	1,255,280	7.23	843,019

As of December 31, 2018, there was $1.1 million of unrecognized compensation expense related to unvested stock options, which is expected to be recognized over a weighted average vesting period of approximately 2.8 years. The aggregate intrinsic value of outstanding options and options vested as of December 31, 2017 were $2.9 million and $1.7 million, respectively, representing options whose exercise price was less than the closing fair market value of our common stock of $7.47 per share. The aggregate intrinsic value of outstanding options and options vested as of December 31, 2018 were zero as there were no options whose exercise price was less than the closing fair market value of our common stock of $1.33 per share. There were no excess tax benefits realized for tax deductions from stock options exercised during the years ended December 31, 2017 and 2018 as we have recorded a full valuation allowance against our deferred income taxes.

Restricted Stock Units Activity

We account for restricted stock units (RSUs) issued to employees at fair value, based on the market price of our stock on the date of grant, net of estimated forfeitures. The fair value of non-employee restricted stock units awarded are re-measured as the awards vest, and the resulting increase in fair value, if any, is recognized as expense in the period the related services are rendered. RSUs issued in connection with our employee incentive programs typically vest within 10 days of grant. All other RSUs, primarily issued as long term incentives, generally vest annually over three to four years. During the years ended December 31, 2017 and 2018 we recorded $3.6 million and $4.8 million, respectively, of stock-based compensation related to the restricted stock units that have been issued to-date.

A summary of restricted stock unit activity for the year ended December 31, 2017 is as follows:

	Number of Restricted Share Units	Weighted-Average Grant-Date Fair Value Per Share
Outstanding at January 1, 2017	1,455,558	$ 3.64
Granted	722,400	5.37
Vested	(649,359)	4.26
Forfeited	(51,741)	5.40
Outstanding at December 31, 2017	1,476,858	$ 4.96

A summary of restricted stock unit activity for the year ended December 31, 2018 is as follows:

	Number of Restricted Share Units	Weighted-Average Grant-Date Fair Value Per Share
Outstanding at January 1, 2018	1,476,858	$ 4.96
Granted	1,661,750	4.60
Vested	(1,051,939)	4.68
Forfeited	(165,075)	5.17
Outstanding at December 31, 2018	1,921,594	$ 4.78

As of December 31, 2018, there was $6.3 million of unrecognized compensation expense related to unvested restricted stock unit agreements which is expected to be recognized over a weighted-average period of approximately 2.1 years. For restricted stock unit awards subject to graded vesting, we recognize compensation cost on a straight-line basis over the service period for the entire award.

Market-based Awards

In August 2016, we granted 250,000 market-based restricted stock units to an executive. The restricted stock units are subject to market-based vesting requirements, measured quarterly, based on the average of (a) the average high daily trading price of our common stock for each trading day during the last month of the applicable calendar quarter and (b) the average low daily trading price of our common stock for each trading day during the last month of the applicable calendar quarter, each as reported by The Nasdaq Stock Market, LLC. The restricted stock units are eligible to be earned on a quarterly basis based on a linear interpolation of the applicable share price, or in the case of a liquidation event, on the day of (or in connection with) such liquidation event based on the applicable transaction price. Once earned, the restricted stock units vest 50% on the date such restricted stock units become earned and 50% on September 30, 2019. We recognize compensation expense for restricted stock units with market-based conditions using a graded vesting model, based on the probability of the performance condition being met, net of estimated pre-vesting forfeitures. The share price on the date of issuance was $5.06 per share. To determine the fair value of the award, we used a Monte Carlo simulation, which simulates future stock prices for the Company and, hence, shares vested, pursuant to the award. A key input into the model is the expected volatility for our stock. This estimate considered the historical volatility of our stock as well as the stock price volatility of guideline public companies. The fair value was determined to be $74,000. For each of the years ended December 31, 2017 and 2018, we recognized $24,000 of stock compensation expense in connection with this award, which is included in sales, marketing and administration expenses. The unamortized expense related to this award is $18,000 and is expected to be recognized over 0.8 years.

Incentive Bonus Awards

We provide eligible employees, including executives, the opportunity to earn bonus awards upon achievement of predetermined performance goals and objectives. The purpose is to reward attainment of company goals and/or individual performance objectives, with award opportunities expressed as a percentage of base salary. Bonuses can be measured and paid quarterly and/or annually, and are paid in cash, equity or a combination of cash and equity, at the discretion of our compensation committee.

Total stock-based compensation recorded in the consolidated statements of comprehensive loss is allocated as follows:

	Year Ended December 31, 2017	Year Ended December 31, 2018
Research and development		
Employees	$ 1,937,000	$ 2,479,000
Non-employees	181,000	77,000
Total research and development	2,118,000	2,556,000
Sales, marketing and administration		
Employees and directors	1,824,000	2,604,000
Non-employees	179,000	102,000
Total sales, marketing and administration	2,003,000	2,706,000
Total stock-based compensation	$ 4,121,000	$ 5,262,000

NOTE 10—COMMITMENTS AND CONTINGENCIES

Purchase Commitments—We have non-cancelable purchasing commitments that we incur in the ordinary course of business. The purchase commitments covered by these agreements are for less than one year and aggregate to $193,000 as of December 31, 2018.

Operating Leases—We lease facilities under non-cancelable operating leases. The leases expire between January 2022 and August 2024 and include renewal provisions for two to five years, provisions which require us to pay taxes, insurance, maintenance costs or provisions for minimum rent increases. Minimum lease payments, including scheduled rent increases, are recognized as rent expenses on a straight-line basis over the applicable lease term.

One lease requires us to maintain a cash security deposit of $50,000 and also a $200,000 letter of credit in favor of the lessor. The letter of credit steps down $50,000 at each anniversary date if there have been no monetary defaults. The letter of credit is secured by a pledge in favor of the issuing bank of a $211,000 mutual fund account which is classified as restricted cash in our balance sheet.

Rent expense related to our facilities was $477,000 and $663,000, respectively, for the years ended December 31, 2017 and 2018.

Future minimum rent payments are as follows:

Years ending December 31,	
2019	$658,000
2020	726,000
2021	748,000
2022	557,000
2023	555,000
2024 and thereafter	376,000
Total future minimum rent payments	$3,620,000

Legal Proceedings—We are not party to any legal proceedings. We may, from time to time, be party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of any future matters could materially affect our future financial position, results of operations or cash flows.

Legal fees and other costs associated with such actions are expensed as incurred. We assess, in conjunction with our legal counsel, the need to record a liability for litigation and contingencies. Litigation accruals are recorded when and if it is determined that a loss related matter is both probable and reasonably estimable. Material loss contingencies that are reasonably possible of occurrence, if any, are subject to disclosure. We will evaluate developments in legal proceedings and other matters on a quarterly basis. As of December 31, 2017 and 2018, there was no litigation or contingency with at least a reasonable

61

possibility of a material loss. No losses have been recorded during the years ended December 31, 2017 and 2018, respectively, with respect to litigation or loss contingencies.
Intellectual Property Indemnities—We indemnify certain customers and manufacturers against liability arising from third-party claims of intellectual property rights infringement related to our products. These indemnities may appear in license agreements, development agreements and manufacturing agreements, may not be limited in amount or duration and generally survive the expiration date of the contract. Given that the amount of any potential liabilities related to such indemnities cannot be determined until an infringement claim has been made, we are unable to determine the maximum amount of losses that we could incur related to such indemnifications.
Director and Officer Indemnities and Contractual Guarantees—We have entered into indemnification agreements with our directors and executive officers, which require us to indemnify such individuals to the fullest extent permitted by Delaware law. Our indemnification obligations under such agreements are not limited in amount or duration. Certain costs incurred in connection with such indemnifications may be recovered under certain circumstances under various insurance policies. Given that the amount of any potential liabilities related to such indemnities cannot be determined until a lawsuit has been filed, we are unable to determine the maximum amount of losses that we could incur relating to such indemnities.
We have also entered into severance and change in control agreements with certain of our executives. These agreements provide for the payment of specific compensation benefits to such executives upon the termination of their employment with us.

Guarantees and Indemnities—In the normal course of business, we are occasionally required to undertake indemnification for which we may be required to make future payments under specific circumstances. We review our exposure under such obligations no less than annually, or more frequently as required. The amount of any potential liabilities related to such obligations cannot be accurately determined until a formal claim is filed. Historically, any such amounts that become payable have not had a material negative effect our business, financial condition or results of operations. We maintain general and product liability insurance which may provide a source of recovery to us in the event of an indemnification claim.

NOTE 11—INCOME TAXES
The provision for (benefit from) income taxes by jurisdiction consists of the following:

	Year Ended December 31, 2017	Year Ended December 31, 2018
U.S. federal:		
Current	$—	$ —
Deferred	—	—
Total U.S. federal	—	—
U.S. state and local:		
Current	1,000	2,000
Deferred	—	—
Total U.S. state and local	1,000	2,000
Foreign:		
Current	—	—
Deferred	(15,000)	(1,000)
Total foreign	(15,000)	(1,000)
Provision for (benefit from) income taxes	$(14,000)	$ 1,000

62

Income taxes differ from the amounts computed by applying the U.S. federal income tax rate to pretax income (loss) before income taxes as a result of the following:

	Year Ended December 31, 2017	Year Ended December 31, 2018
Expected income tax benefit	$(7,357,000)	$(5,211,000)
State income tax (benefit), net of federal benefit	(1,176,000)	(1,997,000)
Valuation allowance	7,398,000	7,372,000
Permanent differences:		
Stock options	95,000	285,000
Warrants	914,000	—
Research & development credit	(263,000)	(405,000)
Adjustment to deferred taxes	267,000	(68,000)
Foreign rate differential	19,000	2,000
Other	89,000	23,000
Provision for (benefit from) for income taxes	$(14,000)	$1,000

For the years ended December 31, 2017 we recorded a net income tax benefit of $14,000 and for the year ended December 31, 2018 we recorded a tax provision of $1,000. The net income tax benefit recorded in 2017 included $1,000 of income tax expense offset by $15,000 for the change in deferred foreign taxes. Deferred income tax reflects the tax effects of temporary differences that gave rise to significant portions of our deferred tax assets and liabilities.

Deferred income tax consists of the following:

	As of December 31, 2017	As of December 31, 2018
U.S. federal and state deferred tax assets—long term:		
Accrued payroll	$ 376,000	$ 102,000
Accrued expenses	21,000	45,000
Fixed assets	111,000	—
Intangibles	457,000	418,000
Research & development credit	1,464,000	2,239,000
Net operating loss	13,204,000	20,140,000
Stock compensation	539,000	612,000
New jobs credit	8,000	8,000
Total long-term assets	16,180,000	23,564,000
Total deferred tax assets	16,180,000	23,564,000
U.S. federal and state deferred tax liabilities—long term:		
Fixed assets	—	(16,000)
Total deferred tax liabilities	—	(16,000)
Net deferred tax assets - long term	16,180,000	23,548,000
Less: Valuation allowance	(16,180,000)	(23,548,000)
Net deferred tax assets	$ —	$ —
Foreign deferred tax assets—long term:		
Net operating loss	$ 12,000	$ 9,000
Total foreign deferred tax assets	12,000	9,000
Foreign deferred tax liabilities—long term:		
Intangibles	(13,000)	(4,000)
Total foreign deferred tax liabilities	(13,000)	(4,000)
Net foreign deferred tax assets (liabilities)	(1,000)	5,000
Less: Valuation allowance	—	(5,000)
Net deferred tax assets (liabilities)	$ (1,000)	$ —

In December 2017, the Tax Cuts and Jobs Act (the “2017 Tax Act”) was enacted. The 2017 Tax Act represents major tax reform legislation that, among other provisions, reduced the U.S. corporate tax rate. The reduction in the tax rate reduced our federal and state net deferred tax assets by $6.1 million, primarily related to our net operating loss carryforwards. Due to the full valuation allowance recorded against our federal and state net deferred tax assets, there was no impact to our income tax expense for the year ended December 31, 2018.

We recorded a full valuation allowance against our U.S. federal and state net deferred tax assets at December 31, 2017 and December 31, 2018. In determining the need for a valuation allowance, we reviewed all available evidence pursuant to the requirements of FASB ASC Topic 740, Income Taxes. Based upon our assessment of all available evidence, we have concluded that it is more likely than not that the net deferred tax assets will not be realized. For the year ended December 31, 2017, the valuation allowance increased by $1.3 million. For the year ended December 31, 2018, the valuation allowance increased by $7.4 million.

As of December 31, 2018, we had federal net operating loss carryforwards of approximately $71.6 million, state net operating loss carryforwards of approximately $72.9 million and foreign net operating loss carryforwards of $61,000 in Switzerland. In accordance with the 2017 Tax Act, the $24.9 million federal net operating loss carryforwards generated on or after January 1, 2018 will not expire and will be limited to 80% usage. The federal net operating loss carryforwards generated prior to January 1, 2018 will begin to expire in 2033, and the state net operating loss carryforwards will begin to expire in 2033.

Our ability to utilize net operating loss carryforwards may be limited in the event that a change in ownership, as defined in Section 382 of the Internal Revenue Code, occurs in the future. In the event a change of ownership occurs, it will limit the annual usage of the carryforwards in future years. Management believes that certain changes in control have occurred which resulted in limitations on our net operating loss carryforwards; however, management has determined that these limitations will not impact the ultimate utilization of the net operating loss carryforwards.
We recognize interest and penalties related to income tax matters in income taxes, and there were none during the years ended December 31, 2017 and 2018.
The adoption of ASC 740 guidance required us to identify, evaluate and measure all uncertain tax positions taken or to be taken on tax returns and to record liabilities for the amount of these positions that may not be sustained, or may only partially be sustained, upon examination by the relevant taxing authorities. Although we believe that our estimates and judgments were reasonable, actual results may differ from these estimates. Some or all of these judgments are subject to review by the taxing authorities. We have no significant uncertain tax positions for the years ended December 31, 2017 and 2018.
Our annual income taxes and the determination of the resulting deferred tax assets and liabilities involve a significant amount of judgment. Our judgments, assumptions and estimates relative to current income taxes take into account current tax laws, their interpretation of current tax laws and possible outcomes of future audits conducted by domestic tax authorities. We operate within federal and state taxing jurisdictions and are subject to audit in these jurisdictions. These audits can involve complex issues which may require an extended period of time to resolve. We are currently not being examined by any tax authorities. We are subject to taxation in the United States, California, Massachusetts and Switzerland. As of December 31, 2018, our tax years remain open to examination by the taxing authorities for all years since our incorporation in 2013.

NOTE 12—RELATED PARTY TRANSACTIONS

In August 2016, we entered into a consulting agreement with a member of our board of directors. Under the agreement, the board member would provide engineering design and fabrication advisory services for an hourly rate, with total payments not to exceed $120,000 during any twelve-month period. During the year ended December 31, 2017, we incurred expenses of $26,000 in connection with the consulting agreement. The agreement was terminated effective April 1, 2017. There was no expense for the year ended December 31, 2018.

NOTE 13—EMPLOYEE BENEFIT PLAN

We have a 401(k) Savings Retirement Plan that covers substantially all domestic employees who meet the plan's eligibility requirements and provides for an employee elective contribution and employer matching contributions. We recorded matching contributions to the retirement plan of $284,000 and $372,000 for the years ended December 31, 2017 and 2018, respectively.

NOTE 14—SUBSEQUENT EVENTS

In February 2019 we received approximately $400,000 from the exercise of Private Placement Warrants - 2016, which resulted in the issuance of 140,000 shares of our common stock.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

The phrase “disclosure controls and procedures” refers to controls and procedures designed to ensure that information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934, as amended, or the Exchange Act, such as this Annual Report on Form 10-K, is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the U.S. Securities and Exchange Commission, or SEC. Disclosure controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our chief executive officer, or CEO, and chief financial officer, or CFO, as appropriate to allow timely decision regarding required disclosure.

Our management, with the participation of our CEO and CFO, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of December 31, 2018, the end of the period covered by this Annual Report on Form 10-K. Based on such evaluation, our CEO and CFO have concluded that as of December 31, 2018, our disclosure controls and procedures were designed at a reasonable assurance level and were effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the SEC, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with generally accepted accounting principles.

Our management, with the participation of our CEO and CFO, has assessed the effectiveness of the internal control over financial reporting as of December 31, 2018. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) in Internal Control - Integrated Framework (2013 Framework). Based on this evaluation, our management has concluded that our internal control over financial reporting was effective as of December 31, 2018.

This Annual Report on Form 10-K does not include an attestation report of our registered public accounting firm on our internal control over financial reporting due to an exemption established by the JOBS Act for “emerging growth companies.”

Changes in Internal Controls over Financial Reporting

There was no change in our internal control over financial reporting identified in management’s evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during the quarter ended December 31, 2018 that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs.

ITEM 9B. OTHER INFORMATION

None.

66

Table of Contents

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item is incorporated by reference to the disclosure appearing under the headings "Election of Directors", "Executive Officers", "Board of Directors and Corporate Governance" and "Other Matters" in our Proxy Statement for our 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2018.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference to the disclosure appearing under the heading "Executive Compensation" in our Proxy Statement for our 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2018.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference to the disclosure appearing under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" in our Proxy Statement for our 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2018.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference to the disclosure appearing under the headings "Certain Relationships and Related Party Transactions" and "Board of Directors and Corporate Governance - Director Independence" in our Proxy Statement for our 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2018.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item is incorporated by reference to the disclosure appearing under the heading "Ratification of Appointment of Independent Registered Public Accounting Firm" in our Proxy Statement for our 2019 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2018.

Table of Contents

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

We have filed the following documents as part of this Annual Report on Form 10-K:

1. Consolidated Financial Statements

Our consolidated financial statements are listed in the "Index to Consolidated Financial Statements" under Part II, Item 8 of this Annual Report on Form 10-K.

2. Financial Statement Schedules

All schedules have been omitted because they are not required, not applicable, not present in amounts sufficient to require submission of the schedule, or the required information is otherwise included in our consolidated financial statements and related notes.

3. Exhibits

The following exhibits are filed as part of this Annual Report on Form 10-K.

Exhibit Number	Exhibit Description	Incorporated by Reference Form	File Number	Exhibit	Filing Date	Filed Herewith
3.1	Amended and Restated Certificate of Incorporation of the Registrant	8-K	001-36467	3.1	6/5/2014	
3.2	Amended and Restated Bylaws of the Registrant	8-K	001-36467	3.2	6/5/2014	
4.1	Form of the Registrant's common stock certificate	S-1/A	333-193552	4.1	4/11/2014	
4.2	Form of Underwriter's Warrant	S-1/A	333-193552	4.2	5/16/2014	
4.3	Form of Warrant, dated April 25, 2016	8-K	001-36467	10.3	4/26/2016	
4.4	Form of Agent Warrant, dated April 25, 2016	8-K	001-36467	10.4	4/26/2016	
4.5	Form of Underwriter's Warrant	8-K	001-36467	1.1	9/9/2016	
4.6	Amended and Restated Warrant to Purchase Common Stock, dated November 15, 2013, issued by the Registrant in favor of MDB Capital Group LLC for 222,222 shares of common stock	S-1	333-193552	10.25	1/24/2014	
4.7	Amended and Restated Warrant to Purchase Common Stock, dated November 15, 2013, issued by the Registrant in favor of MDB Capital Group LLC for a to-be-determined number of shares of common stock	S-1	333-193552	10.26	1/24/2014	
4.8	Warrant to Purchase Common Stock, dated February 22, 2017, issued by the Registrant to Grayboard Investments, Ltd.	8-K	001-36467	10.3	2/24/2017	
4.9	Form of Warrant issued to investors	8-K	001-36467	10.3	9/29/2017	
4.10	Placement Agent Warrant, dated September 28, 2017	8-K	001-36467	10.4	9/29/2017	
4.11	Placement Agent Warrant, dated October 2, 2017	8-K	001-36467	10.1	10/3/2017	
10.1*	Form of Indemnification Agreement between the Registrant and each of its directors and officers	S-1	333-193552	10.1	1/24/2014	
10.2.1*	Registrant's Amended and Restated 2014 Omnibus Incentive Plan	S-1/A	333-193552	10.2	4/11/2014	

Exhibit Number	Exhibit Description	Incorporated by Reference Form	File Number	Exhibit	Filing Date	Filed Herewith
10.2.2*	Amendment No. 1 to Registrant's Amended and Restated 2014 Omnibus Incentive Plan	S-8	333-211893	10.1	6/7/2016	
10.2.3*	Amendment No. 2 to Registrant's Amended and Restated 2014 Omnibus Incentive Plan	S-8	333-218542	10.3	6/7/2017	
10.3*	Offer Letter between the Registrant and Robert Hammond, dated June 17, 2013	S-1	333-193552	10.4	1/24/2014	
10.4*	Offer Letter between the Registrant and Neal Fenzi, dated June 17, 2013	S-1	333-193552	10.5	1/24/2014	
10.5*	Offer Letter between the Registrant and George B. Holmes, dated February 9, 2016	8-K	001-36467	10.1	3/4/2016	
10.6*	Offer Letter between the Registrant and Martin S. McDermut, dated October 14, 2018	8-K	001-36467	10.1	11/5/2018	
10.7*	Form of Severance/Change-in-Control Agreement	10-K	001-36467	10.41	3/27/2015	
10.8*	Restricted Stock Unit Agreement, with a grant date of February 29, 2016 between the Registrant and George B. Holmes	8-K	001-36467	10.2	3/4/2016	
10.9*	Restricted Stock Unit Agreement, with a grant date of April 25, 2016, between the Registrant and George B. Holmes	S-8	333-211894	10.2	6/7/2016	
10.10*	Restricted Stock Unit Agreement, with a grant date of August 8, 2016, between the Registrant and George B. Holmes	8-K	001-36467	10.1	8/12/2016	
10.11*	Restricted Stock Unit Agreement, with a grant date of October 24, 2016, between the Registrant and Jeff A. Killian	S-8	333-214571	10.1	11/10/2016	
10.12*	Outside Director Compensation Policy	10-K	001-36467	10.6	3/25/2016	
10.13	Settlement Agreement, dated April 1, 2018, among the Registrant, Park City Capital Offshore Master Ltd., Park City Capital, LLC, and Michael J. Fox	8-K	001-36467	10.1	4/2/2018	
10.14	Standard Commercial Lease, dated May 14, 2018, between the Registrant and University Business Center Associates	8-K	001-36467	10.1	5/17/2018	
10.15	Standard Multi-Tenant Office Lease - Gross, dated December 16, 2016, between the Registrant and SeaBreeze I Venture - TIC.	8-K	001-36467	10.1	1/6/2017	
10.16	Registration Rights Agreement, dated April 25, 2016	8-K	001-36467	10.2	4/26/2016	
10.17	Registration Rights Agreement for Investors, dated June 17, 2013, by and among the Registrant and the persons listed on Schedule A thereto	S-1	333-193552	10.23	1/24/2014	
10.18	Registration Rights Agreement for Warrants, dated June 17, 2013, by and among the Registrant and MDB Capital Group LLC	S-1	333-193552	10.24	1/24/2014	
10.19	Registration Rights Agreement, dated February 20, 2017, between the Registrant and Grayboard Investments, Ltd.	8-K	001-36467	10.2	2/24/2017	

Exhibit Number	Exhibit Description	Incorporated by Reference Form	File Number	Exhibit	Filing Date	Filed Herewith
10.20	Securities Purchase Agreement, dated September 25, 2017, among the Registrant and the investors identified therein	8-K	001-36467	10.1	9/29/2017	
10.21	Registration Rights Agreement, dated September 28, 2017, among the Registrant and the investors identified therein	8-K	001-36467	10.2	9/29/2017	
10.22	Warrant Exercise Agreement, dated as of December 19, 2017, by and between the Registrant and Grayboard Investments, Ltd.	8-K	001-36467	10.1	12/26/2017	
10.23*	Amended and Restated Severance and Change in Control Agreement, dated as of December 21, 2017, by and between the Registrant and George B. Holmes	8-K	001-36467	10.2	12/26/2017	
21.1	List of Subsidiaries	10-K	001-36467	21.1	3/30/2017	
23.1	Consent of Crowe Horwath LLP					X
24.1	Power of Attorney (included on signature page)					X
31.1	Certification of Principal Executive Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Principal Financial Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1#	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X

ITEM 16. FORM 10-K SUMMARY

None.

Table of Contents

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.

Dated: March 14, 2019 Resonant Inc.

By: /s/ MARTIN S. MCDERMUT
MARTIN S. MCDERMUT
Chief Financial Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints George B. Holmes and Martin S. McDermut, and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution for him or her, and in his or her name in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with 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 therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, and any of them or his or her 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/ George B. Holmes George B. Holmes	Chief Executive Officer and Director (Principal Executive Officer)	March 14, 2019
/s/ Martin S. McDermut Martin S. McDermut	Chief Financial Officer and Secretary (Principal Financial and Accounting Officer)	March 14, 2019
/s/ Brett Conrad Brett Conrad	Director	March 14, 2019
/s/ Janet K. Cooper Janet K. Cooper	Director	March 14, 2019
/s/ Michael J. Fox Michael J. Fox	Director	March 14, 2019
/s/ Alan Howe Alan Howe	Director	March 14, 2019
/s/ Joshua Jacobs Joshua Jacobs	Director	March 14, 2019
/s/ Jack Jacobs Jack Jacobs	Director	March 14, 2019
/s/ John E. Major John E. Major	Chairman of the Board of Directors	March 14, 2019
/s/ Jean Rankin Jean Rankin	Director	March 14, 2019
/s/ Robert Tirva Robert Tirva	Director	March 14, 2019