

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instructions A.2. below):

Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Section 5 – Corporate Governance and Management

Item 5.02. Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

(a) On August 10, 2012, Michael Doyle resigned from the Board of Directors of Image Sensing Systems, Inc. (the “Company”) because of his disagreement with the termination of the employment of Kenneth R. Aubrey as the Company’s President and Chief Executive Officer, as described below.

(b) On August 10, 2012, Kenneth R. Aubrey’s employment as the Company’s President and Chief Executive Officer was terminated.

(c) Effective on August 10, 2012, the Company’s Board of Directors appointed Kris B. Tufto as the Company’s interim President and Chief Executive Officer.

Mr. Tufto, age 54, has been a director of the Company since September 2011. Mr. Tufto has been a director of Sajan, Inc., a publicly-held company, since February 2010. From 2010 until 2012, he was the Chief Revenue Officer of Code 42 Software, Inc., a provider of computer backup solutions. From May 2008 to January 2010, he was President and Chief Executive Officer of MarketingBridge, LLC, a company providing internet connectivity. From April 2005 until April 2008, he served as an executive with or consultant to several early-stage technology companies. Mr. Tufto was President and Chief Executive Officer of Jasc Software, Inc., a provider of digital imaging software based in Eden Prairie, Minnesota, from March 1998 through March 2005. Jasc Software, Inc. was acquired by Corel Corporation in 2004. Mr. Tufto has a Bachelor’s of Sciences degree in Electrical Engineering from North Dakota State University.

(d) Effective on August 10, 2012, the Company’s Board of Directors appointed Dale E. Parker to the Company’s Board. Mr. Parker, age 60, has been a director of HickoryTech Corporation, a publicly-held company, since 2006 and has served as Chair of HickoryTech Corporation’s Board of Directors since January 2011. He is currently serving as interim Chief Financial Officer (CFO) for Ener1, Inc., an energy storage technology company that develops lithium-ion-powered storage solutions for application in the electric utility, transportation and industrial electronics markets. Mr. Parker worked as CFO of Neenah Enterprises, Inc., an independent foundry, in 2010. From 2009 to 2010, Mr. Parker was the Vice President of Finance for Paper Works, a producer of coated recycled paper board. Mr. Parker was CFO at Forest Resources, LLC, a company focused on paper product production and conversion, from 2007 to October 2008. From 2006 to 2007, Mr. Parker was CFO at Vitex Packaging Group, a manufacturer of packaging for tea and coffee brands. From 2000 to 2006, Mr. Parker served as Vice President, CFO, and board member of Appleton Papers, Inc., a leading manufacturer of specialty, value-added coated paper products, including carbonless thermal and security papers. Mr. Parker is a Certified Public Accountant and holds an MBA.

Mr. Parker was appointed to serve on the Company's Audit Committee as Chair, its Compensation and Stock Option Committee, and its Nominating and Corporate Governance Committee.

Mr. Parker will be compensated as a non-employee director in accordance with the Company's non-employee director compensation program. Under the program, for the remainder of 2012, he will receive a pro-rated portion of the \$12,000 annual retainer paid to all non-employee directors, \$1,000 for each regular Board meeting attended, \$750 for each Committee meeting attended and \$500 for each special Board meeting attended. As Chair of the Audit Committee, Mr. Parker will receive a pro-rated portion of the \$4,000 annual retainer.

In addition, in connection with Mr. Parker's initial appointment to the Board, on August 10, 2012, he was granted a 10-year non-incentive stock option to purchase 18,000 shares of the Company's common stock at an exercise price of \$5.05 per share, which is equal to the closing price of the Company's common stock on August 9, 2012 as quoted on The NASDAQ Capital Market. The option becomes exercisable in three equal installments on each of the first, second and third anniversary of the date of grant.

Section 7 – Regulation FD

Item 7.01. Regulation FD Disclosure

Concurrently with Mr. Tufto's appointment as the Company's interim President and Chief Executive Officer, he resigned from the Company's Compensation and Stock Option Committee, of which he was Chair, Audit Committee, and Nominating and Corporate Governance Committee. Mr. Tufto will continue to serve as a non-independent member of the Company's Board of Directors. James W. Bracke was appointed as Chair of the Compensation and Stock Option Committee and resigned as Chair of the Audit Committee, although he continues to serve on the Audit Committee.

Section 9 – Financial Statements and Exhibits

Item 9.01. Financial Statements and Exhibits.

(c) *Exhibits.* The following document is hereby filed as an exhibit to this Current Report on Form 8-K:

Exhibit No.

99.1 Press Release dated August 13, 2012.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Image Sensing Systems, Inc.

Date: August 13, 2012

By /s/ Gregory R. L. Smith
Chief Financial Officer (Principal Financial Officer
and Principal Accounting Officer)

Exhibit Index

Exhibit No.

99.1 Press Release dated August 13, 2012.