UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

The Bergquist Company, Plaintiff, v. Hartford Casualty Insurance Company, Defendant.	Court File No. 05CV2594 JNE/SRN **DEFENDANT HARTFORD CASUALTY INSURANCE COMPANY'S SUPPLEMENTAL RESPONSE TO PLAINTIFF'S REQUESTS FOR PRODUCTION OF DOCUMENTS**

TO: Plaintiff above-named and its attorneys of record Michael H. Streater and Bray Dohrwardt, Briggs and Morgan, P.A., 2200 IDS Center, 80 South Eighth Street, Minneapolis, MN 55402.

Defendant Hartford Casualty Insurance Company, for its Supplemental Response to Plaintiff's Request for Production of Documents, states as follows:

REQUEST NO. 13:

All statements concerning the subject matter of this litigation.

RESPONSE:

None.

SUPPLEMENTAL RESPONSE:

Copies of the following are attached hereto:

1. Affidavit of James E. Schmidt dated February 7, 2007; and
2. Affidavit of Patricia Dunn dated April 3, 2007.

Dated: April 9, 2007

By______________________

Charles E. Spevacek(#126044)
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AFFIDAVIT OF SERVICE VIA U.S. MAIL

The Bergquist Company v. Hartford Casualty Insurance Company
Court File No. 05CV2594 JNE/SRN
Our File No. 50183-21

STATE OF MINNESOTA)
)
COUNTY OF HENNEPIN)

Teri Broms, being first duly sworn on oath, deposes and states that on April 9, 2007 she served copies of Defendant Hartford Casualty Insurance Company's Supplemental Response to Plaintiff's Request for Production of Documents, Affidavit of James E. Schmidt and Affidavit of Patricia Dunn by depositing true and correct copies thereof in the U.S. Mail in the City of Minneapolis, Hennepin County, Minnesota, with postage prepaid, in an envelope directed and addressed to:

Michael H. Streater, Esq.
Bray Dohrwardt, Esq.
Briggs & Morgan, P.A.
2200 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

Teri Broms

Subscribed and sworn to before me
on this 9th day of April, 2007.

Notary Public

DARLENE J. DESLAURIERS
NOTARY PUBLIC-MINNESOTA
My Commission Expires Jan. 31, 2010

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UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

The Bergquist Company, Plaintiff, v. Hartford Casualty Insurance Company, Defendant.	Court File No. 05CV2594 JNE **AFFIDAVIT OF JAMES E. SCHMIDT**

STATE OF NEBRASKA)
) ss.
COUNTY OF DOUGLAS)

James E. Schmidt, being first duly sworn upon oath, deposes and states as follows:

1. I am the Director of Manufacturing for Election System & Software ("ES&S") located in Omaha, Nebraska, and in that capacity have knowledge relevant to the above-captioned matter.

2. ES&S is not a party to the above-captioned matter.

3. ES&S contracted with Pivot International ("Pivot") to manufacture iVotronic voting machines that were either sold to ES&S' customers, consigned to sales agents contracted by ES&S or loaned to ES&S sales representatives located in the United States and elsewhere.

4. The iVotronic voting machines manufactured by Pivot incorporated touchscreens manufactured by The Bergquist Company ("Bergquist").

5. I gave deposition testimony in the above-captioned matter on November 13, 2006.

6. During my deposition testimony referenced above, Deposition Exhibit 16 was marked.

7. Deposition Exhibit 16 is a document created by ES&S to identify the ES&S customers to whom ES&S sold iVotronic voting machines that incorporated Bergquist touchscreens manufactured with what Bergquist identified as its old dielectric ink, Acheson ML25265 and whether or not those touchscreens had been replaced as of September 30, 2004.

8. ES&S sold four iVotronic voting machines, among other items, to Unisys United Kingdom LTD, located in the United Kingdom, to be used in full service elections within the United Kingdom.

9. As reflected in Exhibit 16, two of the four iVotronic units sold to Unisys United Kingdom LTD (serial numbers V5102188-C and V5102587-C) incorporated Bergquist touchscreens manufactured with the old dielectric ink, Acheson ML25265.

10. ES&S replaced the two Bergquist touchscreens incorporated into the iVotronic units sold to Unisys United Kingdom LTD as part of the 22,619 touchscreens, manufactured with Bergquist's old dielectric ink, Acheson ML25265, that Bergquist agreed to replace in 2003.

FURTHER YOUR AFFIANT SAYETH NOT.

[signature]
James E. Schmidt

Subscribed and sworn to before
me this 7th day of February, 2007.

[signature] Angela D. Janke
Notary Public

GENERAL NOTARY - State of Nebraska
ANGELA D. JANKE
My Comm. Exp. Oct. 6, 2009

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

The Bergquist Company, Plaintiff, v. Hartford Casualty Insurance Company, Defendant.	Court File No. 05CV2594 JNE **AFFIDAVIT OF PATRICIA DUNN**

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

Patricia Dunn, being first duly sworn upon oath, deposes and states as follows:

1. I was employed by The Bergquist Company ("Bergquist") from October 28, 1998 until February 14, 2006. I have a Ph.D. in Material Sciences and Engineering from Northwestern University. I was hired by Bergquist to work as a Senior Scientist in Bergquist's Membrane Switch Division. My primary responsibilities while employed at Bergquist included new technology developments, improving the materials and processes used by Bergquist in its manufacture of membrane switch and developing procedures for testing and qualifying all materials changes to membrane switches. My work location while employed at Bergquist began in Edina, Minnesota, which then moved to Bergquist's new headquarters in Chanhassen, Minnesota.

2. In 2000, I also began serving as a materials consultant for Bergquist's Touchscreen Division located in Cannon Falls, Minnesota. I did not however, work on a daily basis in Cannon Falls. My primary work address remained the Bergquist

headquarters in Chanhassen, Minnesota. As a materials consultant for the Touchscreen Division, I handled individual and discrete issues that arose in the Touchscreen Division, upon the request of Sarah Black, who was head of Touchscreen Division at that time.

3. At some point, I assumed more responsibility for the materials evaluation work in Bergquist's Touchscreen Division when my boss, Bob Hartline, took over management of the Touchscreen Division.

4. Attached hereto and marked as Exhibit A (documents labeled B00545 – B00584) are true and correct copies of various documents, including correspondence and reports, either authored by me or provided to me in connection with my work for the Bergquist Touchscreen Division.

5. In 2001, Bergquist was manufacturing 5-wire touchscreens. The 5-wire touchscreen has several layers and is manufactured with different component materials and processes. The bottom layer of the Bergquist 5-wire touchscreen is a piece of glass – coated with a transparent and conductive indium tin oxide ("ITO"). Bergquist purchased the ITO coated glass from outside vendors. The ITO glass was converted into a touchscreen by adding nine layers, which included: a silver resistor network, two layers of dielectric ink, a silver top trace, perimeter adhesive, a tail, two types of electrical interconnects, stand-off dots, and a top film made of Mylar.

6. As I understood, Bergquist had a patent, or patent pending, on the use of a dielectric ink which enabled Bergquist to stack its silver traces (silver-dielectric-silver) and thereby reduce the width of the circuitry on the touchscreen perimeter. In 2001, Bergquist was using an acid-based dielectric ink (Acheson ML25240 or Acheson

ML25265) in the manufacture of its touchscreens. ML25240 and ML25265 were both acid-based dielectric inks manufactured by Acheson. ML25240 and ML25265 had the exact same properties, the only difference being that one was a clear ink and one was green in color. Each layer of the acid-based dielectric ink had to be cured in a ultraviolet ("UV") oven. During the touchscreen manufacturing process, a layer of silver ink is printed on the ITO coated glass and subject to a thermal cure. Next, the fist layer of dielectric ink is printed over the first layer of silver ink and then the dielectric ink is cured in a UV oven. After the first layer of dielectric ink is cured, the second layer of dielectric ink is printed on top of the first and again cured in a UV oven. Another layer of silver ink is placed on top of the two layers of dielectric ink and again subject to a thermal cure. The acid-based dielectric inks (ML25240 or ML25265) were used by Bergquist to manufacture touchscreens sold to its customers until sometime in April 2002, when Bergquist switched to an acid-free dielectric ink, PF455. The reasons for the switch to an acid-free dielectric ink, PF455, and my involvement therewith are discussed further in this Affidavit.

7. My work for the Touchscreen Division began with the evaluation of the individual component materials and processes Bergquist had been using to manufacture its touchscreens. At this time, I was not evaluating fully manufactured touchscreens or their performance. As requested by the Touchscreen Division, I compared existing materials and processes against alternate materials to identify those materials and processes with the best properties. For this work, I used standardized test methods (American Standards for Testing Materials ("ASTM")) for the individual component

materials such as inks and adhesives to evaluate material properties such as adhesion, hardness, solvent resistance, conductivity and dielectric strength. When I first became involved in the Touchscreen Division, I was contacted as a consultant because the Touchscreen Division observed several issues with the materials that Bergquist was using to manufacture its touchscreens. For example, the Touchscreen Division was experiencing adhesion issues with Bergquist's UV cured dielectric ink. Second, the Touchscreen Division was experiencing poor scratch resistance in Bergquist's thermally cured silver ink. I began evaluating higher cures and alternate materials to address these two issues.

8. During the process of trying to implement a higher temperature thermal cure on the silver ink to increase both its hardness and shorten its cure time, for both top and bottom silver traces (on either side of the dielectric ink layers), I found that the high temperature thermal cure could not be implemented on the top silver trace because the thermal cure temperature for the silver ink was limited by the thermal stability of the UV cured dielectric ink Bergquist was using to manufacture its touchscreens. That is, a high temperature thermal cure on the top silver ink would damage the dielectric ink because the dielectric ink was not stable enough to withstand the high heat of the thermal cure on the silver, causing the dielectric ink to turn yellow. Bergquist wanted to implement the high temperature thermal cure on the top silver because it would reduce the thermal cure time on the top silver from 45 minutes to 8 minutes and improve the hardness of the silver ink. These findings prompted me to seek both alternative dielectric inks and higher UV intensity cures on Bergquist's current dielectric ink to increase its thermal stability.

9. Another part of my work for the Touchscreen Division included finding materials which could survive the environmental extremes (>80°C) required for using the Bergquist touchscreens in an automotive application. Through my testing, I discovered that the dielectric ink Bergquist was using to manufacture it touchscreens failed an ASTM cross hatch tape adhesion test after a one week exposure to 85°C with 85% Relative Humidity (85°C/85%RH). This meant that Bergquist could not use its current acid-based dielectric ink (ML25240 or ML25265) in an automotive application. Because the acid-based dielectric could not survive the environmental extremes to be used in an automotive application, I began trying to identify and test a new dielectric ink that Bergquist could use in the manufacture of touchscreens for use in the automotive industry.

10. Accordingly, there were two reasons I was looking for an alternate dielectric ink. First, on the current touchscreens, a new dielectric would allow Bergquist to implement a high intensity thermal cure on the top silver trace. Second, I was searching for a new dielectric ink that could withstand the environmental requirements for an automotive account. I began my search for a new dielectric ink sometime in late summer/early fall of 2001. I tested an epoxy-based dielectric ink, PR-016. PR-016 did not meet the needs of Bergquist and was not implemented. I continued to search for an alternative dielectric ink.

11. In order to determine whether a higher UV intensity could improve the properties of the acid-based dielectric ink (thermal stability) as well other alternative dielectric inks I was evaluating, I recommended in the summer or fall of 2001 that the

Touchscreen Division purchase "a high intensity UV cure line like they had in Big Fork." The manufacturing facility for Bergquist's Membrane Switch Division is located in Big Fork, Minnesota. Howard Lister, a production manager in the Membrane Switch Division, told me that Bergquist was using the American UV Systems cure lines to cure the same acid-based dielectric ink used to manufacture membrane switches in Big Fork at that time.

12. The UV system used by Bergquist to cure the dielectric ink in its touchscreens, from the startup of the Touchscreen Division until the fall of 2001, was a CoLight UV 24-2. The CoLight UV 24-2 had a much lower intensity than the American UV System used in Big Fork.

13. On October 31, 2001, Bergquist was operating the CoLight UV 24-2 at 0.4 Watts/cm2 to cure the dielectric ink used in the manufacture of its touchscreens.

14. On November 1, 2001, Bergquist began using a new UV system, the CoLight UV24-3, to cure the first layer of dielectric at 0.6 Watts/cm2. At that time, Bergquist continued to use the old CoLight, the CoLight UV24-2, to cure the second layer of dielectric ink at 0.4 Watts/cm2.

15. Sometime after November 1, 2001, after learning that a new UV system had been purchased, I went to the Touchscreen Division's manufacturing facility in Cannon Falls to evaluate the properties of the current dielectric (ML25240 or ML25265) at a higher cure intensity. I recall being very upset when I realized that the UV cure line Bergquist purchased was not a high intensity American UV System cure line but rather a low intensity CoLight UV24-3 with a maximum output of only 0.8-0.9 Watt/cm2.

During conversations with Matt Gaspar, a process engineer in the Touchscreen Division, Matt told me that he received a "good deal" on the CoLight UV24-3 because a friend of his built Bergquist's new CoLight UV24-3 unit using CoLight's spare parts.

16. Around this same time, in late fall of 2001, I was asked to consult with Bergquist's Touchscreen Division on issues that had arisen with touchscreens manufactured by Bergquist and provided to a potential Bergquist customer, Hill-Rom. As I understood, sometime during the summer or fall of 2001 (and prior to my involvement with the Hill-Rom issues), Bergquist provided Hill-Rom, a potential customer, with sample touchscreens as a part of Bergquist's efforts to establish a touchscreen account with Hill-Rom. Those sample touchscreens were subjected to testing and qualification by Hill-Rom, which included rapid thermal cycling with exposures to hot and cold temperatures, and accelerated aging (elevated heat and humidity) to predict touchscreen performance in the field or end use application. After completing its testing, Hill-Rom's advised Bergquist that the Bergquist touchscreens were either non-linear or non-functional after Hill-Rom's environmental exposure tests and sent the touchscreens back to Mary Randall at Bergquist for failure analysis.

17. Mary Randall, an employee in Bergquist's Touchscreen Division, performed the initial failure analysis on the touchscreens returned from Hill-Rom. Mary isolated the problem to the dielectric ink. Mary observed that, after scraping off the dielectric ink layer, the ITO coating underneath the dielectric ink was no longer conductive. Mary Randall asked for my assistance with the Hill-Rom failure analysis in order to determine why the ITO under the dielectric ink was no longer conductive after

Hill-Rom's environmental exposure tests and to determine which Hill-Rom test environment the touchscreens failed in. I began this analysis in late fall of 2001, which I believe to be sometime after October 25, 2001.

18. In order to determine which environment (heat or humidity) caused the touchscreen failures at Hill Rom, I evaluated both cured and uncured samples of the dielectric ink on dielectric band samples. For the uncured sample, I placed wet dielectric ink, in band, down the center of a piece of ITO glass. For the cured sample, I had a band of dielectric ink printed down the center of a piece of ITO glass and cured in Cannon Falls on the CoLight UV24-2 at 0.4Watts/cm2 because the Hill-Rom parts would have been on the CoLight UV24-2 at 0.4Watts/cm2. I also used an ITO glass sample as a control against which to measure the other samples because I already knew that the ITO alone, in the presence of humidity, would experience some rise in resistance and I wanted to separate that effect on resistance from the effects of the dielectric ink in combination with the ITO on resistance. I thereafter subjected all three samples to three separate environments: (1) room temperature; (2) heat; and (3) heat + humidity. The ITO resistance measurements were taken from either side of the dielectric band before and after the environmental exposures. From these tests, I determined that the resistance rise only occurred when the samples were exposed to humidity. I also determined that the magnitude of the resistance rise in the presence of humidity was much higher on the uncured dielectric ink sample than it was on the UV cured dielectric ink sample. I further concluded that it was acid in the dielectric ink that, in the presence of moisture, caused the ITO resistance rise. I believed that the acid was probably un-reacted acrylic acid left

over from the acrylic polymerization process which, in the presence of humidity, etched the ITO coating and rendered it non-conductive. At this time, I knew that if the dielectric ink was under cured there would be residual acrylic acid in the touchscreen that would react with moisture in humid environments to etch away the ITO coating on the glass. That is, that under cured dielectric ink would result in touchscreen failure when exposed to humidity.

19. I also submitted touchscreens from the manufacturing line in Cannon Falls for a laboratory test request ("LTR") entitled "Hill-Rom failure analysis" to Bergquist's lab in the Chanhassen facility. The lab technicians subjected the touchscreens to each of the three Hill-Rom environments. The resistance of the ITO was measured on the base silver resistor network at the pin 1-2 and pin 3-4 contacts, before and after exposure to each of the three Hill-Rom environments. The results of these tests revealed that it was Hill-Rom's humidity exposure test (70°C/75%RH, 4 days) that caused the ITO resistance rise. That is, the touchscreens failed because of exposure to humidity.

20. After concluding that it was acid in the dielectric ink that caused the touchscreens to fail after exposure to humidity, I called Acheson, the manufacturer of the acid-based dielectric ink. I inquired about the dielectric ink's effect on ITO during humidity exposure, and the poor thermal stability I discovered in my early testing. Representatives from Acheson told me that these problems would have been caused by Bergquist under curing the dielectric ink. Acheson further claimed that all acrylic monomer should be locked up when the dielectric is fully cured. They also claimed that the poor thermal stability that we were experiencing with this dielectric was also