

EXHIBIT A

TO

**PLAINTIFFS' REBUTTAL BRIEF
ON CLAIM CONSTRUCTION**

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
NORFOLK DIVISION**

_____)
)
)
NADER ASGHARI-KAMRANI and)
KAMRAN ASGHARI-KAMRANI,)
)
)
Plaintiffs,) Civil Action No. 2:15-cv-00478-RGD-LRL
)
)
v.) Hon. Robert G. Doumar
)
)
UNITED SERVICES AUTOMOBILE)
ASSOCIATION,)
)
)
Defendant.)
)
)
)
)
_____)

**DECLARATION OF JEFFREY K. HOLLINGSWORTH IN SUPPORT OF
PLAINTIFFS' REBUTTAL BRIEF ON CLAIM CONSTRUCTION**

I, Jeffrey K. Hollingsworth, Ph.D., hereby declare and state:

ENGAGEMENT

1. I make this Declaration in support of Plaintiffs' Rebuttal Brief on Claim Construction that is filed herewith.

2. Prior to preparing this Declaration, I reviewed various materials, including those identified in my previously submitted Declaration [Dkt. No. 116-1] and:

(1) Technical references and publications, including but not limited to:

- a. IBM DICTIONARY OF COMPUTING 132 (Int'l ed. 1994) (Ex. C);
- b. THE FACTS ON FILE DICTIONARY OF COMPUTER SCIENCE 43 (Rev. ed. 2006) (Ex. D);
- c. MICROSOFT COMPUTER DICTIONARY 105 (4th ed. 1999) (Ex. E);
- d. Rotz, Wendy, et al., "A Comparison of Random Number Generators Used in Business," Proceedings of the Annual Meeting of the American Statistical Association (August 5-9, 2001) ("*Rotz et al.*") (Ex. F);
- e. Soto, J., "Statistical Testing of Random Number Generators," Proceedings of the 22nd National Information Systems Security Conference (1999) ("*Soto*") (Ex. G);
- f. *Securing Your Web Browser*, UNITED STATES COMPUTER EMERGENCY READINESS TEAM (US-CERT) OF U.S. DEP'T OF HOMELAND SECURITY, <https://www.us-cert.gov/publications/securing-your-web-browser> (last visited June 9, 2016) (Ex. H); and
- g. 695.712 – *Authentication Technologies in Cybersecurity*, JOHNS HOPKINS UNIVERSITY - WHITING SCHOOL OF ENGINEERING, <https://ep.jhu.edu/programs-and-courses/695.712-authentication-technologies-in-cybersecurity> (last visited June 2, 2016) (Ex. I).

3. Unless otherwise expressly stated, the opinions below regarding the perspective of one of ordinary skill in the art refer to the opinion of one of ordinary skill as it would have been on the effective filing date of August 29, 2001.

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4. I will briefly describe some of my experience in the fields of network and computer security. From the early 1990s, I have served as one of the two principal investigators on the Dyninst Project. Dyninst is a tool to analyze, and modify computer programs. Dyninst has been used by many research groups around the world for various computer security related research projects.

5. Since 2005, I have served as Adjunct Research Staff Member at the Institute for Defence Analysis Center for Computer Science (CCS). CCS conducts research on critical national issues for the National Security Agency, and other Federal Agencies. In this role I conduct research on various aspects of computer and network security. Since all of that work is classified, I will not describe it further here.

6. From 2004 to 2006 I served as director of the Center for Human Enhanced Secure Systems (CHESS). CHESS was the first research center in cyber-security at the University of Maryland. Its mission was to bring together computer security researchers from across the UMD campus to increase research in computer security at the University of Maryland.

7. Since 1995, I have taught both the Computer Networking and Operating Systems senior level classes at the University of Maryland. Both of these classes include significant coverage of various aspects of network and computer system security. In fact, these classes are two of the five specific senior courses that are required in the University of Maryland's Specialization in Cybersecurity within the Computer Science Program.

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THE PERSPECTIVE OF ONE OF ORDINARY SKILL IN THE ART

“dynamic code”

8. One of ordinary skill would have understood that different methods of generating the claimed “dynamic code” may generate codes of varying degrees of nonpredictability, and one of ordinary skill would have selected a degree of nonpredictability that provides the desired degree of security for a given application. This understanding is corroborated by *Rotz et al.* (2001) and *Soto* (1999), which discuss the idea that different random number generators (RNGs) produce different degrees of nonpredictability. *Soto* discusses “metrics . . . to investigate the randomness of cryptographic RNGs and . . . confidence that random number generators are acceptable from a statistical point of view.” *Soto* at 9 (emphasis in original). The term “substantially nonpredictable” means that one of ordinary skill would have had confidence that the selected degree of nonpredictability is acceptable from a statistical point of view to achieve a desired degree of security for a given application.

9. As a practical matter, a person of ordinary skill would understand that while it is important for a dynamic code to be unpredictable, it would not be necessary, expected, or even desirable that the dynamic code be unique and never repeated for all transactions ad infinitum.

10. As a simple practical example, consider a four digit numeric code: This code only has 10,000 possible values (0000 to 9999). If it were necessary for the code never to be repeated, only 10,000 transactions could be supported before the system would no longer operate. A person of ordinary skill would clearly recognize that such a system would have too short a life to be practical or useful.

11. However, if a new code is generated for each transaction, and each time a code is generated it is substantially nonpredictable, an adversary has only a 1 in 10,000 chance of

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