UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AMNESTY INTERNATIONAL USA; GLOBAL FUND FOR WOMEN; GLOBAL RIGHTS; HUMAN RIGHTS WATCH; INTERNATIONAL CRIMINAL DEFENSE ATTORNEYS ASSOCIATION; THE NATION MAGAZINE; PEN AMERICAN CENTER; SERVICE EMPLOYEES INTERNATIONAL UNION; WASHINGTON OFFICE ON LATIN AMERICA; DANIEL N. ARSHACK; DAVID NEVIN; SCOTT MCKAY; and SYLVIA ROYCE, Plaintiffs, v. JOHN M. McCONNELL, in his official capacity as Director of National Intelligence; LT. GEN. KEITH B. ALEXANDER, in his official capacity as Director of the National Security Agency and Chief of the Central Security Service; and MICHAEL B. MUKASEY, in his official capacity as Attorney General of the United States, Defendants.	**DECLARATION OF STEVEN M. BELLOVIN** Case No. 08 Civ. 6259 (JGK) **ECF CASE**

DECLARATION OF STEVEN M. BELLOVIN

I, Steven M. Bellovin, declare:

1. I am a resident of Westfield, NJ, over the age of eighteen. I have personal knowledge of the facts stated in this declaration. I am a professor in the Computer Science department at Columbia University, and a member of the Science and Technology Advisory Committee of the Department of Homeland Security. From 1982 to 2004, I worked for AT&T Bell Laboratories and for AT&T Labs Research, and I was named an AT&T Fellow in 1998. I continue to maintain affiliation with AT&T.

2. I am an expert on the interplay between networks and security. I was elected to the National Academy of Engineering in 2001, and I have served on numerous National Research Council computer security committees. I also served on the Internet Engineering Task Force's Internet Architecture Board from 1996 to 2002, and as an Internet Engineering Task Force security director from 2002 to 2004. I am the co-chair of the 2008 Applied Cryptography and Network Security conference and the co-author of "Firewalls and Internet Security: Repelling the Wily Hacker" (Addison-Wesley Professional 2004), the first book on the subject, and have authored or co-authored numerous other books, papers, and articles for various scientific journals. In addition to my current position at Columbia, I have held teaching positions at the University of North Carolina at Chapel Hill and at the University of Pennsylvania. In 2007 I was awarded the National Computer Systems Security Award, presented by the National Institute of Standards and Technology and the National Security Agency. In 1995, I and two colleagues were awarded the Usenix Lifetime Achievement Award for developing Usenet, a world-wide distributed Internet discussion system. I graduated with a B.A. from Columbia University, and received an M.S. and a Ph.D in computer science from the University of North Carolina at Chapel Hill.

SCOPE OF THIS DECLARATION

3. I have been asked to render my professional opinion concerning the physical infrastructure used to transmit international communications during the 1970s, in particular at the time that Congress was considering the enactment of the Foreign Intelligence Surveillance Act ("FISA"). The opinions I express in this declaration are based on the technical and other specialized knowledge I have obtained through my experience, training, research, teaching, and education described above. In addition, I specifically consulted the following sources, among

others: Bell Telephone Laboratories, *Engineering and Operations in the Bell System* (2d ed. 1983); Peter K. Runge, *Undersea Lightwave Communications* (Patrick R. Trischitta ed., IEEE 1986); David S. Kris, *Modernizing the Foreign Intelligence Surveillance Act* (Brookings Institution, Georgetown University Law Center, and Hoover Institution, Working Paper, 2007); *In re American Telephone and Telegraph Co.*, 63 F.C.C.2d 166 (1977); and American Telephone and Telegraph Company Annual Reports from 1975-1979. The opinions I express herein are my own and do not necessarily reflect the views of any institution or organization with which I am affiliated.

DEVELOPMENT OF THE NATION'S COMMUNICATIONS INFRASTRUCTURE

4. The first transatlantic telegraph cable was laid between Ireland and Newfoundland in 1858. Although this first transoceanic cable worked for only one month and could only carry a few words within that time span, it spurred additional experimentation. A stronger cable was laid over this route in 1866 and could transmit six to eight words per minute. Although early cables represented a breakthrough in communications technology, they were unreliable and their capacity was very limited. The development of coaxial cable radically altered cable communications, by providing a more stable, secure medium over which many signals could travel at the same time.

5. In the early 1930s the American Telephone and Telegraph Company ("AT&T") began to study the possibility of laying deep sea coaxial cable that could carry voice messages. Cable was meant to provide a more reliable alternative to short wave radio communications, which could vary depending on such things as sunspot activity. After many attempts, TAT-1, the first commercial transoceanic submarine cable, was put into service in 1956. It carried thirty-six telephone channels simultaneously between England and Newfoundland. In 1959, TAT-2, which

was capable of carrying forty-eight telephone channels simultaneously, went into service, linking France and Newfoundland. Completion of TAT-3 (between England and New Jersey) in 1963 and TAT-4 (between France and New Jersey) in 1965 added an additional 138 telephone channels per cable and created a direct cable link between the United States and Europe. Advancement in telecommunications technology allowed for a dramatic increase in capacity over the next decade with TAT-6 and TAT-7 each carrying 4,000 telephone channels directly between Europe and the United States.

6. In comparison to cable telecommunications, satellite telecommunications developed much later. Telstar, the first active communications satellite, was launched into orbit in 1962. It was capable of successfully transmitting faxes, high-speed data, live and taped television programming, and domestic and transatlantic telephone calls. The first commercial communications satellite, Intelsat 1, was launched in 1965 and provided telecommunications service between the United States and Europe. Intelsat 1 supplemented existing transatlantic cable links and carried 240 voice circuits. Later satellites provided increased capacity.

7. Despite the growing use of satellites for broadcasting and some communications during the 1970s, transoceanic cables remained a principal medium for the transmission of international communications. In fact, in the 1970s, transmission capacity was more-or-less evenly divided between satellite and transoceanic cable. This was in part by design. In the 1970s, the Federal Communications Commission ("FCC") implemented a policy known as "balanced loading," which required that the transmission of international telecommunications be divided equally between satellite and cable technology. As part of this policy, in 1977 the FCC authorized the activation of additional circuits on the TAT-6 transatlantic cable. (The transmission of military communications was also divided, by design, between the available

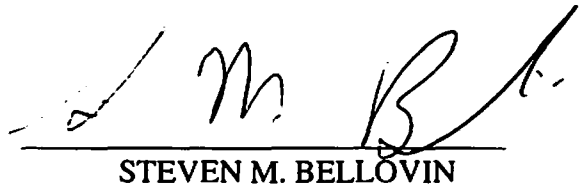
technologies. In the late 1970s the Department of Defense maintained a policy of routing one-third of its overseas communications through commercial cable, one-third through commercial satellite, and one-third through military satellite.) In 1980, AT&T reported that its network supported "a complex web of 1.4 billion miles of microwave and cable paths and 12,000 satellite circuits" and was "linked to the rest of the world's telephones by undersea cable and satellite."

8. Thus in the mid 1970s, international communications were transmitted over both satellite and cable. Moreover, the expectation was that cable would continue to be a principal medium for the transmission of international communications for the foreseeable future. There were sound technical reasons for continued use of coaxial cable; both voice and data connections were inherently of higher quality when sent over cable compared to satellite. In fact, many calls were routed over an asymmetric path—satellite one way, coaxial cable the other—to maintain voice quality.

9. At the time Congress was debating the passage of FISA, Americans' international communications were being transmitted more-or-less equally over satellite and transoceanic cable. Moreover, telecommunications companies were expected to continue developing both cable and satellite capacity in the future. In fact, new transoceanic cables were sunk the year after FISA passed, and throughout the early 1980s. In enacting FISA, Congress regulated, among other things, "the acquisition by an electronic, mechanical, or other surveillance device of the contents of any wire communication to or from a person in the United States, without the consent of any party thereto, if such acquisition occurs in the United States." 50 U.S.C. § 1801(f)(2). In regulating this kind of surveillance, Congress regulated—and plainly intended to regulate—certain kinds of surveillance of Americans' international communications.

10. I understand that the government has argued that, in enacting FISA, "Congress did not generally intend the statute's regulatory framework to cover surveillance directed at persons outside the United States—even with respect to those persons' international communications with parties inside the United States." I believe that this is, at best, a gross oversimplification. In the 1970s, Americans' international communications were as likely to be transmitted via satellite as they were via transoceanic cable. Moreover, cable capacity was expected to grow significantly over the subsequent decades. The government's claim that FISA was not intended to regulate the surveillance of Americans' international communications is incorrect.

I declare under penalty of perjury under the laws of the United States and of the State of New Jersey that the foregoing is true and correct.



STEVEN M. BELLOVIN

Executed at London, England on December 9, 2008.