innocuous purposes, or for interception that violates consumer privacy and U.S. law. [redacted] Configurations could be used for a number of legitimate purposes; however, the scale of these deployments is, in my opinion and based on my experience, vastly in excess of what would be needed for any likely application, or any likely combination of applications other than surveillance.

41. The [redacted] Configurations that were deployed are not routine for Internet backbone operators, and they are emphatically not required (nor, apparently, are they being used) for the transmission of Internet data between customers.

42. I consider other possible alternative hypotheses for AT&T's deployments later in this Declaration, under "Alternative reasons why AT&T might have deployed the [redacted] Configurations." For instance, the [redacted] Configurations could be used in support of routine lawful intercept, and are possibly being used in that way, but lawful intercept requirements could not account for AT&T's deployment of the [redacted] deployments. As another example, the [redacted] Configurations could be used in support of AT&T commercial security offerings, and it appears that AT&T is using either the [redacted] Configurations or, more likely, similar technology deployed elsewhere in support of their Internet Protect commercial offering. In my judgment, and based on my experience, it is highly unlikely that benign applications, either individually or collectively, provided the rationale for the deployment. The information at hand suggests, rather, that AT&T has attempted after the fact to find ways to realize additional commercial value out of a very substantial deployment that had already been made primarily in order to conduct (presumably warrantless) surveillance. Public statements by AT&T officials over the years tend to support this view – AT&T only belatedly realized that customers might be interested in certain of these capabilities.[14]

43. Prior to seeing the Klein Declaration, I would have expected the Program to involve a modest and limited deployment, targeted solely at overseas traffic, and likely limited in the information captured to traffic measures (except pursuant to a warrant). The majority of international IP traffic enters the United States at a limited number of locations, many of them in the areas of northern Virginia, Silicon Valley, New York, and (for Latin America) south Florida.

[14] Supporting detail appears later in this Declaration, in "Alternative reasons why AT&T might have deployed the [redacted] Configurations."

This deployment, however, is neither modest nor limited, and it apparently involves considerably more locations than would be required to catch the majority of international traffic.

44. The [redacted] Configurations are fully capable of pattern analysis, pattern matching and detailed analysis at the level of *content*, not just of addressing information. One key component, the [redacted], exists primarily to conduct sophisticated rule-based analysis of content. It is also well suited to high speed data reduction – to the "winnowing down" of large volumes of data, in order to identify only events of interest.

45. Klein Exhibit C speaks of a private [redacted] backbone network, which appears to be partitioned from AT&T's main Internet backbone, the CBB.[15] This suggests the presence of a private network. The most plausible inference is that this was a covert network that was used to ship data of interest to one or more central locations for still more intensive analysis. I return to the capabilities of the [redacted] Configurations later in this Declaration, under "Capabilities of the [redacted] Configuration."

46. Given the probable cost of these configurations, and the likely limited commercial return, I find it exceedingly unlikely a financially troubled AT&T[16] would have made these investments at that time on its own initiative. I can envision no commercial reason, nor any combination of commercial reasons, that would render that investment likely. I therefore conclude that it is highly probable that funding came from an outside source, and consider the U.S. Government to be the most likely source. This supports Mr. Klein's assertion that the room was an NSA secure room, accessible only to NSA-cleared personnel.

47. I also find that the components that were chosen are exceptionally well suited to a massive, distributed surveillance activity (*see* "Capabilities of the [redacted] Configuration" later in this Declaration). No other application provides as good an explanation for the combination of engineering choices that were made.

48. In addition, the private [redacted] backbone network referred to in Klein Exhibit C,

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[15] Klein Exh.C, pp 6, 12, 42. Again, *see* "Capabilities of the [redacted] Configuration" later in this Declaration.

[16] I return to the topic of AT&T's financial condition later in this Declaration, under "AT&T's Financial Condition in 2003."

appears to be partitioned from AT&T's main Internet backbone, the CBB.[17] This is perfectly consistent with the notion of massive, covert distributed surveillance system. It is not consistent with normal AT&T practice – they have been working for years to try to reduce the number of networks in use, in the interest of engineering and operational economy.

49. For all of these reasons, I am persuaded that the [redacted] Configurations were deployed primarily in order to perform surveillance on a massive scale, and not for any other purpose.

BACKGROUND – FIBER OPTICS

50. The Klein Declaration speaks (at ¶ 24 and in the sections following) of *splitting* the light signal, so as to divert a portion of the signal to the [redacted] Room. It may be helpful to review (at an informal level suitable for a non-specialist) some of the characteristics of fiber optic transmission before proceeding.

51. Historically, electronic communications were carried over copper wires, or were broadcast through the air. In both instances, it was often economically and technically advantageous to *modulate*[18] the signal onto a higher frequency wave. Doing so enables the recipient to select from among multiple signals transmitted over the same physical medium. You do this every time that you tune your television or radio to a particular channel.

52. More recently, fiber optics have supplanted the use of copper wire for many applications, especially those involving long distances. Instead of modulating signals onto electrical waves or radio waves, they are modulated onto light waves. Because light waves have a much higher frequency than the waves used in copper wires, it is possible to modulate far more information onto them.

53. Fiber optics have an additional advantage over copper wires: They do not generate electrical interference, nor are they vulnerable to it. In addition, it is difficult to "tap" into a fiber

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[17] Klein Exh.C, pp 6, 12, 42. Again, *see* "Capabilities of the [redacted] Configuration" later in this Declaration.

[18] *Modulation* is ". . . the process of varying a carrier signal, typically a [signal in the shape of a sine wave], in order to use that signal to convey information . . . . There are several reasons to modulate a signal before transmission in a medium. These include the ability of different users sharing a medium (multiple access), and making the signal properties physically compatible with the propagation medium." *See* http://en.wikipedia.org/wiki/Modulation (Exhibit H).

optic cable without detection. All of these characteristics are felt to make fiber more reliable and more secure than copper.

54. At the same time, these characteristics mean that law enforcement has to work harder to implement lawful intercept. The Hollywood image of an FBI agent with a pair of alligator clips is a thing of the past.

55. This is one of the main reasons why CALEA obligates carriers to instrument their networks in order to support requests for lawful intercept. Lawful intercept in today's world depends on the cooperation of the carrier.

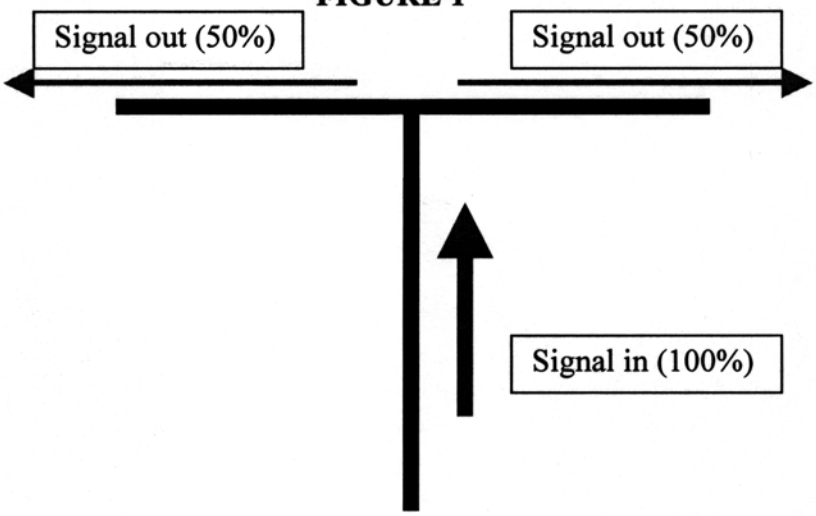
56. In this case, the splitter (described below) provides an equivalent function to that of the alligator clips. However, instead of capturing traffic to a single target, these splitters collectively transferred all or substantially all of AT&T's off net IP-based traffic[19] (so-called Internet *peering*[20] traffic to other Internet backbones) to a secure room.

57. A splitter is a standard bit of optical gear. The simplest form is a "T" – one signal comes in, two signals go out. The splitters in this case were 50/50 splitters, which is to say that they split the signal such that 50% went to each output fiber. *See* the figure immediately below.

[19] The basis for this statement is developed over the balance of this Declaration. Traffic from one AT&T customer to another AT&T customer is *on net* traffic; traffic from an AT&T customer to a customer of some other ISP is in general *off net* traffic. As previously noted, all Internet traffic is *IP-based*, *i.e.* based on the Internet Protocol. I expand on this discussion in the section in which I discuss "Traffic captured."

[20] Again, peering is the process whereby Internet providers interchange traffic destined for their respective customers, and for customers of their customers.

FIGURE 1



58. To the layman, it may seem strange that one can split a signal and still use both portions. In everyday life, if we divide something in half, each half is in some sense less than the whole. It is important to remember that, in this case, what is important is the bits (the information carried), not the underlying medium. This is more akin to making a copy of an audio CD – the CD that has been copied is not harmed by being copied. The copy contains the same information as the original.

59. Opto-electronic equipment is routinely designed to recover as much information as possible from weakened signals in order to attempt to compensate for *attenuation*[21] (weakening, or loss of "punch") of the signals over distance.

60. The AT&T designers were well aware that splitting the signal would make it weaker. They expected a loss of [redacted][22] as a direct result of splitting the signal in two, and a loss of an additional [redacted] due to possible inefficiencies in the process – think of this latter loss as being the equivalent of friction in a mechanical device. This makes for a combined loss of [redacted]. As long

[21] "In telecommunication, *attenuation* is the decrease in intensity of a signal, beam, or wave as a result of absorption of energy and of scattering out of the path to the detector, but not including the reduction due to geometric spreading." *See* http://en.wikipedia.org/wiki/Attenuation (Exhibit I).

[22] dB is the standard abbreviation for decibel. "The decibel (dB) is a measure of the ratio between two quantities, and is used in a wide variety of measurements in acoustics, physics and electronics. . . . It is a "dimensionless unit" like percent. Decibels are useful because they allow even very large or small ratios to be represented with a conveniently small number. This is achieved by using a logarithm." *See* http://en.wikipedia.org/wiki/Decibel (Exhibit J).

as the loss was less than [redacted], they presumably expected it to be within the normal operating tolerances of the devices on both ends, so they apparently made no provision to correct for the loss. [redacted][23]

61. For the work that was described in the Klein Exhibits, each high speed circuit was apparently comprised of multiple fiber optic cables. [redacted] to the splitters, and thereby to divert or copy the signals carried on those circuits. They presumably chose not to connect the cables associated with other circuits to the splitters, and thereby to refrain from diverting or copying the signals associated with those circuits.

62. [redacted] Configurations, [redacted][24] This arrangement enabled the circuits to continue to function just as they previously had, but also made the signals available to the [redacted]

63. The splitter configuration that AT&T used is routinely available from a major supplier of equipment for electronic communications, [redacted]

SUMMARY OF THE ARCHITECTURE OF THE [redacted] CONFIGURATION AND ITS DATA CONNECTIVITY

64. In this section, I provide a summary overview of the architecture of the [redacted] Configuration and its data connectivity, based on the Klein Declaration, the Klein Exhibits, and my professional expertise. More details are provided in later sections of this declaration.

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[23] *See* Klein Exh. A, p. 10.

[24] [redacted]