THE SKY'S THE LIMIT: A MODERN APPROACH TO AIRPORT SECURITY

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In today's society, technology is always changing. In a matter of years—or maybe even months—once-prized computers and cell phones are tossed aside for the latest and greatest model. As a matter of national security, airport screening technology should also follow this trend. Although the Transportation Security Administration has made significant strides into the modern era through the use of advanced imaging technology, more remains to be done. This Note discusses the constitutional and privacy implications of modern airport screening technology and introduces laser-based molecular scanners as a solution that will strengthen national security while protecting individual privacy rights.

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INTRODUCTION

What if you could be arrested for unknowingly carrying the butt of someone else's marijuana cigarette on the bottom of your shoe?[1] What if you could be detained for carrying cash containing traces of cocaine residue?[2] What if the U.S. government could discover every physical characteristic about you—including traces of drugs, gunpowder, adrenaline levels, and what you had for breakfast—from 164 feet away?[3] These "Big Brother" scenarios are not fictional sequels to George Orwell's famous novel, 1984[4]; the government has technology at its disposal—laser-based molecular scanners—that can make these hypothetical scenarios a reality.[5]

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1. This happened to a British traveler at the Dubai International Airport. He was ultimately sentenced to four years in a Dubai prison. Beth Hale, MAILONLINE, Briton Jailed for Four Years in Dubai After Customs Find Cannabis Weighing Less Than a Grain of Sugar Under His Shoe (Feb. 8, 2008), http://www.dailymail.co.uk/news/article-512815/Briton-jailed-years-Dubai-customs-cannabis-weighing-grain-sugar-shoe.html.

2. A large amount of U.S. currency contains traces of controlled substances. United States v. Carr, 25 F.3d 1194, 1215 (3d Cir. 1994) (Becker, J., concurring in part and dissenting in part) (citing United States v. Fifty-Three Thousand Eighty-Two Dollars in U.S. Currency, 985 F.2d 245, 250 n.5 (6th Cir. 1993); United States v. Six Hundred Thirty-Nine Thousand Five Hundred & Fifty-Eight Dollars ($639,558) in U.S. Currency, 955 F.2d 712, 714 n.2 (D.C. Cir. 1992)).

3. See Hidden Government Scanners Will Instantly Know Everything About You from 164 Feet Away, GIZMODO (July 10, 2012, 9:40 AM) [hereinafter Hidden Government Scanners], http://gizmodo.com/5923980/ the-secret-government-laser-that-instantly-knows-everything-about-you.

4. GEORGE ORWELL, 1984 (1st World Publ'g 2004) (1949).

5. See infra Part I.B.

Rather than fearing this technology because of what could happen, the government and the general public should embrace it. Where technological innovation is concerned, the sky should be the limit. Under our current system, however, the government is forced to adopt security measures to detect new types of threats as technology advances, especially in the airport security context.[6] As a result, like a rodent on a hamster wheel, the government is constantly chasing new threats and struggling to keep up with the pace of technological innovation.[7] But with the aid of laser-based molecular scanners, the government has the power to permanently prevent weapons and explosives from circumventing airport security. However, as the saying goes, "with great power comes great responsibility,"[8] and the scanners' detection capabilities must be carefully limited in order to protect individual privacy interests.[9]

This Note focuses on the constitutional implications of governmental use of laser-based molecular scanners at airport screening checkpoints. Although these scanners can be used constitutionally, they are highly susceptible to abuse.[10] The scanners' capability to discover contraband and nonthreatening items, search passengers surreptitiously, and stigmatize passengers requires their use to be narrowly tailored.[11] The government can accomplish this goal by installing software to ensure that the scan detects only the presence of weapons and explosives.[12] This restricted use would be upheld as a nonsearch, or in the alternative, a constitutionally permissible search under the administrative search doctrine.[13]

Part I provides background information about laser-based molecular scanners and the history of airport security. Part II discusses the Fourth Amendment legal standard involved in administrative searches,[14] outlining the

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6. See MIKE ROGERS, CHAIRMAN, SUBCOMM. ON TRANSP. SEC. COMM. ON HOMELAND SEC., REBUILDING TSA INTO A SMARTER, LEANER ORGANIZATION 3 (Sept. 2012) (criticizing TSA's reactive approach to threats).

7. See infra Part I.

8. See SPIDERMAN (Columbia Pictures 2002).

9. See infra Part IV.

10. See infra Part IV.A.1.

11. See John Brandon, Will New Airport Laser Scan You for Explosives—and Your Lunch?, FOX NEWS (July 12, 2012), http://www.foxnews.com/tech/2012/07/12/will-new-airport-laser-scan-for-explosives-and-your-lunch/#ixzz215RRmnWu. Mychal Wilson, security expert and attorney, commented that "[l]aser-based molecular scanners will enable TSA officials to identify explosives, dangerous chemicals and bioweapons on its passengers. They can also detect drugs, alcohol, and your breakfast, lunch and dinner. Even your adrenaline level will be available for government analysis. Everything about your body will be available to the government and logged into a database." Id.; Hidden Government Scanners, supra note 3.

12. See infra Part IV.

13. Id.

14. The scope of this Note is limited to the administrative search doctrine. Other justifications for suspicionless searches include consent and special needs. See, e.g., MacWade v. Kelly, 460 F.3d 260, 275 (2d Cir. 2006) (holding that suspicionless subway baggage search program was constitutional by serving a special need of preventing a

boundaries of a reasonable administrative search. Part III applies the administrative search doctrine to current airport screening technology. Part IV examines both the unrestricted and limited potential uses of laser-based molecular scanners in airports, and the constitutionality of each. Finally, Part V discusses the policy implications of laser-based molecular scanners, and why they are an optimal solution to airport security.

I. THE HISTORY AND POSSIBLE FUTURE OF AIRPORT SECURITY

A. An Unsettling History

During the first half of the twentieth century, commercial air travel was relatively peaceful.[15] This period of tranquility was interrupted in the 1960s, however, when a passenger hijacked a Florida-bound jetliner and forced the pilot to fly to Cuba.[16] Of the 87 hijackings in 1969, 40 occurred within the United States.[17] In an effort to prevent more hijackings, New Orleans International was the first airport to screen all departing passengers with magnetometers to detect metallic weapons.[18] Today, magnetometers remain a common airport screening method.[19] Although magnetometers are designed to detect every firearm manufactured,[20] there are several ways to circumvent them.[21]

Most notably, the 9/11 hijackers walked through airport security with knives and box cutters.[22] At the time, security screenings consisted of x-ray scans of carry-on bags, a walk-through magnetometer to detect metallic objects, and the occasional hand-search of personal belongings.[23] This system proved to be

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terrorist attack on the subway); Gilmore v. Gonzales, 435 F.3d 1125, 1139 (9th Cir. 2006) (upholding an airport search as reasonable on the basis of consent); United States v. Davis, 482 F.2d 893, 910–11 (9th Cir. 1973) (holding that "airport screening searches are valid only if they recognize the right of a person to avoid search by electing not to board the aircraft"). But see United States v. Aukai, 497 F.3d 955, 957 (9th Cir. 2007) ("Today we clarify that the reasonableness of such searches does not depend, in whole or in part, upon the consent of the passenger being searched.").

15. George C. Larson, Moments and Milestones: Perfecting the People Filter, AIR & SPACE MAG. (Sept. 2010), http://www.airspacemag.com/history-of-flight/Moments-and-Milestones-Perfecting-the-People-Filter.html.

16. Id.

17. Id.

18. Id.

19. Magnetometers, X-Rays, and More: Airport Security Technology, FOX NEWS (Dec. 29, 2009) [hereinafter Magnetometers, X-Rays, and More], http://www.foxnews.com/tech/2009/12/29/magnetometers-x-rays-airport-security-technology/.

20. Larson, supra note 15.

21. See generally Michael A. Hiltzik et. al., How Did Hijackers Get Past Airport Security?, L.A. TIMES, Sept. 23, 2001, at A1.

22. See THOMAS H. KEAN ET AL., NAT'L COMM'N ON TERRORIST ATTACKS UPON THE U.S., THE 9/11 COMMISSION REPORT 9 (explaining that a passenger called her husband, the Solicitor General of the United States, to report that the hijackers had knives and box cutters).

23. Hiltzik et al., supra note 21.

ineffective on one of the bloodiest days in American history for two reasons. First, it was procedurally flawed. Because the carry-on-bag x-ray scanners transmitted vertical scanning beams, a knife could be concealed by merely laying it on edge, which made it appear as slender as a wire.[24] Second, the government was concerned with the wrong types of threats. Even if the magnetometers and x-ray scanners were operating at full capacity and security screeners were assessing threats with a critical eye, the weapon guidelines developed by the Federal Aviation Administration (FAA) permitted knives with blades shorter than four inches to get through airport security undetected.[25] Recognizing these critical deficiencies, the Aviation and Transportation Security Act was signed into law on November 19, 2001, to federalize airport security and establish the Transportation Security Administration (TSA).[26]

Unfortunately, the threat remained. Just months after the 9/11 terrorist attacks, Richard Reid, the "Shoe Bomber," attempted to ignite explosives in his shoe.[27] In 2009, the infamous "Underwear Bomber" sewed 80 grams of highly explosive powder called PETN into his briefs on a Christmas flight to Detroit.[28] In May 2012, the CIA prevented another underwear bomb plot that contained a sophisticated nonmetal detonation system.[29]

In an effort to detect and deter these nonmetallic threats, the TSA began using advanced imaging technology (also known as body scanners) as a primary screening method in early 2010.[30] While it remains unclear whether the body scanners would have detected the shoe and underwear explosive devices,[31] it is clear that screening procedures have become more invasive and inconvenient as threats have escalated.[32] As screening technology evolves, a key question remains:

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24. Id. at 2.

25. Id. at 3.

26. Aviation and Transportation Security Act, Pub. L. No. 107–71, 115 Stat. 597 (2001) (codified at 5 U.S.C. §§ 2105, 5313, 8331; 8 U.S.C. § 1101; 19 U.S.C. § 1431; 26 U.S.C. § 4261; 49 U.S.C. §§ 40101–02, 41308–09, 41714, 44306, 44703, 44901, 44903, 44912, 44932–33, 44935–36, 45301, 47109, 47110, 47114–15, 47192).

27. Neal E. Boudette et. al., Bomb Attempt on U.S.-Bound Flight, WALL ST. J., Dec. 26, 2009, at A1.

28. Underwear Bomb Revealed as Terror Suspect Warns More Attacks Coming, FOX NEWS (Dec. 29, 2009) [hereinafter Underwear Bomb Revealed], http://www.foxnews.com/us/2009/12/29/underwear-bomb-revealed-terror-suspect-warns-attacks-coming/.

29. Catherine Herridge et. al., CIA Thwarts Al Qaeda Underwear Bomb Plot Near Anniversary of Bin *Laden's* Death, FOX NEWS (May 8, 2012), http://www.foxnews.com/us/2012/05/07/cia-thwarts-al-qaeda-underwear-bomb-plot-on-anniversary-bin-laden-death-us/.

30. Elec. Privacy Info. Ctr. v. U.S. Dep't. of Homeland Sec., 653 F.3d 1, 3 (D.C. Cir. 2011).

31. Herridge et al., supra note 29.

32. Compare United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974) (describing the minimal invasion of privacy involved with magnetometer searches), with Tobey v. Napolitano, 808 F. Supp. 2d 830, 834 (E.D. Va. 2011) (explaining that plaintiff

At what point does the government cross the line between protecting national security and invading individual privacy interests? Although this line is often blurred, government use of laser-based molecular scanners would be a logical step toward clarifying this ambiguity.

B. A Promising Future

Genia Photonics invented the Picosecond Programmable Laser Scanner ("laser-based molecular scanner") to detect trace elements of chemical compounds and radiation through a technique called laser spectroscopy.[33] Through this method, terahertz waveforms detect threatening materials by reacting in a particular way to explosive devices.[34] The scanner, which can penetrate clothing, is attached to a computer that displays the information in real time.[35] As a portable unit, the laser can "rapidly sweep wavelengths in any pattern and sequence."[36] From 50 meters away, the scanners can detect traces of drugs, gunpowder, adrenaline levels, and food consumed, in real time.[37]

Genia Photonics was subcontracted by In-Q-Tel, a company that facilitates communication between the Central Intelligence Agency and technology innovators,[38] to work with the U.S. Department of Homeland Security (DHS).[39] DHS plans to install laser-based molecular scanners in airports and border crossings across the country to quickly identify "explosives, dangerous chemicals, or bioweapons" from a distance.[40] In 2011, the DHS Under Secretary for Science and Technology testified that the scanners could be ready within one to two years, and the public may see them in airports shortly thereafter.[41]

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wrote the text of the Fourth Amendment on his chest to oppose "enhanced secondary screening" procedures).

33. Hidden Government Scanners, supra note 3; Brandon, supra note 11.

34. Brandon, supra note 11.

35. Hidden Government Scanners, supra note 3.

36. Id. (quoting an In-Q-Tel representative).

37. Id.; Brandon, supra note 11.

38. See, e.g., Rick E. Yannuzzi, In-Q-Tel: A New Partnership Between the CIA and the Private Sector, 9 DEF. INTELLIGENCE J. 25 (2000).

39. Hidden Government Scanners, supra note 3.

40. Id.; see Brandon, supra note 11. Elaborating, DHS spokeswoman Nicole Stickel stated that: "We're always looking for new and innovative ways to detect threats and ensure the safety and security of the traveling public. . . . Explosives detection technology is designed to provide early warning of evolving threats and augment current checkpoint technologies." Id.

41. See U.S. H.R. Comm. on Homeland Sec. Subcomm. on Cyber Sec., Infrastructure Protection, and Sec. Tech., 112th Cong. 7 (2011) (statement of the Hon. Tara O'Toole, Under Secretary for Science and Technology, Dep't. of Homeland Sec.) ("[Genia Photonics] developed a tunable laser source for the medical community and S&T [Science and Technology Directorate] is investigating the feasibility of this technology to perform non-contact, trace explosives detection. S&T expects to close four more In-Q-Tel deals in the next few months. All of these projects are expected to produce transition-ready technologies in the next 12 to 24 months.").

Perhaps these security measures will help minimize public criticism and avoid time-consuming screens, as passengers have complained that current security measures are inadequate to combat the terrorism threat.[42] An August 2012 Gallup Poll revealed that approximately 46% of frequent fliers believed that current screening procedures were ineffective in preventing acts of terrorism on an aircraft.[43] Thus, frequent travelers are demanding improvements in security measures.[44]

Additionally, a congressional subcommittee recently criticized the TSA's reactive approach to security threats.[45] For example, following the attempted shoe bombing of American Airlines Flight 63, the TSA began requiring passengers to remove their shoes when passing through security checkpoints.[46] Five years later, after a liquid explosives plot was uncovered in Great Britain, the TSA banned liquids, gels, and certain food items in excess of three ounces from being carried onto a commercial flight.[47] Following the attempted bombing of Northwest Airlines Flight 253 in December 2009, the TSA accelerated deployment of advanced imaging technology for primary and secondary passenger screening.[48] This raises the question: What kind of threat is required to deploy even more advanced technology in the future?

The TSA is aware of the public concern, and efforts are underway to enhance current technology at screening checkpoints before another attack occurs.[49] Laser-based molecular scanners would be an efficient preventive method to increase airport security's effectiveness.[50] Some commentators, however, express concern that the new scanners may result in illegal searches and seizures

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42. See Ashley Halsey III, TSA to Pull Revealing Scanners from Airports, WASH. POST, Jan. 9, 2013, at A01. Summarizing the public sentiment, a leading terrorism expert, Richard Bloom, commented: "If you're talking about a sophisticated terrorist group with a sophisticated plan, these [checkpoints] have little impact . . . . If you know where the machines are, you just go somewhere else." Id.

43. Jason Sickles, Poll: Most Frequent Travelers Frustrated with TSA Screenings, THE LOOKOUT (Sept. 11, 2012, 10:04 AM), http://news.yahoo.com/blogs/lookout/poll-most-frequent-ravelers-frustrated-tsa-screenings-140440770.html (updated on Sept. 11, 2012, 1:45 PM).

44. See id. (quoting Jonathan Spira, Frequent Business Traveler editorial director) ("The survey clearly indicates that substantial improvements are needed at America's airport security checkpoints . . . . Frequent fliers are under the impression that the current screening process is largely security theater.").

45. ROGERS, supra note 6, at 3.

46. Id.

47. Id.

48. Id.

49. See Sickles, supra note 43. Underscoring this assertion, a TSA spokesman commented that "[t]he [TSA] is undertaking efforts to focus its resources and improve the passenger experience at security checkpoints by applying new intelligence-driven, risk-based screening procedures and enhancing its use of technology." Id.

50. See infra Part V.B.

by the TSA.[51] With the power to quickly detect drugs and adrenaline levels, TSA officials can easily use the scanners for crime-control purposes. This use would result in an unlawful administrative search because administrative searches conducted to detect evidence of a crime are unreasonable searches under the Fourth Amendment.[52] Therefore, the government will have to implement numerous procedural safeguards to ensure compliance with the Fourth Amendment.[53]

II. THE FOURTH AMENDMENT AND THE ADMINISTRATIVE SEARCH DOCTRINE

The Fourth Amendment provides that "[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated."[54] The overriding purpose of the Fourth Amendment is to prevent unwarranted State intrusion upon personal privacy and dignity.[55]

Subject to limited exceptions, a "search or seizure is ordinarily unreasonable in the absence of individualized suspicion of wrongdoing."[56] One of these exceptions involves administrative searches "conducted as part of a general regulatory scheme in furtherance of an administrative purpose, rather than as part of a criminal investigation to secure evidence of crime."[57] With no warrant or particularized suspicion requirement, an administrative search scheme is subject to potential abuse because it "invests the Government with the power to intrude into the privacy of ordinary citizens."[58] Due to this danger, courts must carefully evaluate administrative searches to ensure compliance with the Fourth Amendment.[59]

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51. See Brandon, supra note 11. Discussing these concerns, Mychal Wilson, security expert and attorney, noted that "[t]he new laser scanner may enable illegal search and seizures by the TSA under the Fourth Amendment . . . . Expectation of privacy at an airport will become a major issue." Id.

52. See, e.g., United States v. Bulacan, 156 F.3d 963, 967 (9th Cir. 1998) (noting that "searches conducted as part of a general regulatory scheme, done in furtherance of administrative goals rather than to secure evidence of a crime, may be permissible under the Fourth Amendment") (emphasis added); United States v. Davis, 482 F.2d 893, 909 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) (discussing "obvious danger" of a screening process that will "be subverted into a general search for evidence of a crime").

53. See infra Part IV.

54. U.S. CONST. amend. IV.

55. Schmerber v. California, 384 U.S. 757, 767 (1966).

56. City of Indianapolis v. Edmond, 531 U.S. 32, 37 (2000) (citing Chandler v. Miller, 520 U.S. 305, 308 (1997)).

57. Davis, 482 F.2d at 908.

58. United States v. Bulacan, 156 F.3d 963, 967 (9th Cir. 1998).

59. See id.; McMorris v. Alioto, 567 F.2d 897, 899 (9th Cir. 1978) ("Care must be taken so that the exception is not unduly extended.").

A. Applicability of the Administrative Search Doctrine: Has a Search Occurred?

Determining whether a search or seizure has taken place is the first step in Fourth Amendment analysis.[60] A search involves a violation of another's "reasonable expectation of privacy."[61] This involves two considerations—first, an individual must exhibit "an actual (subjective) expectation of privacy;" and second, the expectation must be one "that society is prepared to recognize as 'reasonable.'"[62] Official conduct must compromise a "legitimate interest in privacy" to constitute a search under the Fourth Amendment.[63] As technology evolves, it becomes more difficult to ascertain whether an individual's expectation of privacy is "reasonable."[64] The Supreme Court has examined this question in several contexts, most notably in cases involving thermal imaging and dog sniffs.[65]

In Kyllo v. United States, the Supreme Court held that the use of thermal imaging to gather information about the interior of a home constitutes a search because it could detect lawful and intimate details.[66] Dog sniffs, however, are generally considered to be nonsearches.[67] The Court has treated a canine sniff by a well-trained narcotics-detection dog as sui generis because it "discloses only the presence or absence of narcotics, a contraband item."[68] Although the sniff alerts the authorities to the contents of the luggage, the information obtained is limited, ensuring "that the owner of the property is not subjected to the embarrassment and inconvenience entailed in less discriminate and more intrusive investigative

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60. United States v. Hartwell, 436 F.3d 174, 177 (3d Cir. 2006).

61. See Katz v. United States, 389 U.S. 347, 360–62 (1967) (Harlan, J., concurring) (discussing the "reasonable expectation of privacy" standard).

62. Id. at 361.

63. See United States v. Jacobsen, 466 U.S. 109, 123 & n.23 (1984) ("[G]overnmental conduct that can reveal whether a substance is cocaine, and no other arguably 'private' fact, compromises no legitimate privacy interest.") (citations omitted).

64. See Kyllo v. United States, 533 U.S. 27, 33–34 (2001) ("It would be foolish to contend that the degree of privacy secured to citizens by the Fourth Amendment has been entirely unaffected by the advance of technology.").

65. See infra notes 66–70 and accompanying text.

66. Kyllo, 533 U.S. at 37, 40. "In the home, our cases show, all details are intimate details, because the entire area is held safe from prying government eyes." Id. at 37.

67. See, e.g., Illinois v. Caballes, 543 U.S. 405, 410 (2005) (holding "[a] dog sniff conducted during a concededly lawful traffic stop that reveals no information other than the location of a substance that no individual has any right to possess does not violate the Fourth Amendment"); City of Indianapolis v. Edmond, 531 U.S. 32, 40 (2000) ("The fact that officers walk a narcotics-detection dog around the exterior of each car at the . . . checkpoints does not transform the seizure into a search." (citing United States v. Place, 462 U.S. 696, 707 (1983)); Place, 462 U.S. at 707 (holding that exposing respondent's luggage to a "trained canine" did not constitute a Fourth Amendment search). But see Florida v. Jardines, 133 S. Ct. 1409, 1417–18 (2013) ("The government's use of trained police dogs to investigate the home and its immediate surroundings is a 'search' within the meaning of the Fourth Amendment.").

68. Place, 462 U.S. at 707.

methods."[69] The key distinction between thermal-imaging devices and drug-sniffing canines appears to be the content of the disclosure and the manner in which the information is obtained.[70]

Therefore, the government conducts a search when its screening procedure is capable of detecting lawful and intimate details,[71] while a nonsearch merely discloses "the presence or absence" of contraband.[72] In evaluating the constitutionality of a Fourth Amendment search, "reasonableness is still the ultimate standard."[73] Courts have evaluated various factors when determining whether an administrative search is reasonable.[74]

B. The Limits of the Administrative Search Doctrine: Is the Search Reasonable?

In determining whether a reasonable search has occurred, a court must balance "the need to search against the invasion which the search entails."[75] However, the search does not have to be the least restrictive search practicable to satisfy the Fourth Amendment's reasonableness standard.[76] The reasonableness analysis is a case-by-case, fact-specific inquiry.[77]

1. The Need to Search

There is a "particularly acute" need to search airline passengers to ensure public safety.[78] As the United States quickly learned after 9/11, there is a grave and urgent need to prevent hijackings in order to protect lives and property, facilitate the smooth flow of air traffic, and preserve our foreign relations.[79] Modern technology has strengthened this need, ushering in a new era of nonmetallic threats

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69. Id.

70. See Caballes, 543 U.S. at 410 ("The legitimate expectation that information about perfectly lawful activity will remain private is categorically distinguishable from respondent's hopes or expectations concerning the nondetection of contraband in the trunk of his car."); Place, 462 U.S. at 707.

71. Kyllo, 533 U.S. at 37, 40.

72. See Place, 462 U.S. at 707.

73. Camara v. Municipal Court of the City & Cnty. of S.F., 387 U.S. 523, 539 (1967).

74. See infra Part II.B.

75. Camara, 387 U.S. at 536–37; United States v. Davis, 482 F.2d 893, 910 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) ("To meet the test of reasonableness, an administrative screening search must be as limited in its intrusiveness as is consistent with satisfaction of the administrative need that justifies it.").

76. City of Ontario v. Quon, 560 U.S. 746, 763–64 (2010).

77. See United States v. Albarado, 495 F.2d 799, 804 (2d Cir. 1974) (citing Chimel v. California, 395 U.S. 752, 765 (1969)) ("[T]he reasonableness of a search depends upon the facts and circumstances and the total atmosphere of each case.").

78. See City of Indianapolis v. Edmond, 531 U.S. 32, 47–48 (2000) ("Our holding also does not affect the validity of border searches or searches at places like airports and government buildings, where the need for such measures to ensure public safety can be particularly acute.").

79. Davis, 482 F.2d at 910.

to air safety.[80] For example, both the shoe and underwear bombers used nonmetallic components to pass through security undetected.[81] Airport security officers are responsible for responding to such threats while "avoiding any undue disruption to this nation's heavy flow of commercial air traffic."[82] An airport security search is an efficient way to accomplish this difficult task.[83] Despite the strong need for an efficient search, however, it must be weighed against its intrusion upon individual privacy interests.[84]

2. Invasion of Privacy

A reasonable administrative search generally has one or more of the following characteristics: (1) limited scope; (2) a proper programmatic purpose; (3) minimal subjective intrusion or stigma; and (4) adequate notice.[85] Courts examine these factors under the totality of circumstances to determine whether a search is reasonable.[86]

The scope of airport screening searches is not limitless.[87] A constitutionally reasonable airport screening search "is no more extensive nor intensive than necessary, in the light of current technology, to detect the presence of weapons or explosives."[88] Search procedures must be "well-tailored to protect personal privacy, escalating in invasiveness only after a lower level of screening

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80. United States v. Marquez, 410 F.3d 612, 616 (9th Cir. 2005) (citations omitted); see United States v. Moreno, 475 F.2d 44, 49 (5th Cir. 1973) ("[M]odern technology has made it possible to miniaturize to such a degree that enough plastic explosives to blow up an airplane can be concealed in a toothpaste tube. A detonator planted in a fountain pen is all that is required to set it off.").

81. See supra notes 27–29 and accompanying text.

82. Moreno, 475 F.2d at 49.

83. See United States v. Hartwell, 436 F.3d 174, 180 (3d Cir. 2006) (quoting United States v. Skipwith, 482 F.2d 1272, 1275 (5th Cir. 1973)) ("[P]rocedures requiring the screening of all passengers and luggage 'have every indicia of being the most efficacious that could be used.'"); Singleton v. Comm'r., 606 F.2d 50, 52 (3d Cir. 1979) ("[A]bsent a search, there is no effective means of detecting which airline passengers are reasonably likely to hijack an airplane . . . .").

84. See, e.g., United States v. Edwards, 498 F.2d 496, 500 (2d Cir. 1974) ("The reasonableness of a warrantless search depends, as many of the airport search opinions have stated, on balancing the need for a search against the offensiveness of the intrusion.").

85. These factors are collected from reasoning that has supported the constitutionality of administrative searches across numerous cases. See, e.g., United States v. Aukai, 497 F.3d 955, 962 (9th Cir. 2007) (limiting the scope of airport searches); Skipwith, 482 F.2d at 1275 (explaining that airport searches are less offensive than similar searches in other contexts because of "the almost complete absence of any stigma attached to being subjected to search at a known, designated airport search point"); United States v. Davis, 482 F.2d 893, 908, 913 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) (explaining that airport searches must further an administrative purpose instead of operating "as part of a criminal investigation to secure evidence of crime" and discussing the limited scope of airport searches).

86. United States v. Albarado, 495 F.2d 799, 804 (2d Cir. 1974).

87. Aukai, 497 F.3d at 962.

88. Id. (citing Davis, 482 F.2d at 913).

disclose[s] a reason to conduct a more probing search."[89] When passengers are subject to a search, the length of detention must not be "prolonged beyond the time reasonably required to rule out the presence of weapons or explosives."[90] Restricting the scope of airport searches ensures that the searching officer exercises minimal discretion,[91] which, in turn, "safeguard[s] the privacy and security of individuals against arbitrary invasions."[92] Impermissible discretion exists when the decision to search is entirely within an officer's judgment.[93]

However, a search is not automatically unreasonable if it "ultimately reveals contraband other than weapons or explosives" post facto.[94] As long as the search has a proper programmatic purpose, its scope is not exceeded if an officer happens to find other contraband while exercising his regular duties.[95] In drawing the line, courts examine whether the search scheme is designed to secure criminal evidence or further an administrative purpose.[96]

While Drug Enforcement Administration (DEA) agents routinely make drug busts at airports, these searches are upheld based on other theories, not the administrative search doctrine.[97] A constitutional airport screening search under

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89. United States v. Hartwell, 436 F.3d 174, 180 (3d Cir. 2006).

90. Aukai, 497 F.3d at 963.

91. See Camara v. Municipal Court of the City & Cnty. of S.F., 387 U.S. 523, 532 (1967) ("The practical effect of this system is to leave the occupant subject to the discretion of the official in the field. This is precisely the discretion to invade private property which we have consistently circumscribed by a [warrant requirement].").

92. Delaware v. Prouse, 440 U.S. 648, 654 (1979) (quoting Camara, 387 U.S. at 528); see, e.g., United States v. Brignoni-Ponce, 422 U.S. 873, 882 (1975) ("[T]he reasonableness requirement of the Fourth Amendment demands something more than the broad and unlimited discretion sought by the Government."); Brinegar v. United States, 338 U.S. 160, 180 (1949) (Jackson, J., dissenting) ("Uncontrolled search and seizure is one of the first and most effective weapons in the arsenal of every arbitrary government.").

93. See United States v. Bulacan, 156 F.3d 963, 966, 974 (9th Cir. 1998) (holding that instructing security officers that explosives could be "as small as a quarter, [and] virtually any closed container, however small, could be subject to a search" led to an unreasonable search under the Fourth Amendment).

94. United States v. Marquez, 410 F.3d 612, 617 (9th Cir. 2005).

95. See United States v. Davis, 482 F.2d 893, 908 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) ("Of course, routine airport screening searches will lead to discovery of contraband and apprehension of law violators. This practical consequence does not alter the essentially administrative nature of the screening process, however, or render the searches unconstitutional.").

96. See id. (explaining that "searches conducted as part of a general regulatory scheme in furtherance of an administrative purpose, rather than as part of a criminal investigation to secure evidence of crime, may be permissible under the Fourth Amendment").

97. See, e.g., United States v. Mendenhall, 446 U.S. 544, 559–60 (1980) (upholding search conducted by DEA agent on the basis of consent); United States v. Fry, 622 F.2d 1218, 1221 (5th Cir. 1980) (same); United States v. Smith, 574 F.2d 882, 885–87 (6th Cir. 1978) (upholding search conducted by DEA agent because he had reasonable suspicion "that criminal activity may have been afoot," permitting him to stop Appellant; voluntary consent provided authority to search purse).

the administrative search doctrine must further an administrative purpose, instead of covering up an unconstitutional attempt to secure evidence of a crime.[98] This issue comes into play when security officers have other objectives, besides air safety, in mind.[99]

A search scheme may be invalidated because of an improper secondary programmatic purpose.[100] For example, the Ninth Circuit held that a policy that offered a monetary reward to airport security officers who reported the discovery of large sums of American currency and contraband injected an impermissible secondary purpose into the administrative search scheme.[101] The court reasoned that these security officers could not separate the permissible from the impermissible objective; thus, they were provided with broad discretion in deciding which bags to search.[102] On the other hand, the Ninth Circuit held that there was no improper programmatic secondary purpose when the "TSA search scheme . . . focused solely on the discovery of threats to air travel safety," and the agent "did not receive any reward for finding contraband."[103] A court should closely examine whether an airport search scheme employs these dual objectives when assessing its reasonableness.[104]

Although courts must be cognizant of the "obvious danger" that an airport screening process will "be subverted into a general search for evidence of a crime,"[105] judges are not permitted "to probe the minds of individual officers acting at the scene."[106] So long as the "search is conducted pursuant to a lawful administrative scheme with a constitutionally permissible motivation," improper individual subjective motives will not invalidate the search.[107] The individual officer's subjective intent should not be considered until "the search ceases legitimately to be for [a] valid administrative purpose," which is "the point after which the administrative exception can no longer justify continuation of the warrantless search."[108]

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98. See Davis, 482 F.2d at 908 (justifying screening searches of airline passengers because the "essential purpose of the scheme [was] not to detect weapons or explosives or to apprehend those who carry them, but to deter persons carrying such material from seeking to board at all.").

99. See United States v. $124,570 U.S. Currency, 873 F.2d 1240, 1245 (9th Cir. 1989).

100. See id. at 1245–47.

101. Id.

102. Id. at 1245–46.

103. United States v. McCarty, 648 F.3d 820, 834 (9th Cir. 2011).

104. See $124,570 U.S. Currency, 873 F.2d at 1245–47.

105. United States v. Davis, 482 F.2d 893, 909 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007).

106. City of Indianapolis v. Edmond, 531 U.S. 32, 48 (2000).

107. McCarty, 648 F.3d at 833 (citing United States v. Bulacan, 156 F.3d 963, 966–67 (9th Cir. 1998)); accord United States v. Tsai, 282 F.3d 690, 695–96 (9th Cir. 2002); United States v. Bowhay, 992 F.2d 229, 231 (9th Cir. 1993).

108. McCarty, 648 F.3d at 835.

The level of subjective intrusion or stigma is another important consideration in assessing reasonableness.[109] Courts measure subjective intrusion by the level that the challenged procedure concerns, frightens, or annoys the subject of the search.[110] When every passenger is subject to a search, there is virtually no associated stigma.[111] However, although there is no stigma or suspicion cast on passengers for inadvertently walking through a magnetometer with keys in their pockets,[112] unsupervised searches, in which an officer and passenger are the only witnesses, are less likely to survive Fourth Amendment scrutiny.[113]

Finally, in assessing the reasonableness of airport administrative searches, courts consider whether passengers are provided notice that they will be searched.[114] For example, a sign indicating that passengers and baggage are subject to search satisfies this requirement.[115] In the absence of proper signage, however, general knowledge may also suffice, especially because of the publicity of airport searches.[116] Even though federal law requires TSA to screen anyone seeking to board a commercial airliner,[117] surreptitious searches are unconstitutional under the administrative search doctrine.[118]

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109. See United States v. Skipwith, 482 F.2d 1272, 1275 (5th Cir. 1973) (explaining that airport searches are less offensive than similar searches in other contexts because of "the almost complete absence of any stigma attached to being subjected to search at a known, designated airport search point").

110. See United States v. Martinez-Fuerte, 428 U.S. 543, 558 (1976) (defining subjective intrusion as the "generating of concern or even fright on the part of lawful travelers").

111. United States v. Hartwell, 436 F.3d 174, 180 (3d Cir. 2006).

112. See United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974) ("No stigma or suspicion is cast on one merely through the possession of some small metallic object.").

113. See Skipwith, 482 F.2d at 1276 ("Unlike searches conducted on dark and lonely streets at night where often the officer and the subject are the only witnesses, these searches are made under supervision and not far from the scrutiny of the traveling public.").

114. United States v. Edwards, 498 F.2d 496, 501 (2d Cir. 1974); see Singleton v. Comm'r, 606 F.2d 50, 52 (3d Cir. 1979) (approving a search where passengers "were given advance notice that the search was to be conducted, and could elect not to be searched by deciding not to board the aircraft"); Albarado, 495 F.2d at 806 (holding that a magnetometer search involved a minimal invasion of privacy because it is not "done surreptitiously, without the knowledge of the person searched").

115. See, e.g., Edwards, 498 F.2d at 499; Albarado, 495 F.2d at 806; United States v. Davis, 482 F.2d 893, 914 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007).

116. See Hartwell, 436 F.3d at 181 ("[S]creening procedures . . . have existed in every airport in the country since at least 1974. The events of September 11, 2001, have only increased their prominence in the public's consciousness."); Skipwith, 482 F.2d at 1274 ("Because of the widespread publicity given to the government's efforts to cope with the piracy of aircraft, it was general knowledge that citizens boarding planes were subject to special scrutiny and to weapon searches.").

117. 49 U.S.C. §§ 44901(a), 44902(a)(1) (2012).

118. See Albarado, 495 F.2d at 806 (justifying a magnetometer search because it is not done surreptitiously).

An airport screening search is unreasonable if these factors, under the totality of circumstances, outweigh the government's need to search airline passengers.[119] The following section evaluates these factors as applied to current airport screening technology.

III. THE CONSTITUTIONALITY OF CURRENT AIRPORT SCREENING TECHNOLOGY

This section analyzes whether current airport screening technology constitutes a search under the Fourth Amendment, and if so, whether the search is reasonable. Because of its limited scope, proper administrative purpose, and minimal stigma, current airport screening technology has survived the administrative search doctrine analysis.[120] Despite its constitutionality, however, the current system is ineffective at preventing and deterring terrorism threats. If our skies were truly safe, terrorists would have been thwarted from smuggling knives, box cutters, and explosives past security.[121] Another constitutional and more effective solution is needed.[122]

A. Has a Search Occurred?

The use of magnetometers and advanced imaging technology at airport security checkpoints invades passengers' "reasonable expectation[s] of privacy."[123] Although airline passengers are subject to governmental regulation, they still retain a reasonable expectation of privacy.[124] Because a magnetometer detects "metal items within areas most intimate to the person where there is a normal expectation of privacy,"[125] courts have consistently held that magnetometer screenings constitute a search within the meaning of the Fourth Amendment.[126]

Unlike dog sniffs, which disclose only the presence or absence of contraband,[127] magnetometers also detect nonthreatening metallic items.[128] Similarly, advanced imaging technology detects nonmetallic objects, such as liquid or powder.[129] Although some of these items can be used in explosive devices,[130]

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119. See supra notes 84–86 and accompanying text.

120. See infra Part III.B.

121. See supra Part I.A.

122. See infra Part V.

123. See Katz v. United States, 389 U.S. 347, 360–62 (1967) (Harlan, J., concurring) (discussing the "reasonable expectation of privacy" standard).

124. Cf. Delaware v. Prouse, 440 U.S. 648, 662 (1979) ("An individual operating or traveling in an automobile does not lose all reasonable expectation of privacy simply because the automobile and its use are subject to government regulation.").

125. United States v. Albarado, 495 F.2d 799, 803 (2d Cir. 1974).

126. See, e.g., United States v. Slocum, 464 F.2d 1180, 1182 (3d Cir. 1972); United States v. Epperson, 454 F.2d 769, 770 (4th Cir. 1972).

127. See supra notes 67–69 and accompanying text.

128. See Albarado, 495 F.2d at 805 (explaining that a magnetometer may also be activated "by car keys, ladies' sewing scissors, briefcase hinges and latches, and the like").

129. Elec. Privacy Info. Ctr. v. U.S. Dep't. of Homeland Sec., 653 F.3d 1, 3 (D.C. Cir. 2011).

others are harmless.[131] Like the thermal imaging device in Kyllo, magnetometers and advanced imaging technology are capable of detecting lawful activity and are not restricted to detecting contraband items alone.[132] Therefore, current airport technology constitutes a search under the Fourth Amendment.

Warrantless airport security screenings qualify as administrative searches.[133] These searches may be conducted without "individualized suspicion of wrongdoing"[134] because their primary goal is not to detect crime but to protect the public from a terrorist attack.[135] Nonetheless, "reasonableness is the ultimate standard" in evaluating the constitutionality of an administrative search.[136]

B. Is the Search Reasonable?

1. Magnetometers

Magnetometers are the most common airport security method.[137] The TSA uses walkthrough and handheld magnetometers.[138] This technology uses an electromagnetic field to detect metal objects, but it cannot detect nonmetallic weapons.[139]

Magnetometer searches are reasonable under the Fourth Amendment.[140] As the Fourth Circuit has stated, "[T]he use of a magnetometer to detect metal . . .

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130. See Underwear Bomb Revealed, supra note 28 and accompanying text.

131. The TSA might have realized the harmlessness of most liquids that passengers attempt to bring on board. See Christopher Elliot, Liquid Rules: So Long, 3-1-1?, NBCNEWS (May 10, 2010, 10:05 AM), http://www.nbcnews.com/id/37021555/ns/travel-tips#.UuGOCLRlDIU (discussing passenger experiences where the TSA ignored the 3-1-1 rule).

132. See Kyllo v. United States, 533 U.S. 27, 38 (2001).

133. See United States v. Davis, 482 F.2d 893, 908 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) (holding "screening searches of airline passengers are conducted as part of a general regulatory scheme in furtherance of an administrative purpose, namely, to prevent . . . hijackings").

134. See City of Indianapolis v. Edmond, 531 U.S. 32, 37 (2000) (citing Chandler v. Miller, 520 U.S. 305, 308 (1997)).

135. See United States v. Hartwell, 436 F.3d 174, 178, 181 (3d Cir. 2006).

136. United States v. Moreno, 475 F.2d 44, 50 (5th Cir. 1973) (citing Camara v. Municipal Court for the City & Cnty. of S.F., 387 U.S. 523, 539 (1966)); see, e.g., United States v. Marquez, 410 F.3d 612, 618 (9th Cir. 2005) ("[E]ven with the grave threat posed by airborne terrorist attacks, the vital and hallowed strictures of the Fourth Amendment still apply: these searches must be reasonable to comport with the Constitution."); United States v. Bulacan, 156 F.3d 963, 967 (9th Cir. 1998) ("While administrative searches are an exception to the Fourth Amendment's warrant requirement, they are not an exception to the Fourth Amendment's standard of reasonableness."); accord United States v. Slocum, 462 F.2d 1180, 1182 (3d Cir. 1972).

137. Magnetometers, X-Rays, and More, supra note 19.

138. See Marquez, 410 F.3d at 614.

139. Magnetometers, X-Rays, and More, supra note 19.

140. See Marquez, 410 F.3d at 616 ("[A]irport screenings of passengers and their carry-on luggage in order to detect weapons and explosives and deter potential passengers from carrying such items aboard is 'reasonably necessary' and not overly intrusive in light

is not a resented intrusion on privacy, but, instead, a welcome reassurance of safety. Such a search is more than reasonable; it is a compelling necessity to protect essential air commerce and the lives of passengers."[141] There is a strong government interest in ensuring public safety and preventing hijackings.[142] The minimal invasion of individual privacy interests does not outweigh this strong government interest.[143] Unlike the thermal search in Kyllo,[144] a magnetometer search does not "'prob[e] into an individual's private life and thoughts.'"[145] Passengers are aware of the search, and there is no subjective intrusion or stigma associated with it.[146] The constitutionality of magnetometer searches has been repeatedly affirmed by precedent.[147]

2. Advanced Imaging Technology (AIT)

To combat the efficiency problems of magnetometers and to detect nonmetallic threats,[148] the TSA began using AIT scanners ("body scanners") as a primary screening method in early 2010.[149] Both randomly selected and targeted passengers must undergo AIT screening.[150] There are two types of scanners: one

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of the interests at stake." (citing United States v. Davis, 482 F.2d 893, 910 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007)); United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974) ("The absolutely minimal invasion in all respects of a passenger's privacy weighed against the great threat to hundreds of persons if a hijacker is able to proceed to the plane undetected is determinative of the reasonableness of the search.").

141. United States v. Epperson, 454 F.2d 769, 772 (4th Cir. 1972).

142. Davis, 482 F.2d at 910; see City of Indianapolis v. Edmond, 531 U.S. 32, 47–48 (2000).

143. Albarado, 495 F.2d at 806; see Marquez, 410 F.3d at 618 ("Given the randomness, the limited nature of the intrusion, the myriad devices that can be used to bring planes down, and the absence of any indicia of improper motive, we hold that the random, more thorough screening involving scanning of Marquez's person with the handheld magnetometer was reasonable.").

144. Kyllo v. United States, 533 U.S. 27, 38 (2001).

145. Albarado, 495 F.2d at 806 (quoting Davis v. Mississippi, 394 U.S. 721, 727 (1969)).

146. Marquez, 410 F.3d at 616; Albarado, 495 F.2d at 806.

147. See, e.g., United States v. Aukai, 497 F.3d 955, 962 (9th Cir. 2007); United States v. Hartwell, 436 F.3d 174, 180–81 (3d Cir. 2006); Marquez, 410 F.3d at 616; Albarado, 495 F.2d at 806; United States v. Doran, 482 F.2d 929, 932 (9th Cir. 1973); United States v. Slocum, 464 F.2d 1180, 1182 (3d Cir. 1972) (an airport magnetometer screen "per se is justified").

148. See 49 U.S.C. § 44925(a) (2012) (directing the TSA to "give a high priority to developing, testing, improving, and deploying at airport screening checkpoints" new technology "that detects nonmetallic, chemical, biological, and radiological weapons, and explosives, in all forms, on individuals and in their personal property").

149. Elec. Privacy Info. Ctr. v. U.S. Dep't. of Homeland Sec., 653 F.3d 1, 3 (D.C. Cir. 2011).

150. BART ELIAS, SPECIALIST IN AVIATION POLICY, CONG. RESEARCH SERV., AIRPORT BODY SCANNERS: THE ROLE OF ADVANCED IMAGING TECHNOLOGY IN AIRLINE PASSENGER SCREENING 1 (Sept. 20, 2012).

that uses millimeter-wave technology that relies upon radio frequencies ("millimeter-wave scanners"), and another that employs backscatter technology that utilizes low-intensity x-ray beams ("x-ray backscatter scanners").[151] While the millimeter-wave scanners generate images that resemble a chalk outline, the x-ray backscatter machines display graphic detail.[152]

The D.C. Circuit held that AIT screening is a reasonable administrative search and does not violate the Fourth Amendment, because the government interest outweighs the scanners' intrusiveness.[153] The court explained that body scanners advance the acute need to ensure public safety[154] because they can "detect a nonmetallic object, such as a liquid or powder—which a magnetometer cannot detect—without touching the passengers coming through the checkpoint."[155] The court emphasized that the body scanners can detect and deter nonmetallic threats.[156]

The court justified its decision on the grounds that passengers are not required to submit to a body scan and may opt instead for a pat-down.[157] In a public statement, the TSA stated that "[p]at-downs are one important tool to help TSA detect hidden and dangerous items such as explosives."[158] The D.C. Circuit reasoned that offering pat-downs as an alternative allows passengers to decide "which of the two options for detecting a concealed, nonmetallic weapon or explosive is least invasive."[159] Given this choice, more than 99% of passengers choose to be screened by AIT technology over alternative screening procedures.[160] Although there is no underlying data supporting the reasoning for this decision,

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151. Elec. Privacy Info. Ctr., 653 F.3d at 3.

152. Hugo Martín, Full-Body Scanners to Depart Airports; TSA Will Remove Controversial Devices That Create Nude Like Images Using Radiation, L.A. TIMES, Jan. 19, 2013, at B.1; Halsey, supra note 42.

153. Elec. Privacy Info. Ctr., 653 F.3d at 10.

154. See City of Indianapolis v. Edmond, 531 U.S. 32, 47–48 (2000).

155. Elec. Privacy Info. Ctr., 653 F.3d at 3.

156. Id. at 10.

157. Id. at 3.

158. TSA Statement on New Pat-Down Procedures TRANSP. SEC. ADMIN. (Oct. 28, 2010), http://www.tsa.gov/press/releases/2010/10/28/tsa-statement-new-pat-down-procedures.

159. Elec. Privacy Info. Ctr., 653 F.3d at 10.

160. Advanced Imaging Technology (AIT), TRANSP. SEC. ADMIN., http://www.tsa.gov/traveler-information/advanced-imaging-technology-ait (last updated Feb. 12, 2014).

passengers probably choose the body scan because it is faster[161] and less aggressive than pat-downs.[162]

Although the body scanners are constitutional, Congress has taken steps to limit the scanners' intrusiveness.[163] The FAA Modernization and Reform Act requires the TSA to equip all advanced imaging technology with automatic target recognition (ATR) software by June 1, 2012, subject to a one-year extension under certain circumstances.[164] The TSA granted the extension, imposing a June 1, 2013 deadline upon Rapiscan, the body-scanner manufacturer, to develop a software patch for its x-ray backscatter machines.[165] The software produces a "generic image" of every individual that walks through the scanner.[166] Instead of producing graphic images that TSA officers can view in a back room,[167] ATR software displays "a cookie-cutter image of the human form."[168]

After concluding that the June 2013 deadline would not be met, the TSA canceled its contract with Rapiscan in January 2013, agreeing to remove 174 x-ray backscatter machines from airport security checkpoints.[169] These machines will be replaced with millimeter-wave scanners that are arguably "less-intrusive."[170] The TSA's decision was a victory for privacy advocates;[171] this victory, however, may be short lived.[172]

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161. See Peter Greenberg, TSA Pat Downs and Body Scanners: What Holiday Travelers Need to Know, CBS NEWS, http://www.cbsnews.com/8301-505123_162-46740147/tsa-pat-downs-and-body-scanners-what-holiday-travelers-need-to-know/ (last updated Nov. 23, 2010, 12:42 PM) (explaining that a pat-down can add five minutes to an airport security screening, and possibly more time if another passenger is waiting for a pat-down).

162. Elec. Privacy Info. Ctr., 653 F.3d at 3; see generally Derek Kravitz, New Searches Too Personal for Some Air Travelers, WASH. POST, Nov. 13, 2010, at A01; see also infra notes 250–53 and accompanying text.

163. See FAA Modernization & Reform Act of 2012, Pub. L. No. 112–95, § 826, 126 Stat. 11, 132–33 (2012) (codified at 49 U.S.C. § 44901 (2012)).

164. Id.

165. Jack Nicas, TSA to Halt Revealing Body Scans at Airports, WALL ST. J., Jan. 19, 2013, at A7; Halsey, supra note 42; Martín, supra note 152.

166. FAA Modernization & Reform Act § 826.

167. See *Letter from a Passenger: "What Really Happens in the TSA Private Room?"* TAKING SENSE AWAY (Dec. 19, 2012) [hereinafter Letter from a Passenger], https://takingsenseaway.wordpress.com/2012/12/19/letter-from-a-passenger-what-really-happens-in-the-tsa-private-room/.

168. See Halsey, supra note 42.

169. Mike M. Ahlers, *TSA Removing 'Virtual Strip Search' Body Scanners*, CNN (Jan. 19, 2013, 1:08 PM), http://www.cnn.com/2013/01/18/travel/tsa-body-scanners/index.html; Halsey, supra note 42; Martín, supra note 152.

170. Halsey, supra note 42.

171. The executive director of the Electronic Privacy Information Center, Marc Rotenberg, stated: "The announcement by the TSA is recognition that if devices don't respect the privacy of the public, they don't belong here." Martín, supra note 152.

172. See infra notes 250–53 and accompanying text (describing passenger protests of aggressive pat-down procedures).

Despite technological advancement, airport security measures are continually upheld as constitutional administrative searches.[173] Current airport screening technology is restricted in scope to detect metallic and nonmetallic threats to air safety while preserving individual privacy interests.[174] Although current methods are constitutional, there are several deficiencies.[175] Laser-based molecular scanners would cure these deficiencies, so long as the government takes affirmative steps to prevent them from turning into a general crime-control mechanism.

IV. THE CONSTITUTIONALITY OF LASER-BASED MOLECULAR SCANNERS

Because airport security screenings are vital to protecting passenger safety,[176] the TSA has broad statutory authority to further this interest.[177] The TSA must screen everyone seeking to board a commercial airline flight to ensure that a passenger is not "carrying unlawfully a dangerous weapon, explosive, or other destructive substance."[178] By statute, the TSA is required to give high priority "to developing, testing, improving, and deploying, at airport screening checkpoints, equipment that detects nonmetallic, chemical, biological, and radiological weapons, and explosives, in all forms, on individuals and in their personal property."[179] Although unrestricted use of laser-based molecular scanners would be unconstitutional, if designed appropriately, the TSA can employ the scanners at airport checkpoints to meet this statutory directive.

The following sections discuss how laser-based molecular scanners could be constitutionally implemented as a reasonable administrative search[180] or nonsearch,[181] and why laser-based molecular scanners are a preferable airport screening method.[182]

A. Laser-Based Molecular Scanners as a Constitutional Administrative Search

1. The Worst-Case Scenario: Unrestricted Use

If laser-based molecular scanners are implemented at full capacity, they will violate the Fourth Amendment's reasonableness standard because of their inability to notify passengers of the search, broad scope, improper programmatic

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173. See supra notes 140–59 and accompanying text.

174. See Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec., 653 F.3d 1, 10 (D.C. Cir. 2011) (explaining TSA's efforts to protect passenger privacy while detecting and deterring "attempts to carry aboard airplanes explosives in liquid or powder form").

175. See infra Part V.

176. See supra Part II.B.1.

177. See 49 U.S.C. §§ 44901(a), 44902(a)(1), 44925(a) (2012).

178. Id. §§ 44901(a), 44902(a)(1).

179. Id. § 44925(a).

180. See infra Part IV.A.

181. See infra Part IV.B.

182. See infra Part V.

purpose, and high level of stigma.[183] Their use can easily be distinguished from current technology, including the controversial x-ray backscatter scanners.

First, with the ability to scan from 50 meters away,[184] laser-based molecular scanners could scan passengers without their knowledge. Unlike the large magnetometers and millimeter-wave scanners, laser-based molecular scanners are portable units.[185] A TSA officer could potentially scan passengers from any area of the airport, in addition to the security checkpoint. This would inject an impermissible amount of officer discretion,[186] and potentially cultural or racial bias,[187] into the search.

Next, the scope of searches with unrestricted use of laser-based molecular scanners is the most troubling. Traces of drugs, gunpowder, adrenaline levels, and food consumed[188] are not threats to air safety. Unlike a search that happens to reveal contraband other than weapons or explosives,[189] these scanners could be designed to secure both information that creates an inference that the subject of the search was engaged in criminal activity (i.e., gunpowder and adrenaline levels), and actual evidence of a crime.[190]

Similarly, searches with laser-based molecular scanners could constitute an unconstitutional attempt to uncover criminal evidence without the requisite

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183. See infra notes 184–99 and accompanying text.

184. Hidden Government Scanners, supra note 3.

185. Id.

186. See Camara v. Municipal Court of City & Cnty. of S.F., 387 U.S. 523, 532 (1967) (explaining that the search scheme gives the official in the field discretion that the warrant requirement was designed to prevent); United States v. Bulacan, 156 F.3d 963, 971 (9th Cir. 1998) (noting that improper discretion existed when "the determination as to whether to search a particular container was entirely within a Security Officer's judgment").

187. Privacy activists were also concerned that the x-ray backscatter scanners would lead to selective searches based on racial or cultural factors. Tobias W. Mock, The *TSA's New X*-Ray Vision: The Fourth Amendment Impli*cations of "Body-Scan" Searches at* Domestic Airport Security Checkpoints, 49 SANTA CLARA L. REV. 213, 229–30 (2009).

188. See Hidden Government Scanners, supra note 3; Brandon, supra note 11.

189. A search that "ultimately reveals contraband other than weapons or explosives" ex post facto is not automatically unreasonable. United States v. Marquez, 410 F.3d 612, 617 (9th Cir. 2005). See also United States v. Davis, 482 F.2d 893, 908 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) ("Of course, routine airport screening searches will lead to discovery of contraband and apprehension of law violators. This practical consequence does not alter the essentially administrative nature of the screening process, however, or render the searches unconstitutional.").

190. Such a fishing expedition to secure evidence of crime violates the Fourth Amendment. See Davis, 482 F.2d at 908; see also United States v. $124,570 U.S. Currency, 873 F.2d 1240, 1244 (9th Cir. 1989) (discussing the Supreme Court's emphasis of "the importance of keeping criminal investigatory motives from coloring administrative searches").

level of suspicion.[191] While a search for weapons and explosives is proper, these scanners have the potential to taint the search with "criminal investigatory motives."[192] An administrative search scheme that encompasses both permissible and impermissible purposes does not satisfy the Fourth Amendment's reasonableness standard.[193]

Laser-based molecular scanners resemble thermal imaging technology. Just as a thermal imaging device can detect intimate lawful activity within a home, such as the "hour each night the lady of the house takes her daily sauna and bath,"[194] a laser-based molecular scanner can detect intimate details within the human body.[195] Although the TSA has a duty to protect the traveling public, it does not have broad authority to probe into passengers' private lives. Just as using thermal imaging to gather information about the interior of a home constitutes an unlawful search,[196] the TSA cannot constitutionally use laser-based molecular scanners to intrude upon passengers' individual privacy interests.

Finally, unlike magnetometers and millimeter-wave scanners, laser-based molecular scanners can generate an alarming level of stigma. People commonly activate the magnetometer with nonthreatening metallic objects, such as keys, without causing suspicion.[197] On the other hand, a laser-based molecular scanner can alert to traces of drugs on paper currency,[198] which is not necessarily indicative of criminal activity.[199]

Under the worst-case scenario, the use of laser-based molecular scanners in airports would represent a broad, surreptitious search designed to secure criminal evidence unrelated to keeping our skies safe for travel. As discussed above, this search would fail to satisfy the Fourth Amendment's reasonableness standard.

Although the government has steadily implemented more invasive screening technology as new threats have emerged, Congress took a step back in 2012.[200] Rather than requiring airline passengers to shed their privacy interests at security checkpoints, Congress has mandated that airport screening technology comply with "privacy considerations."[201] Because of this increased recognition of

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191. See Davis, 482 F.2d at 908; City of Indianapolis v. Edmond, 531 U.S. 32, 37 (2000) (citing Chandler v. Miller, 520 U.S. 305, 308 (1997)) ("A search or seizure is ordinarily unreasonable in the absence of individualized suspicion of wrongdoing.").

192. See $124,570 U.S. Currency, 873 F.2d at 1244.

193. United States v. Bulacan, 156 F.3d 963, 973 (9th Cir. 1998).

194. Kyllo v. United States, 533 U.S. 27, 38 (2001).

195. See Hidden Government Scanners, supra note 3.

196. Kyllo, 533 U.S. at 40.

197. United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974).

198. Hidden Government Scanners, supra note 3.

199. See United States v. Carr, 25 F.3d 1194, 1214–17 (3d Cir. 1994) (Becker, J., concurring in part and dissenting in part).

200. See FAA Modernization & Reform Act of 2012, Pub. L. No. 112–95, § 826, 126 Stat. 11, 132–33 (2012) (codified at 49 U.S.C. § 44901 (2012)) (requiring the TSA to equip all advanced imaging technology with automatic target recognition software).

201. Id.

privacy concerns, it is unlikely that the U.S. Department of Homeland Security, and specifically the TSA, will implement an unrestricted version of laser-based molecular scanners. The following sections discuss how the government can transform these devices into an efficient and constitutional search method.

2. A Reasonable Administrative Search: Limited Use

Laser-based molecular scanners would be a constitutional administrative search if the government (1) only used the scanners at airport security checkpoints; (2) programmed the scanners to detect only metallic and nonmetallic threats; (3) designed the search scheme to pursue an antihijacking objective; and (4) minimized the level of associated stigma.[202]

If the TSA used laser-based molecular scanners in a similar fashion to current screening technology, the searches would not be surreptitious. Although the scanners are portable and can scan from a distance,[203] passengers would be aware that they will be searched at security checkpoints.[204] And even if passengers are initially ignorant about specific procedures, signs can provide adequate notice.[205]

If the laser-based molecular scanners are programmed to detect the same items as current technology, the scope of the search would be constitutional, but the government may have to provide an alternative search mechanism. Although programming the scanners to detect metal is well supported by precedent,[206] the constitutionality of search mechanisms to detect nonmetallic threats (i.e. body scanners) has not been thoroughly discussed.[207] Because the D.C. Circuit justified its decision to uphold the constitutionality of body scanners based on the ability for passengers to opt out,[208] the government may have to provide passengers with an alternative search option.

If the government programs the scanners to only detect threats to passenger safety, the scanners would not generate an alarming level of stigma. Traces of drugs on currency would not alarm a system programmed to detect

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202. See infra notes 203–12 and accompanying text.

203. Hidden Government Scanners, supra note 3.

204. See supra note 116.

205. See, e.g., United States v. Edwards, 498 F.2d 496, 499 (2d Cir. 1974); United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974); United States v. Davis, 482 F.2d 893, 914 (9th Cir. 1973).

206. See supra note 147.

207. There is only one appellate decision discussing the constitutionality of airport use of advanced imaging technology. Elec. Privacy Info. Ctr. v. U.S. Dep't. of Homeland Sec., 653 F.3d 1 (D.C. Cir. 2011). Other appellate decisions on the issue do not reach the merits. See, e.g., Redfern v. Napolitano, 727 F.3d 77 (1st Cir. 2013) (dismissing action as moot); Blitz v. Napolitano, 700 F.3d 733 (4th Cir. 2012) (affirming district court's dismissal for lack of subject matter jurisdiction); Corbett v. United States, 458 Fed.Appx. 866 (11th Cir. 2012) (same).

208. Elec. Privacy Info. Ctr., 653 F.3d at 10.

weapons and explosives.[209] Furthermore, there is virtually no associated stigma when every passenger is subject to a search.[210] Unlike the x-ray backscatter machines, laser-based molecular scanners could be equipped with automatic target recognition software[211] to ensure that TSA officials could not view nude images of passengers from a back room.[212]

Although laser-based molecular scanners could constitute a constitutional administrative search, courts might not have to determine reasonableness if the scanners are deemed to be a nonsearch.

B. Laser-Based Molecular Scanners as a Nonsearch

Laser-based molecular scanners can be designed to function as nonsearches. For example, if the government "programs out" unnecessary information, such as adrenaline levels and food consumed, the government can use the scanners solely to detect weapons and explosives. If the scanners are programmed to only detect contraband items, their function would resemble dog sniffs and would be upheld as a nonsearch.[213] If a search has not taken place, the Fourth Amendment is not implicated.[214]

Absent a search, however, the Fourth Amendment may apply if the use of laser-based molecular scanners amounts to a seizure.[215] A person is seized "within the meaning of the Fourth Amendment only if, in view of all of the circumstances surrounding the incident, a reasonable person would have believed he was not free to leave."[216] As long as the person is free to walk away, "there has been no intrusion upon that person's liberty or privacy as would under the Constitution require some particularized and objective justification."[217]

In the airport context, passengers arguably are free to choose not to fly, and thereby may avoid any resulting search or seizure. This choice, however, may be impractical for travelers operating under tight time constraints. As soon as a passenger attempts to enter the secured area of an airport—by walking through the screening technology or placing items on the conveyor belt of the x-ray machine—the passenger has consented to the airport screening process and can no longer revoke his or her consent.[218]

A laser-based molecular scan, by itself, would not be a seizure. Passengers are not confined to the security checkpoint indefinitely and are free to

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209. See United States v. Carr, 25 F.3d 1194, 1214–17 (3d Cir. 1994) (Becker, J., concurring in part and dissenting in part).

210. United States v. Hartwell, 436 F.3d 174, 180 (3d Cir. 2006).

211. See FAA Modernization & Reform Act of 2012, Pub. L. No. 112–95, § 826, 126 Stat. 11, 132–33 (2012) (codified at 49 U.S.C. § 44901 (2012)).

212. See Letter from a Passenger, supra note 167.

213. See supra notes 67–69 and accompanying text.

214. See U.S. CONST. amend. IV.

215. See id.

216. United States v. Mendenhall, 446 U.S. 544, 554 (1980).

217. Id.

218. United States v. Aukai, 497 F.3d 955, 961–62 (9th Cir. 2007).

continue to their gate after passing through. A scan may transform into a seizure, however, if the searching officer decides to have the passenger step aside to investigate further a suspected threat. At this point, a reasonable person would not have believed that he or she was free to leave.[219] Such a seizure, however, will likely be upheld under the Fourth Amendment as supported by the requisite level of suspicion.[220]

Therefore, the use of laser-based molecular scanners can be upheld as an administrative search or a constitutionally permissible seizure or search. As the next section examines, this screening method is preferable over the current system.

V. AN OPTIMAL SOLUTION

Because of its convenience, effectiveness, minimal intrusion of privacy, and ability to simplify judicial administration, governmental use of laser-based molecular scanners at airport checkpoints would be an optimal solution to the airport security conundrum.

A. Convenience

Imagine the ideal airport security experience: no lines, no stumbling while trying to remove shoes, no x-ray conveyor belts, and no removal of metallic items. Arriving at the airport less than an hour before a flight would no longer be unwise. All of this would be possible with the implementation of laser-based molecular scanners.

With the capability to "rapidly sweep wavelengths in any pattern and sequence," the scanners can scan a passenger and her carry-on items at the same time.[221] There would be no need for x-ray conveyor belts, and passengers could keep their shoes on. If the scanners were programmed to detect weapons and explosives, removing metallic items also would be unnecessary. These improvements would substantially speed up the security process, especially because the scanners can scan multiple people at once.[222] While a millimeter-wave

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219. See Mendenhall, 446 U.S. at 554.

220. See United States v. Hartwell, 436 F.3d 174, 180 (3d Cir. 2006); United States v. Scott, 406 F. Supp. 443, 444 (E.D. Mich. 1976) (holding that an airport official had reason to suspect that the "black, oblong object" displayed on the x-ray scanner might be a weapon or explosive device, which gave the official a legal basis to conduct a hand search of the defendant's bag; arrest was later supported by probable cause when searching officer observed a small transparent packet of white powder in the defendant's bag).

221. See Hidden Government Scanners, supra note 3.

222. New Homeland Security Laser Scanner Reads People at Molecular Level, CBS DC (Jul. 11, 2012, 11:01 AM), http://washington.cbslocal.com/2012/07/11/new-homeland-security-laser-scanner-reads-people-at-molecular-level/.

scan takes 15 seconds per person,[223] a laser-based molecular scan can screen groups of passengers in picoseconds.[224]

Unfortunately, the current rule governing liquids[225] would have to remain in place because liquid explosives can be manufactured with nonthreatening ingredients. For example, several British men planned to blow up a succession of transatlantic airliners with liquid bombs containing hydrogen peroxide and the powdered soft drink Tang.[226] It would be unrealistic to expect the government to program the scanners to detect such nonthreatening liquids, because the list could be endless. Therefore, if passengers wish to travel with more than 3.4 ounce bottles of liquids contained in a quart-sized bag, they would have to pack such bottles in their checked luggage, as the current system requires.[227] This minor inconvenience, however, is dwarfed by the scanners' other capabilities.[228]

B. Effectiveness

Current screening technology has proven ineffective at detecting and deterring threats. In fact, the TSA has employed a reactive approach to terrorism.[229] As new threats have emerged, the TSA has rushed to develop solutions,[230] but none have permanently solved the problem.

Because of emerging nonmetallic threats,[231] it appears that magnetometers will soon become obsolete. The Fifth Circuit identified this shift to nonmetallic threats in the 1970s, explaining that "modern technology has made it possible to miniaturize to such a degree that enough plastic explosives to blow up an airplane can be concealed in a toothpaste tube. A detonator planted in a fountain pen is all that is required to set it off."[232] As the thwarted British liquid explosives plot[233] and the attempted underwear and shoe bombing incidents reveal,[234] magnetometers are ineffective at detecting such threats.

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223. Joseph Straw, New Views on Airport Screening, 52 SEC. MGMT. 76 (Sept. 2008), available at http://www.securitymanagement.com/article/new-views-airport-screening-004586.

224. A picosecond is defined as "one trillionth of a second." Picosecond, MERRIAM-WEBSTER DICTIONARY, http://www.merriam-webster.com/dictionary/picosecond (last visited Feb. 23, 2014). See Hidden Government Scanners, supra note 3.

225. This rule restricts each passenger to 3.4 ounces or smaller containers of liquid or gel contained in one quart-size, clear, plastic, zip-top bag. 3-1-1 for Carry-Ons, TRANSP. SEC. ADMIN. [hereinafter 3-1-1 for Carry-Ons], http://www.tsa.gov/traveler-information/3-1-1-carry-ons (last visited Feb. 25, 2014).

226. Dominic Casciani, Liquid Bomb Plot: What Happened, BBC NEWS, http://news.bbc.co.uk/2/hi/uk_news/8242479.stm (last updated Sept. 7, 2009).

227. See 3-1-1 for Carry-Ons, supra note 225.

228. See supra notes 221–24 and accompanying text.

229. ROGERS, supra note 6, at 3.

230. See supra notes 46–48 and accompanying text.

231. See ROGERS, supra note 6, at 3; Casciani, supra note 226; Herridge et al., supra note 29; Underwear Bomb Revealed, supra note 28.

232. United States v. Moreno, 475 F.2d 44, 49 (5th Cir. 1973).

233. See Casciani, supra note 226.

Although advanced imaging technology can better detect nonmetallic threats, it is not perfect. A 27-year-old engineer named Jonathan Corbett recently exposed a flaw in the technology.[235] A viral video documented Corbett's successful attempt to outsmart both types of AIT scanners.[236] He sewed a pocket to the side of a shirt, placed a metal carrying case inside it, and walked through the scanners undetected.[237] Although such a case could "easily alarm any of the old metal detectors," the supposedly more advanced body scanners did not detect it.[238] Federal investigators conceded these vulnerabilities.[239]

Laser-based molecular scanners can fill these loopholes by disclosing metallic and nonmetallic threats that are overlooked by current technology.[240] In fact, the scanners have the capability to precisely detect traces of substances.[241] To ensure that the scanners' effectiveness is not reduced by a false positive problem, however, they should be programmed to alert to substances greater than a specified amount. Such a limitation would avoid the "Big Brother" scenarios depicted in the Introduction of this Note.[242]

C. Privacy

Airport screening procedures have steadily become more invasive as threats have escalated.[243] While a magnetometer screening is minimally intrusive,[244] the public has condemned the use of advanced imaging technology as an overly intrusive "virtual strip search" that is not narrowly tailored to meet airport security needs.[245] In a blog, a former TSA screener detailed the disturbing activities that took place in the image operator room before the TSA agreed to remove its x-ray backscatter machines.[246] He witnessed "light sexual play among officers . . . and a whole lot of officers laughing and clowning in regard to some of

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234. See supra notes 27–29 and accompanying text.

235. Christopher Elliott, *TSA Body Scanners' Apparent Flaw Raises Airport* Security Concerns, ELLIOTT (Mar. 25, 2012), http://elliott.org/the-navigator/tsa-body-scanners-apparent-flaw-raises-airport-security-concerns/.

236. How to Get Anything Through TSA Nude Body Scanners, YOUTUBE (Mar. 6, 2012), http://www.youtube.com/watch?v=olEoc_1ZkfA.

237. Elliott, supra note 235.

238. Id.

239. See generally David Kravets, Homeland Security Concedes Airport Body Scanner *'Vulnerabilities'*, WIRED (May 7, 2012, 6:45 PM), http://www.wired.com/threat level/2012/05/body-scanner-vulnerabilities/.

240. See Hidden Government Scanners, supra note 3.

241. Id.

242. See supra notes 1–3 and accompanying text.

243. See supra note 32 and accompanying text.

244. See, e.g., United States v. Marquez, 410 F.3d 612, 618 (9th Cir. 2005); United States v. Albarado, 495 F.2d 799, 806 (2d Cir. 1974).

245. Mock, supra note 187, at 229. But see Stephanie Condon, Poll: 4 in 5 Support Full-Body Airport Scanners, CBS NEWS (Nov. 15, 2010, 6:56 PM), http://www.cbsnews.com/news/poll-4-in-5-support-full-body-airport-scanners/.

246. Letter from a Passenger, supra note 167.

[the passengers'] nude images."[247] Although automatic target recognition software will prevent TSA officers from viewing passengers' naked images from a back room,[248] the pat-down opt-out option[249] creates even more privacy concerns.

Passengers expressed outrage at being subjected to these aggressive pat-downs.[250] Victims of such pat-downs include a four-year-old girl who feared the TSA agents because of "stranger danger,"[251] a cancer survivor who had to endure a flight covered in his own urine after a TSA agent popped his urostomy bag during a pat-down,[252] and John Tyner—the famous "don't touch my junk" disgruntled passenger.[253] Although the pat-down option contributed to the constitutionality of advanced imaging technology,[254] laser-based molecular scanners would be a more desirable option.

Unlike a probing pat-down, laser-based molecular scanners can detect threats without even touching passengers.[255] With the goal of "quickly identify[ing] explosives, dangerous chemicals, or bioweapons at a distance,"[256] the scanners permit passengers to speed through security without the fear of being groped by strangers. Passengers would not have to check their privacy interests at the gate when they chose to fly.

D. Judicial Administration

Finally, the use of laser-based molecular scanners could avoid the complicated reasonableness test under the administrative search doctrine.[257] There

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247. Id.

248. Pursuant to a recent congressional enactment, the TSA is required to equip all advanced imaging technology with automatic target recognition software. FAA Modernization & Reform Act of 2012, Pub. L. No. 112–95, § 826, 126 Stat. 11, 132–33 (2012) (codified at 49 U.S.C. § 44901 (2012)).

249. See Pat-Downs: What to Know Before You Go, TRANSP. SEC. ADMIN., http://www.tsa.gov/traveler-information/pat-downs (last updated Feb. 21, 2014).

250. Susan Stellin, Pat-Downs at Airports Prompt Complaints, N.Y. TIMES, Nov. 19, 2010, at B1.

251. TSA Defends Patting Down Hysterical 4-Year-Old Who Had Just Learned *About 'Stranger Danger' in School*, N.Y. DAILY NEWS (Apr. 26, 2012, 8:29 PM), http://www.nydailynews.com/news/national/tsa-defends-patting-hysterical-4-year-old-learned-stranger-danger-school-article-1.1068296.

252. Harriet Baskas, TSA Pat-Down Leaves Traveler Covered in Urine, NBC NEWS (Mar. 25, 2011, 1:07 PM), http://www.nbcnews.com/id/40291856/ns/travel-news/#.USLRLGe5vh8.

253. Kim Zetter, *TSA Investigating 'Don't Touch My Junk' Passenger*, WIRED (Nov. 16, 2010, 2:15 PM), http://www.wired.com/threatlevel/2010/11/tsa-investigating-passenger/.

254. Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec., 653 F.3d 1, 3 (D.C. Cir. 2011).

255. See Hidden Government Scanners, supra note 3.

256. Id.

257. See Camara v. Municipal Court of the City & Cnty. of S.F., 387 U.S. 523, 536–37 (1967) (holding that courts must balance "the need to search against the invasion which the search entails" in determining whether a reasonable search has occurred).

is no bright-line rule explicitly describing the factors supporting a reasonable search.[258] Instead, the reasonableness analysis is a case-by-case, fact-specific inquiry.[259] These factors can be difficult to apply consistently.

For example, a search scheme with an improper programmatic purpose is not easily distinguishable from an appropriate administrative search scheme. Because a search is not automatically unreasonable if it "ultimately reveals contraband other than weapons or explosives" post facto,[260] this line is often blurred. The fact that courts are prohibited from investigating officers' subjective motives further complicates matters.[261]

If laser-based molecular scanners are implemented as a nonsearch, courts will not need to analyze reasonableness under the administrative search doctrine. As an exception to the Fourth Amendment's requirement that searches be conducted with the requisite level of suspicion,[262] the administrative search doctrine will not be implemented if the Fourth Amendment is inapplicable. Therefore, the use of laser-based molecular scanners at airports would alleviate the judicial burden by simplifying the analysis of airport searches.

CONCLUSION

Airport security is a critical, and often the most dreaded, part of traveling. Passengers are asked to sacrifice their individual privacy rights, and sometimes their dignity, in exchange for flying from point A to point B safely.[263] Although the world is not as safe as it used to be, the general public should not have to suffer for the misdeeds of a few. The government has substantial resources at its disposal, including laser-based molecular scanners, to prevent threats from escalating into catastrophes.[264] Because of their convenience, effectiveness, minimal invasion of privacy, and ease of judicial administration, laser-based molecular scanners are an optimal solution to airport security if they are used appropriately.[265] The

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258. For purposes of this Note, the factors were compiled from the reasoning of numerous airport search cases across a variety of fact patterns. See supra Part II.B.2.

259. See United States v. Albarado, 495 F.2d 799, 804 (2d Cir. 1974) (citations omitted) ("[T]he reasonableness of a search depends upon the facts and circumstances and the total atmosphere of each case.").

260. United States v. Marquez, 410 F.3d 612, 617 (9th Cir. 2005).

261. See City of Indianapolis v. Edmond, 531 U.S. 32, 48 (2000)

262. See id. at 37 (citing Chimel v. California, 395 U.S. 752, 765 (1969)) (explaining that a "search or seizure is ordinarily unreasonable in the absence of individualized suspicion of wrongdoing"); United States v. Davis, 482 F.2d 893, 908 (9th Cir. 1973), overruled on other grounds by United States v. Aukai, 497 F.3d 955 (9th Cir. 2007) ("[S]earches conducted as part of a general regulatory scheme in furtherance of an administrative purpose, rather than as part of a criminal investigation to secure evidence of crime, may be permissible under the Fourth Amendment though not supported by a showing of probable cause directed to a particular place or person to be searched.").

263. For a disturbing depiction of current airport pat-down procedures, see supra notes 251–53 and accompanying text.

264. See supra Part I.B.

265. See supra Part V.

government should continue to take advantage of technological innovation to stop terrorists in their tracks, while simultaneously protecting the privacy interests of the law-abiding majority.