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S. HRG. 108–170

DOE POLYGRAPH PROGRAM

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

TO RECEIVE TESTIMONY ON THE DEPARTMENT OF ENERGY'S POLYGRAPH PROGRAM

SEPTEMBER 4, 2003

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

90–082 PDF WASHINGTON : 2003

For sale by the Superintendent of Documents, U.S. Government Printing Office
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DOE POLYGRAPH PROGRAM

THURSDAY, SEPTEMBER 4, 2003

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:03 a.m., in room SD–366, Dirksen Senate Office Building, Hon. Pete V. Domenici, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

Senator BINGAMAN. Why don't we go ahead and get started? Senator Domenici is delayed and asked me to go ahead and start the hearing.

I want to thank Deputy Secretary McSlarrow and Professor Fienberg both for appearing today and dealing with this issue, which is in my view very important, but one that has been with us for quite a while.

This program to have all of these polygraphs conducted in the Department of Energy was inserted in the Senate Armed Services bill in August 1999, and that was at the height of the concern about the perceived loss of nuclear weapons data to foreign governments, particularly the government of China, as I remember it. At that time, our Government was developing a case against Dr. Wen Ho Lee. There have been numerous questions and criticisms about how that investigation and case preparation was conducted.

Also, at that time was a report from the House Select Committee on U.S. National Security and Military Commercial Concerns with the People's Republic of China, and that report pointed out the degree with which sensitive dual-use and military technology was being exported to China.

So when the DOE polygraph program was authorized, we were in the midst of a crisis over the alleged loss of nuclear weapons data. I am not sure if we have conclusively proven or disproven many of the allegations made at that time.

What still remains, of course, is the polygraph program that was put in place at that time. It now screens up to 20,000 Federal and laboratory employees to counterintelligence polygraphs.

In October 1999, we initiated an amendment in the Armed Services Committee to ask the National Academy of Sciences to look at the scientific validity of polygraphs. The amendment was to build upon the 1983 study that was done by the Office of Technology Assessment which found that polygraphs were subject to operator

bias and had a high degree of variability according to the population that they were used with.

We now have the results of the National Academy of Sciences study before us. It adds scientific rigor by demonstrating that in a test population of 10,000, with 10 spies included in the 10,000, 2 of those spies would still pass the test and 1,600 innocent people would fail. So under the current 1999 regulations if up to 20,000 employees were tested, that would translate into about 3,000 innocent employees who would be subjected to additional review. That is almost half the population of Los Alamos National Laboratory.

I believe and have believed for a long time that polygraphs do have a role in counterintelligence through their selective use when there has been an adequately staffed and funded counterintelligence team that has uncovered evidence that a particular person or group of persons has engaged in activities that might endanger national security and when that person or persons voluntarily submit to polygraph exams.

But using polygraphs as a screening tool, no matter how many individuals are screened, in my view, is going to produce false positives and false negatives. In the case of false positives, it questions a person's patriotism and, in many cases undermines morale. In the case of a false negative, a well-trained spy like Aldrich Ames escapes to do further damage to the country.

So I think this is a very important issue. It is one that is no longer in the headlines but one that is very important for us to get resolved.

So I appreciate Secretary McSlarrow being here to testify. Why do you not go ahead with your testimony and I will have a few questions of you, and then we will do the same with Dr. Fienberg. Thank you.

[A prepared statement from Representative Tauscher follows:]

PREPARED STATEMENT OF HON. ELLEN O. TAUSCHER, U.S. REPRESENTATIVE FROM CALIFORNIA

I strongly commend Senator Domenici and Ranking Member Bingaman for holding this important hearing on the Department of Energy's polygraph policies.

I should add that because of my longstanding concern about this issue, I have requested a similar hearing in the House Armed Services Committee but that my request has not been granted. I hope Chairman Hunter will see fit to do so in the near future.

I believe I join many lawmakers in saying I was shocked that, in spite of an 18-month study by the National Academy of Sciences saying that there is no scientific basis for indiscriminate polygraph testing, Secretary Abraham still intended to pursue widespread use of polygraphs as a matter of Energy Department policy.

I am relieved that the Energy Department has partially reversed course on its highly controversial widespread use of polygraphs, but I remain deeply concerned that a dangerous gap between the science and the policy remains.

Section 3152 of the fiscal year 2002 National Defense Authorization Act required the Energy Department to take into account the findings of the National Academy of Sciences review of the polygraph. That review concludedthat the "accuracy (of polygraph testing) in distinguishing actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in federal agencies."

Yet, time and again, the Energy Department has continued to not just rely, but to over rely, on polygraph testing as a tool to screen personnel - in its proposed rulemaking and now again with a revised polygraph policy.

I have made my position on polygraphs clear. Polygraph testing can be useful for specific investigative purposes and perhaps for scientists and security personnel working in the most highly classified areas, but it cannot be effectively used on a

widespread screening basis. I continue to fear that the Energy Department's intention to subject thousands of lab employees to polygraphs only promotes a false sense of security and does nothing to foster good science at our national labs.

We can talk about the questionable science on polygraphs and the Energy Department's flawed policy all day long, but Secretary Abraham needs to understand how this impacts the men and women at our national labs in personal terms. According to the National Academy of Sciences, a lab employee who fails an Energy Department polygraph test has more than a 99 percent chance of actually telling the truth.

The Chairman of the National Academy also testified that "any spy or terrorist who takes the DOE's polygraph test is far more likely to 'pass' the test than to 'fail' it—even without trying to 'beat' the system."

The Energy Department cannot continue to hinge the careers of scientists on voodoo science, no matter how few or great the number. It makes little difference to the scientists at our labs if polygraphs are administered to 20,000 or 6,000 when all it takes is onefalse positive to ruin a career..

In fairness to science, security, and the men and women who work at our labs, I again urge Secretary Abraham to take a closer look at this decision.

STATEMENT OF KYLE E. McSLARROW, DEPUTY SECRETARY OF ENERGY, DEPARTMENT OF ENERGY

Mr. MCSLARROW. Thank you, Senator. I am pleased to be here to have an opportunity to appear before you to discuss our current efforts and intentions regarding a new polygraph examination policy, and with your permission, I would like to summarize my testimony and submit it in full in the record.

Senator BINGAMAN. Please do so.

Mr. MCSLARROW. You described already the legislative history, and I know you are well familiar, having authored some of those statutory directives. So let me just start off with the process beginning with the NAS study that was published in October 2002.

As a result of the statutory directive, we published a notice of proposed rulemaking on April 14 of this year. In that notice, the Department indicated its then current intent to continue the current polygraph program under a new rule. At the same time, the Secretary recognized that in the longer term some changes might be appropriate, and therefore we asked explicitly for public comment during a period which ended on June 13 of this year.

The Secretary then directed me to conduct a review of the current policy and to make recommendations based on my review. I have worked closely with the NNSA Administrator and the three directors of the nuclear weapons labs, and I have discussed these issues with counterintelligence professionals, polygraph experts, and as part of that review, I have also had access to classified summaries prepared by other Federal agencies.

I have recently completed that review process. Let me say up front that this is one of the most difficult public policy issues I have had to confront. There is something almost talismanic about polygraphs, and that is something I can personally attest to since both the Secretary and I took a polygraph exam early in our tenure at the Department.

I found many of the NAS's concerns about the validity of polygraph testing to be well-taken. I personally discussed this issue, as I know you have, Senator, with many employees of the Department, some of whom feel quite strongly that the polygraph is a dangerous tool that either has or will deprive us of the very talent that is needed to support our national security programs. And yet, as a policymaker, I have concluded that the utility of polygraphs

is strong enough to merit their use in certain situations for certain classes of individuals and with certain protections that minimize the legitimate concerns expressed by the National Academy of Sciences, employees of the Department, and other observers.

I am, therefore, recommending to the Secretary that we propose substantial changes to how we use the polygraph in the context of our counterintelligence program. In doing so, I carefully weighed considerations of fairness to employees with national security objectives, and throughout I was guided by the NAS report, a study of considerable rigor and integrity, both in the sense of what it tells us about what we know and do not know about scientific evidence relating to the polygraph and in its willingness to make clear the limitations under which the study was conducted.

Because I have recommended that we propose substantial changes, if the Secretary accepts my recommendations, I would expect that we would publish a new proposed rule.

Perhaps the most difficult issue involves the use of a polygraph as a screening tool. The NAS report points out that the generic nature of the questions, for example, asked in the traditional counterintelligence scope exam poses concerns for validity, concerns that are present to a lesser degree when a polygraph exam is focused on a specific set of facts or circumstances. Adding to the difficulty for public policy makers is the NAS's conclusions that "virtually all of the available scientific evidence on polygraph tests relate to studies of specific-event investigations" rather than its use as a screening tool.

However, Federal agencies deploying the counterintelligence scope polygraph as a screening tool for initial hiring or initial access have detected applicants for classified positions within those agencies who were directed by foreign governments or entities to seek employment with those agencies in order to gain successful penetrations of our Government. Our agencies have also benefitted from the utilization of the polygraph screen as part of a periodic security evaluation, and I enumerate in the written testimony some examples of the success in that regard.

However, as the NAS report makes clear, there are two fundamental issues: problems associated with exam results that produce false positives or false negatives.

False positives pose, as you said, Senator, a serious dilemma. They clearly affect the morale of those for whom such a result is reached, and a certain number can plausibly be expected to affect morale of a sizeable portion of the workforce. They risk interrupting the careers of valuable contributors to our Nation's defense. They also risk wasting valuable resources, resources that could be more usefully deployed in other ways.

My response would be twofold. First, I believe that those considerations strongly counsel in favor of ensuring that the types of information that require a screening polygraph be that type of information that we deem the most vital. As I will note below, that has led me to recommend that we substantially lower the numbers of categories of information and hence the numbers of persons that would be subject to a polygraph screen.

But that is not enough because the NAS report also notes "We believe that any agency that uses polygraphs as part of a screening

process should, in light of the inherent fallibility of the polygraph, use the polygraph results only in conjunction with other information, and only as a trigger for further testing and investigation."

Therefore, I believe we should continue to use the polygraph as one tool to assist in making that determination, but that we not use it as the only tool. That in turn leads me to believe that we make clear not only as we do now in our current rule that we will not take any adverse personnel action solely based on the test results of polygraph exams, but that it is also our policy that no adverse decision on access to certain information or programs will be made solely on the basis of such test results.

Let me now turn to the problem of false negatives where a polygraph indicates no deception but the individual is actually being deceptive. The NAS report quite correctly highlights this as a very real concern and as important if not more important than the concern of false positives, which generally generates most of the discussion.

My review of this question persuades me that it is a certainty that any screening polygraph will produce a number of false negatives. These could, in theory, be significantly diminished by raising the sensitivity threshold of polygraph exams, but that almost certainly raises the numbers of false positives in a population like the Department's where virtually everyone is an honest patriot. Moreover, even this approach will not solve the problem, as we still may end up with a substantial number of false negatives.

What we must keep in mind is that every clearance procedure has the problem of false negatives. It is just as dangerous to simply assume that a successfully completed background check means that we "know" that a person is loyal to the United States. In my view, the right way to think about this is defense in depth. One tool alone will not suffice, but many tools, among them the polygraph and other well-known tools, working together can reduce the risk to the greatest extent practical.

Just to touch on some of my recommendations to the Secretary, I am recommending that the new program, like the current program, be driven by access needs and apply equally to Federal and contractor employees. We will make no distinctions between political appointees or career service professionals. My recommendation is to retain a mandatory polygraph screening program only for individuals with regular access to the most sensitive information. Overall, my recommendation is to narrow the range of information, access to which will trigger mandatory screening, and the result is the number of individuals affected would go from in excess of potentially 20,000, as you said, Senator Bingaman, under the rule to approximately 4,500 under this new program.

In my own thinking about the justifications for use of the counterintelligence scope polygraph, I have searched for a test to identify the types of information that on balance overcame the very real concerns about the validity of the polygraph screen. As it happens, we do have a well-understood test of how to define the damage disclosure of certain information would present: the current classification levels of confidential, secret, and top secret. There are additional categories that are also important, but it seems to me that the definition of top secret is a better way to capture the informa-

tion most precious to us: "information, the unauthorized disclosure of which reasonably could be expected to cause exceptionally grave damage to the national security."

Thus, I would propose including in the mandatory screening program those positions with routine or continuing access to all Department-originated top secret information, including top secret restricted data and top secret national security information.

Let me now address an entirely new proposal of this program and it is the random screening program. We have identified a universe of positions whose level and frequency of access, while not requiring mandatory screening, nevertheless warrant some additional measure of deterrence against damaging disclosures.

In reviewing the public policy dimensions of the polygraph, one is struck by the either/or aspect of the debate. Either you are subject to a polygraph or you are not. This struck me as too simplistic. The types of information we are concerned with do not easily fall into categories of either we deploy every tool we have or we do nothing. There is a continuum, and the problem of targeting in terms of counterintelligence is perhaps unique to DOE facilities and especially our three weapons labs in a way not present elsewhere in our national security complex. Nowhere else in America can someone in one location find not only our most sensitive nuclear weapons secrets but secrets addressing other weapons of mass destruction and special nuclear material.

Thus, as a policy matter, I believe that unless there are very compelling countervailing considerations, we should pursue even modest additions to the arsenal of tools we deploy to deter dissemination of this information to our enemies, given the potentially grave consequences of failure.

Finally, the Department is strongly committed to maximizing protections against potential errors and adverse consequences and safeguarding the privacy of the employees. Therefore, I will recommend that the new proposed rule retain and enhance the protections already contained in the current regulation.

Limiting the population of those subject to mandatory screening polygraphs, as I recommend, will also be an important step. But I think we also have to make clear that it is our policy not to base a denial of access, not just an adverse personnel action, solely on the results of a polygraph exam.

I am also recommending that the new regulation improve the process for making decisions to grant, continue, or deny access by providing for a new counterintelligence evaluation review board that may be convened to consider the results of exams that are not dispositive.

I also recommend that it be our policy that the appropriate weapons laboratory director be consulted when the access determination involves a laboratory employee. I believe we need to place a premium on thorough but speedy decision making on these issues which I believe is in the best interest of both the employee and the Department.

Mr. Chairman, in the interest of time, I will conclude my statement at this point, and I would be happy to respond to any questions.

[The prepared statement of Mr. McSlarrow follows:]

PREPARED STATEMENT OF KYLE E. MCSLARROW, DEPUTY SECRETARY OF ENERGY, DEPARTMENT OF ENERGY

Thank you for giving me the opportunity to appear before you today to discuss the Department of Energy's current efforts and intentions regarding a new polygraph examination policy. This testimony is specific to the DOE polygraph program as it is administered by the DOE. The DOE utilizes a format that differs from the format used by some other Federal agencies. My statements today should therefore not be construed as offering any opinion on any other polygraph program in the Federal government.

I. INTRODUCTION

Let me start by providing some historical perspective on this matter. Both the Executive and Legislative branches of our government have long recognized that the Department's national weapons laboratories are among the world's premier scientific research and development institutions. They are essential to our continued national security. They played a vital role in our victory in the Cold War, and they have continued to play a vital role in protecting the United States to this day. For that very reason, because they are the repository of America's most advanced know-how in nuclear and related weapons and the home of some of America's finest scientific minds and engineering capabilities, they also have been and will continue to be major targets of foreign intelligence services and other enemies of the United States. That has been true since they were created and it is equally true today.

In particular, the attractiveness of DOE's laboratories as an intelligence target has not abated as a result of the end of the Cold War. Rather, as this Committee is well aware, the number of nations possessing, developing, or seeking weapons of mass destruction continues to grow, as does the threat presented to American interests by rogue nations and terrorist groups seeking access to these materials.

As a result, throughout our history, the Department of Energy, like its predecessor the Atomic Energy Commission, has had to balance two sets of considerations. On the one hand, we must attract the best minds that we can to do this cutting edge scientific work, and we must allow sufficient dissemination of that work to allow it to be put to the various uses that our national security demands. On the other hand, we must take all reasonable steps to prevent our enemies from gaining access to the work we are doing, lest that work end up being used to the detriment rather than the advancement of our national security. There are no easy answers to the dilemma of how best to reconcile these competing considerations.

The question of whether and to what extent the Department of Energy should use the polygraph as a tool for screening individuals for access to our most sensitive information is the latest manifestation of this perennial struggle. This particular chapter begins in 1988, when Congress enacted the Employee Polygraph Protection Act of 1988. That legislation generally restricted employers from using polygraphs to screen potential employees. Congress, however, included three exceptions that are relevant to the matter before you today. First, Congress decided that it would not apply any of the legislation's prohibitions to the United States or other governmental employers with respect to their own employees. Second, Congress specifically allowed the Federal government to administer polygraphs to Department of Defense contractors and contractor employees, and Department of Energy contractors and contractor employees in connection with the Department's atomic energy defense activities. And finally, Congress specifically provided that the Federal Government could administer polygraphs to contractors and contractor employees of the intelligence agencies and any other contractor or contractor employee whose duties involve access to top secret information or information that has been designated as within a special access program.

In February 1998, President Clinton issued Presidential Decision Directive-61. In that directive, entitled U.S. Department of Energy Counterintelligence Program, the Department was ordered to enhance its protections against the loss or compromise of highly sensitive information associated with certain defense-related programs by considering a variety of improvements to its counterintelligence program. One of these was the use of polygraph examinations to screen individuals with access to this information.

In order to carry out this directive, after initially proceeding through an internal order governing only federal employees, on August 18, 1999, the Department of Energy proposed a rule, entitled "Polygraph Examination Regulation," that would govern the use of the polygraph as a screening tool. It proposed that all employees at DOE facilities, contractor employees as well as Federal employees, with access to certain classified information and materials, as well as applicants for such positions, be subject to a counterintelligence polygraph before they received initial access to

the information and materials and at five-year intervals thereafter. In the National Defense Authorization Act for FY2000, Congress endorsed the approach by directing that the Department administer a counterintelligence polygraph to all Department employees, consultants, and contractor employees in "high risk programs" prior to their being given access to the program. Congress specified that these programs were the "Special Access Programs" and "Personnel Security and Assurance Programs." On January 18, 2000, the Department finalized essentially the rule it had proposed, which included individuals with access to these programs and others in the screening requirement. Thereafter, on October 30, 2000, Congress enacted the National Defense Authorization Act of FY 2001, which added DOE employees, consultants, and contractor employees in programs that use "Sensitive Compartmented Information" and all others already covered by the Department's prior rule to those to whom the polygraph screening mandate applied.

More recently, in the National Defense Authorization Act for FY2002 (PL 107-107), enacted on December 28, 2001, Congress required the Secretary of Energy to carry out, under regulations, a new counterintelligence polygraph program for the Department. Congress directed that the purpose of the new program should be to minimize the potential for release or disclosure of classified data, materials, or information. Congress further directed that the Secretary, in prescribing the regulation for the new program, take into account the results of a not-yet-concluded study being done by the National Academy of Sciences. That study was being conducted pursuant to a contract DOE had entered into with the National Academy of Sciences in November 2000, in which the Department requested the Academy to conduct a review of the existing research on the validity and reliability of polygraph examinations, particularly as used for personnel security screening. Congress directed the Department to propose a new rule regarding polygraphs no later than six months after publication of the NAS study. Finally, Congress provided that the requirements it had imposed in the two earlier Defense Authorization Acts regarding the DOE Counterintelligence Polygraph Program would be repealed upon certification by the Secretary to the Congressional Defense Committees that DOE has promulgated and fully implemented a new polygraph rule. We understand this to mean that the Department is not constrained by those requirements in developing the rule it may elect to promulgate.

The NAS study, entitled The Polygraph and Lie Detection, was published in October 2002 (hereinafter referred to as "NAS Report" or "NAS Study"). The Department published a Notice of Proposed Rulemaking on April 14, 2003. In that Notice, the Department indicated its then-current intent to continue the current polygraph program under a new rule. As the Secretary of Energy said upon release of that proposed rule, he "concluded that it was appropriate at the present time to" retain the current system "in light of the current national security environment, the ongoing military operations in Iraq, and the war on Terrorism." At the same time, the Secretary recognized that in the longer term some changes might be appropriate. Therefore, the Department explicitly asked for public comment during a period which ended on June 13, 2003. The Secretary also personally wrote all laboratory directors inviting their comments and views on the proposed rule.

The Secretary then directed me to conduct a review of the current policy and its implementation history to date, the NAS Report, and the public and internal comments resulting from the Notice of Proposed Rulemaking, and to make recommendations based on my review. I have worked closely with the Administrator of the National Nuclear Security Administration and the three directors of the nuclear weapons labs. I have discussed these issues with counterintelligence professionals, polygraph experts, and, as part of that review, I have also had access to classified summaries prepared by other Federal agencies regarding their use of polygraph as a screening tool for highly sensitive national security positions.

II. BASIS FOR RECOMMENDATIONS

I have recently completed that review process. Let me say up front that this is one of the most difficult public policy issues I have had to confront. There is something almost talismanic about polygraphs. I can personally attest to this, since both the Secretary and I took a polygraph exam early in our tenure at the Department. I will discuss specific NAS recommendations throughout my testimony, but the NAS report makes very clear how little we actually know in a scientific sense about the theory and practice of polygraphs, either in support of or against the use of polygraphs in a variety of contexts. I found many of the NAS's concerns about the "validity" of polygraph testing to be well taken. I have personally discussed this issue with many employees, some of whom feel quite strongly that the polygraph is a dangerous tool that either has or will deprive us of the kind of talent that is needed

to support our important national security programs. And, yet, as a policy maker, I have concluded that the utility of polygraphs is strong enough to merit their use in certain situations, for certain classes of individuals, and with certain protections that minimize legitimate concerns expressed by the NAS, employees of the Department, and other observers.

I am therefore recommending to the Secretary that we propose substantial changes to how we use the polygraph in the context of the Department's counterintelligence program. In doing so, I carefully weighed considerations of fairness to employees with national security objectives. I weighed the critical need to protect important classes of national security information against the reality that such information's value is realized in some situations only when shared among talented individuals, without which our national security would suffer. I weighed the possibility that individuals who might otherwise be critically important to our national security might not be able to contribute to our security if they choose another type of employment because they object to taking a polygraph exam. I weighed the possibility that a polygraph exam that is sensitive enough to raise the likelihood of "catching" someone who means to do harm to the United States is also sensitive enough to raise the risk that many "innocent" employees will have their lives and employment disrupted by an examination that is either inconclusive or wrongly indicates deception. Throughout, I was guided by the NAS Report, a study of considerable rigor and integrity both in the sense of what it tells us about what we know and don't know about scientific evidence relating to the polygraph, and in its willingness to make clear the limitations under which the study was conducted.

Because I have recommended that we propose substantial changes that encompass the classes of individuals who would be subject to a counterintelligence scope polygraph exam and the procedures that apply to the use of polygraphs, if the Secretary accepts my recommendation we will also publish a new proposed rule. Such a proposal will entail significant consultation within the executive branch. I would anticipate such a proposed rule would be published by the end of this year. In addition to public comment, I would expect the Department to hold a public hearing before finalizing the rule.

I would like now to summarize the changes that I am recommending to the current polygraph program. As I do so, I will identify the considerations I concluded were most important taking into account the NAS report.

Perhaps the most difficult issue involves the use of a polygraph as a screening tool, either as a pre-employment test, or as is the case with the Department's program, as a tool for determining access to certain types of information, programs, or materials. The NAS report points out that the generic nature of the questions asked in the traditional counterintelligence scope exam poses concerns for validity, concerns that are present to a lesser degree when a polygraph exam is focused on a specific set of facts or circumstances. Thus, the NAS report stated, "we conclude that in populations of examinees such as those represented in the polygraph research literature, untrained in countermeasures, specific-incident polygraph tests can discriminate lying from truth telling at rates well above chance, though well below perfection." By contrast, "polygraph accuracy for screening purposes is almost certainly lower than what can be achieved by specific-incident polygraph tests in the field."

Adding to the difficulty for public policy makers is the NAS' conclusion that "virtually all the available scientific evidence on polygraph test validity comes from studies of specific-event investigations" rather than studies of polygraphs used as a screening tool, and the "general quality of the evidence for judging polygraph validity is relatively low."

However, several agencies within the U.S. intelligence community have utilized the counterintelligence scope polygraph for many years as part of both their hiring process and periodic security evaluations of on-board personnel. Those examinations have produced positive results.

Federal agencies deploying the counterintelligence scope polygraph as a screening tool for initial hiring or initial access have detected applicants for classified positions within those agencies who were directed by foreign governments or entities to seek employment with the agencies in order to gain successful penetrations within the various U.S. Government components.

U.S. agencies have also benefited from the utilization of the polygraph screen as part of periodic security evaluations and re-investigations of federal employees and contractor personnel. Such examinations have resulted in multiple admissions in several different areas:

- Knowingly providing classified information to members of foreign intelligence services.

- Involvement in various stages of recruitment efforts by foreign intelligence services.
- Prior unreported contacts with known foreign intelligence officers.
- Efforts by employees to make clandestine contact with foreign diplomatic establishments or foreign intelligence officers.
- Serious contemplation or plans to commit acts of espionage.
- Knowingly providing classified information to foreign nationals and uncleared U.S. persons.

As a result of admissions and subsequent investigations, federal agencies have disrupted on-going clandestine relationships between employees/contractors and foreign intelligence officers, and stopped others in their beginning phases, or even before the clandestine relationships began.

If this were the end of the inquiry, it would be a relatively straightforward matter. The probability would be that use of the polygraph screen as one tool for counterintelligence would have a value that demanded its use in the context of access to information the protection of which is critical to our national security, even taking into account questions of employee morale and the resources necessary to sustain such a program. The value of its use in specific-incident investigations would be presumably greater still.

However, that cannot be the end of the inquiry. As the NAS Report makes clear, there are two fundamental issues that must still be confronted: problems associated with examination results that produce "false positives" (i.e., where an "innocent" person's exam is either inconclusive, or wrongly indicates deception or a significant response meriting further investigation); or "false negatives" (i.e., where a "guilty" person is judged to have "passed" an exam such that no follow up investigation is required).

"False positives" pose a serious dilemma. They clearly affect the morale of those for whom such a result is reached, and at a certain number can plausibly be expected to affect the morale of a sizeable portion of the workforce. They risk interrupting the careers of valuable contributors to our nation's defense, if only to fully investigate and clear someone who has not "passed" a polygraph. Both ways, therefore, they pose a very serious risk of depriving the United States of the vital services of individuals who may not be easily replaced. They also risk wasting valuable resources, particularly valuable security and counterintelligence resources that could more usefully be deployed in other ways. For all these reasons, therefore, false positives are a serious issue not only as a matter of individual justice but as a matter of the security of the United States.

What this means, in turn, is that the ratio of "true positives" to "false positives" is a very important consideration in evaluating the polygraph's utility as a screening tool. Unfortunately, we do not really know what that ratio actually is. It largely depends on the accuracy of the polygraph used in this way, as to which, as the NAS Study explains, for the reasons noted above, we do not have enough hard information to make anything more than an educated guess.[1]

Nonetheless, the NAS's conclusion on this point is stark: "Polygraph testing yields an unacceptable choice. . . . Its accuracy in distinguishing actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in federal agencies."

The NAS analysis underlying this conclusion is very complex and varies somewhat depending on the "sensitivity threshold" at which the polygraph is set. I will not detail it fully here. However, the bottom line is that I found these concerns to be compelling, requiring a satisfactory response in order to continue the use of the polygraph as a counterintelligence tool for screening decisions.

The core of my response is twofold. First, I believe that considerations brought out by the NAS Study strongly counsel in favor of ensuring that the types of information that require a screening polygraph in order to obtain access to them are the most critical to our national security, so that we are only incurring the costs that the screening polygraph will inevitably entail in order to protect our most vital information. As I will note below, that has led me to recommend that we substantially

[1] The NAS report details a number of concerns in addition to those identified in the text. The most serious of these is countermeasures, an issue that is recognized by all agencies who use polygraphs. We must establish a policy that does not rely on the results of a polygraph alone to provide comfort that anyone tested has been "cleared." Other tools must always be used in conjunction with a polygraph. In addition, of course, we need to work to recognize and defeat countermeasures. Finally, the possibility of countermeasures does not diminish the utility of polygraphs for deterrence, particularly among those not trained in countermeasures, but even among those who may be, since no one can have complete confidence that a countermeasure will succeed.

lower the numbers of categories of information and hence the numbers of persons that would be subject to a polygraph screen.

Even in such cases, however, I still believe the costs of allowing bottom-line decisions to be made based solely on a "positive" that stands a substantial chance of being a "false positive" are unacceptably high. We cannot afford them because they risk undermining the very national security goals we hope to attain. That brings me to the second element of my response.

The NAS paragraph quoted above actually only goes to the use of the polygraph results as the sole basis for decision-making. It does not address the polygraph's use as an investigative lead, to be used in conjunction with other traditional investigative tools. So used, the polygraph seems to me to be far less problematic because we should be able to use these other tools to distinguish the false positives from the true positives. The NAS Report acknowledges that this approach can ameliorate the problems it identifies, noting that "We believe that any agency that uses polygraphs as part of a screening process should, in light of the inherent fallibility of the polygraph instrument, use the polygraph results only in conjunction with other information, and only as a trigger for further testing and investigation."

To put the point most simply: I know of no kind of investigative lead that is perfect. Most will identify a substantial number of instances of misconduct or "false positives" that do not check out. Let us take anonymous tips, which are the bread and butter of investigations. If an anonymous tipster reports wrongdoing on someone's part that indicates danger to the national security, the report may be true. But it is also possible that the tipster misunderstood something and leapt to an unwarranted conclusion. And it is also possible that the tipster made up or distorted the report in order to slander the subject out of malice, envy, or on account of some other grievance or motivation. Anonymity provides a cloak to the tipster that may result in the government's obtaining some true information it otherwise might not get, but it also lowers the costs to the tipster of lying.

Nevertheless, we do not rule out the use of anonymous tips to screen individuals for access to information, or for all kinds of other purposes. Rather, we accept them, but we investigate them. What we do not do, however, is assume they are true and treat them as the sole basis for decision-making.

Similarly, techniques in addition to the polygraph are utilized by U.S. Government agencies, including DOE, to determine whether to grant security clearances and determine access to classified information. Those techniques include, among others, national agency checks; credit and criminal checks; and interviews of neighbors, co-workers and others. Any of those techniques, standing alone, could produce inaccurate information which, taken on its face without further verification, could lead to adverse consequences to the prospective or current employee. While no individual technique is perfect and without some potential for error, no one to my knowledge has suggested that we should abandon their use, or that we hire people and entrust them with national defense information with no prior checks or reviews whatsoever.

It seems to me that it is not unreasonable to place the same kind of limited credence in a polygraph result that we place in many other kinds of information that we receive in the course of evaluating whether an individual should be given access to extremely sensitive information. Therefore, I believe we should continue to use the polygraph as one tool to assist in making that determination, but that we not use it as the only tool. That, in turn, leads me to believe that we make clear not only, as we do now in our current rule, that we will not take any "adverse personnel action" solely based on the test results of polygraph examinations, but that it is also our policy that no adverse decision on "access" to certain information or programs will be made solely on the basis of such test results.

The bottom line is that we intend that a polygraph screen serve what we have previously said it would: that is, a "trigger" that may often be useful for subsequent investigation, but standing alone treated as having no conclusive evidentiary value. In every case of an adverse personnel action, it would be our policy that such an action or decision would be based on other information as well.

Let me now turn to the problem of "false negatives," where a polygraph indicates "no deception" but the individual is actually being deceptive. The NAS report quite correctly highlights this as also a very real concern. My review of this question persuades me that it is a certainty that any screening polygraph will produce a number of false negatives. These could in theory be significantly diminished by raising the sensitivity threshold of polygraph exams, but that almost certainly raises the numbers of false positives in a population like the Department's where virtually everyone is an honest patriot. Moreover, even this approach will not solve the problem, as we may still end up with a substantial number of false negatives.

What we must keep in mind is that every "clearance" procedure has the problem of "false negatives." It is just as dangerous to simply assume that a successfully completed background check means that we "know" the person is loyal to the United States. All that we "know" is that we have not found any evidence of disloyalty. The same should hold for thinking about what it means to "pass" a polygraph exam. We actually don't "know" that the person is not being deceptive. We simply have not found anything indicating that he or she is. The real life public policy challenge is that we have to make a judgment about how far we go, how many resources we expend, in the search for perfection when it comes to counterintelligence. Quite obviously, considering the many tens of thousands of Americans who have access to information or programs the protection of which is absolutely critical, we are forced to make a probabilistic judgment on how far is enough.

The right way to think about this is "defense in depth." One tool alone will not suffice. But many tools, among them the polygraph and other well-known tools, working together can reduce the risk to the greatest extent practical.

Thus, in making my recommendations, I intend to give greater scrutiny to those concerns the NAS Report identified. In particular, as a result of the NAS Report, I have already directed a review of our current practice under the Accelerated Access Authorization Program, where interim clearances are granted for some personnel, based in part on whether they "pass" a polygraph exam, even before the completion of a background check (Other requirements for interim clearance under this program include completion of Questionnaire for National Security Positions, a National Agency Check with Credit, psychological screening and drug testing). I also believe it is critical that everyone at DOE involved in access determinations—Counterintelligence, Security, and Program personnel—truly internalize the NAS's points on both "false positives" and "false negatives" and build them into the culture of their organizations, particularly the people charged with making access recommendations or decisions.

III. OVERVIEW OF RECOMMENDED CHANGES

I am recommending that the new program, like the current program, be driven by access needs and apply equally to Federal and contractor employees. We will make no distinctions between political appointees or career service professionals. The function or information to which access is sought will be determinative.

My recommendation is to retain a mandatory polygraph screening program only for individuals with regular access to the most sensitive information. I recommend that the proposed rule, like the current regulation, provide for a mandatory counterintelligence scope polygraph examination prior to initial access being granted, as well as periodic polygraph examinations at intervals not to exceed five years.

Overall, my recommendation is to narrow the range of information, access to which will trigger mandatory screening as compared to the potential scope of the program under the current rule. The approach I am recommending would have the effect of reducing the number of individuals affected from well in excess of potentially 20,000 under the current rule to approximately 4,500 under this new program.

I will recommend that some elements of the mandatory screening population remain essentially the same as under the current regulation. For example: all counterintelligence positions; all positions in the Headquarters Office of Intelligence and at the Field Intelligence Elements; and all positions in DOE Special Access Programs (and non-DOE Special Access Programs if a requirement of the program sponsor) will be included in the mandatory screening program. These positions would continue to be subject to mandatory screening because they involve routine access to highly sensitive information, such as foreign intelligence information and other extremely close-hold and compartmented information.

In my own thinking about the justifications for use of the counterintelligence scope polygraph, I have searched for a test to identify the types of information that on balance overcame the very real concerns about the validity of the polygraph screen. Most would agree that the polygraph should be reserved for only those programs or information, the protection of which is the most critical. As it happens, we have a well understood test of how to define the damage disclosure of certain information would present: the current classification levels of Confidential, Secret, and Top Secret. There are additional categories that are also important, but it seems to me that the definition of Top Secret is a better way to capture the information most precious to us: "information, the unauthorized disclosure of which reasonably could be expected to cause exceptionally grave damage to the national security".

Another consideration is that even equally critical information may be targeted differently. In some cases, such information may reside in seemingly innocuous of-

fices anywhere in the country. In the case of the Department, no such possibility exists. All of our facilities, and certainly the three weapons labs, are well known to involve the most sensitive secrets our country possesses, not simply about nuclear weapons, but about countless other programs. Therefore, there can be no question that these facilities will be targeted by those who wish to do us harm.

Thus, we would propose including in the mandatory screening program those positions with routine or continuing access to all DOE-originated Top Secret information, including Top Secret Restricted Data and Top Secret National Security Information. Top Secret Restricted Data is a clearly distinguishable criterion that identifies the weapons community's most sensitive information assets. Other non-weapons-related Top Secret information, categorized as Top Secret National Security Information, although not dealing with nuclear weapons, includes our most sensitive national security information.[2]

Let me make clear that this category will not include everyone with a "Q" or a Top Secret clearance, nor will it include all weapons scientists; it will include only those whose positions require continuing, routine access to Top Secret RD or other DOE-originated Top Secret information. This is a fairly small population, probably less than one thousand people complex-wide.

I am also making a separate recommendation regarding certain DOE-originated information. We possess certain nuclear weapons information referred to as "Sigma" information classified at a level below Top Secret that deals with various sensitive aspects of the nuclear weapons program to which we formally restrict access, including vulnerability information (Sigma 14), use control information (Sigma 15), and other design information (Sigmas 1 and 2). This information would be particularly attractive to terrorist organizations because it could facilitate the deliberate unauthorized use (nuclear detonation) of a nuclear weapon or the construction of an Improvised Nuclear Device. I am recommending to the Secretary that he direct a review to determine whether, as a result of our understanding of current threats and other factors, some or all of this "Sigma" information should be reclassified at the Top Secret level or protected under a Special Access Program. The conclusions of this review could result in additional positions in this category.

I will also recommend to the Secretary that the new proposed rule include authority for certain managers, with input from the Office of Counterintelligence and subject to the approval of either the Secretary or the Administrator of the National Nuclear Security Administration, to include additional individuals within their offices or programs in the mandatory screening program. These individuals will be limited to those with regular access to information or other materials presenting the highest risk. This authority would allow designation of individuals within the Office of the Secretary, the National Nuclear Security Administration, the Office of Security, the Office of Emergency Operations, the Office of Independent Oversight and Performance Assurance, the Personnel Assurance Program, and the Personnel Security Assurance Program.

I intend to recommend that we no longer designate for mandatory polygraph screening all individuals in the Personnel Assurance Program and the Personnel Security Assurance Program (which, as an aside, we are in the process of combining into a single Human Reliability Program with uniform clearance requirements). The FY 2000 NDAA originally mandated that everyone in these programs be subject to a screening polygraph, and the FY 2001 NDAA retained that mandate. Accordingly, the current regulation likewise mandates that they all be screened.

The FY 2002 NDAA, however, directs that the focus of DOE's polygraph program be the protection of classified data, materials or information. The PAP and PSAP programs apply to individuals not by reason of their access to classified information but on account of their responsibilities for nuclear materials. Many, if not most, of the individuals in positions associated with these programs do not have routine access to the most sensitive classified information, leading me to recommend against their wholesale inclusion in the mandatory screening program.

Before I leave the mandatory screening program, let me mention that if a revised rule is proposed and promulgated, I believe it is important that we proceed with full implementation of that rule expeditiously so that the Secretary is in a position to make the certification required by the FY 2002 NDAA regarding implementation of the new program. I would envision, as one element of the new program, we would allow incumbents in positions designated for mandatory screening under the new regulation to retain access to their programs pending scheduling of their first polygraph examination.

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[2] Access to non-DOE-originated information, including non-DOE SAPS, SCI, and Top Secret information, would be governed by the rules of the originating agency.

Let me now address an entirely new proposed element of the overall program the random screening program. We have identified a universe of positions whose level and frequency of access, while not requiring mandatory screening, nevertheless warrants some additional measure of deterrence against damaging disclosures.

In reviewing the public policy dimensions of the polygraph, one is struck by the "either-or" aspect of the debate: either you are subject to a polygraph, or you are not. This strikes me as too simplistic. The types of information we are concerned with don't easily fall into categories where either we fully deploy every tool we have to defend against disclosure or we do nothing. The classification regime itself acknowledges that there is a continuum, and that these determinations are based on less science and more judgment than is often admitted. Nonetheless, the problem of targeting that I identified above is perhaps unique to DOE facilities, and especially our three weapons labs, in a way not present elsewhere in our national security complex. Nowhere else in America can someone—in one location—find not only our most sensitive nuclear weapons secrets, but secrets addressing other weapons of mass destruction, and special nuclear material.

There are many ways to deter and detect such targeting, and the security and counterintelligence functions at the Department command the full attention of the Department's leadership, substantial resources, large and highly trained protective forces, and security and access controls that are too numerous to list here. Nonetheless, we will do everything we can to strengthen our ability to detect and deter activities inimical to our interests. Thus, as a policy matter, I believe that unless there are very compelling countervailing considerations, we should pursue even modest additions to the arsenal of tools we deploy to deter dissemination of this information to our enemies given the potentially grave consequences of failure.

It is noteworthy that the NAS report, while questioning the validity of polygraph screens and their value in "detection," also stated that "polygraph screening may be useful for achieving such objectives as deterring security violations, increasing the frequency of admissions of such violations, [and] deterring employment applications from potentially poor security risks."

As the NAS report notes, "the value, or utility, of polygraph testing does not lie only in its validity for detecting deception. It may have a deterrent value. . . ." And, as the NAS report also notes, "predictable polygraph testing (e.g., fixed-interval testing of people in specific job classifications) probably has less deterrent value than random testing."

This leads me to conclude that it is appropriate in some instances to include some form of screening beyond that routinely required to obtain and maintain access to specific programs or positions that makes some use of the deterrent value of the polygraph. The random screening program is intended to meet this need and to supplement the mandatory screening program. Under the random screening portion of the program, polygraph examinations would not be a condition of initial entry nor would individuals with access to the information at issue be subject to mandatory polygraphs at specific intervals. However, they would be subject to random selection for polygraph examinations at any time, at any frequency. In essence, even though it is possible that an individual in such a position may never actually be selected through the random process, the individual could be subject to a (random) polygraph at any time, even if the individual recently completed one.

While the overall goal is one of deterrence, an associated benefit is that the random program serves to reduce the number of individuals in the mandatory program, allowing us to focus our resources more wisely. Thus, it will be our policy to fashion a random polygraph program that achieves the objectives of deterrence with the minimum reasonable percentage or number of individuals in those positions to which it applies. Since we estimate the total number of individuals who would be eligible for the random polygraph program to be about 6000, the use of a minimum percentage means the total number of random polygraphs in any given year would be a much lower number.

The following positions would be included in the random screening program: all positions in the offices of Security, Emergency Operations, and Independent Oversight and Performance Assurance that are not designated for the mandatory screening program; positions with routine access to Sigma 14 and 15 weapons data; and system administrators for classified cyber systems. Again, the population associated with routine access to Sigma 14 and 15 weapons information will not encompass the entire population of "Q" cleared individuals, but only those with regular access to Sigma 14 and 15 information.

In addition, due to the interconnectedness of DOE sites and cyber networks and the volume of sensitive unclassified information, we are already taking steps to apply additional security controls (clearance requirements, segregation of duties, two-person rules, etc.) to system administrators of unclassified systems. We intend

to evaluate the merits of including system administrators of unclassified cyber systems in the random program at a later date.

In addition to the mandatory and random screening programs, I intend to recommend that we clarify in the regulation that the Department may also conduct "specific-incident" polygraph examinations in response to specific facts or circumstances with potential counterintelligence implications. That recommendation also grows out of the NAS Report, which noted that this kind of use of the polygraph is the one for which the existing scientific literature provides the strongest support. The rule will also retain provisions for voluntary polygraphs such as exculpatory polygraph examinations conducted in response to questions that have arisen in the context of counterintelligence investigations or personnel security issues.

As I made clear in the discussion above, the Department is strongly committed to maximizing protections against potential errors and adverse consequences and safeguarding the privacy of the employees who are subject to polygraph examinations. Therefore I will recommend that the new proposed rule retain and enhance the protections already contained in the current regulation. The provisions we would retain include: written notification by the Department and written consent from the employee are required before a polygraph examination can be administered; DOE is prohibited from recording a refusal to submit to a polygraph examination in an employee's personnel file; audio and video recordings of polygraph examination sessions are made to protect both the employee and the polygrapher; all polygraph examination records and reports are maintained in a system of records established under the Privacy Act; and strict qualification standards and standards of conduct for polygraphers are established and enforced. Neither the polygrapher nor the Office of Counterintelligence has the authority to make a decision to grant or deny access. That decision is made by the Program Manager or the Secretary. The examination is limited to topics concerning the individual's involvement in espionage, sabotage, terrorism, unauthorized disclosure of classified information, unauthorized foreign contacts, and deliberate damage to or malicious misuse of a U.S. government information or defense system. The examiner may not ask questions that concern conduct that has no counterintelligence implication or concern conduct that has no direct relevance to an investigation, such as "lifestyle" questions.

Perhaps the most important aspect of these safeguards is how we address the problem of "false positives." Assuming we adhere to the difficult policy choice that the continued use of polygraphs as both a screening tool and for specific-incident investigations is appropriate, we believe that it is absolutely necessary to ensure that we minimize to the greatest extent possible any morale effects of the polygraph, and do everything we can to prevent "false positives" from producing an unfair result to an employee.

Limiting the population of those subject to mandatory screening polygraphs as I recommend we do is the most important step I believe we can take to limit these kinds of problems. In addition, however, I believe we can make a few improvements to the current rule. First, I believe we should clarify that the sole purpose for which we use the polygraph as a screening tool is to assist us in making determinations about whether an individual may be given access to specific categories of highly sensitive information. Otherwise, we do not use it to make employment decisions at all, except to the extent that access to this information may be a critical element of someone's job. Therefore, somewhat curiously, the current prohibition on an "adverse personnel action" solely based on polygraph results prohibits a use of the polygraph not really contemplated by the rule in the first place.

Accordingly, I recommend that we also make clear that it is our policy not to base a denial of access solely on the results of a polygraph exam. This would be consistent with the NAS report's recommendation: "We believe that any agency that uses polygraphs as part of a screening process should, in light of the inherent fallibility of the polygraph instrument, use the polygraph results only in conjunction with other information, and only as a trigger for further testing and investigation."

I am also recommending that the new regulation improve the process for making decisions to grant, continue, or deny access to these high-risk programs by providing for a counterintelligence evaluation review board that may be convened to consider the results of counterintelligence evaluations that are not dispositive. I also recommend that it be our policy that the appropriate weapons laboratory director be consulted when the access determination involves a laboratory employee. I also believe we need to place a premium on thorough but speedy decision-making on these issues, which I believe is in the best interest of both the employee and the Department.

I am also recommending that we consider establishing a separate mechanism, within the Department but external to the Office of Counterintelligence, to evaluate

any complaints lodged against polygraphers and identify and correct specific issues associated with the conduct, performance, or training of polygraphers.

Finally, as I mentioned previously, I am recommending that we commit to review, not later than two years following the effective date of the regulation, the scope of the mandatory and random screening programs and the experience gained through the implementation of the regulation. The purpose of the review would be to consider whether any amendments to the regulation related to the process or to the covered population are appropriate.

Because the policy choices discussed above lead to the conclusion that the polygraph should be just one tool of many, I am recommending that we make clear in the new regulation that polygraphs are just one element to be used in broader counterintelligence evaluations resulting from polygraph examinations or other information. The current rule refers to review of personnel security files and personal interviews as elements of such evaluations. I am also recommending that we consider broadening this reference to note that these evaluations may also, in appropriate circumstances and to the extent authorized by law, use other techniques, such as reviews of medical and psychological examinations, analyses of foreign travel and foreign contacts and connections, examination of financial and credit information, and net worth analyses. We intend to consult closely with others in the executive branch regarding this potential aspect of our proposal.

In addition to a wider array of tools, better tools are needed to increase the reliability and validity of screening processes. The NAS report called for basic and applied scientific research into improved security screening techniques, and suggested that such an effort could be devoted in part to developing knowledge to put the polygraph technique on a firmer scientific foundation, which could strengthen its acceptance as a tool for detecting and deterring security threats. We have also identified a need for basic research into improved screening technologies, including but not limited to psychological and behavioral assessment techniques. It may be, as the NAS report suggests, that this research is best conducted under the auspices of an organization other than an agency that invests considerable resources in a counterintelligence polygraph program. In any event, we stand ready to lead or assist in such research.

That concludes my prepared statement. I will be happy to respond to any questions you have regarding our intentions for the proposed regulation on counterintelligence evaluations.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. Thank you very much, Mr. Secretary.

Senator Bingaman, I am glad you opened the meeting, and I have brief remarks. They were much longer but now I understand what you have said and I received the statement last night. So until that time, I did not know that you had elected to substantially revise the earlier decision to continue large-scale use of polygraphs. Their decision should substantially shorten the duration of this hearing, as I see it, and significantly change the direction of our questions.

I want to congratulate the Deputy Secretary for his testimony on the revised DOE polygraph program and the Chairman of the National Academy panel that studied this issue. It is now clear that the Department is carefully considering the results of the academy review. The outstanding work of the panel was clearly instrumental in shaping the Department's new plan. The drastic reduction in the number subject to the routine screening is very positive. It is evident that careful thought went into selecting the population for such testing.

Future evaluation of the revised DOE program is appropriate and may result in future program modifications. I am pleased that the Department plans such a study.

I believe the laboratory personnel should be greatly relieved by the adjustments made in the Department's previous program, and

I believe that a careful development of this new program will result in improved security of our precious national secrets.

Our two witnesses today will help us understand the Department's current thinking, as well as the study completed by the Academy of Sciences. The written testimony of each witness is part of the record. I invite our witnesses to be brief in summarizing and, if they can, to talk more about what has been accomplished by the changes than about the past.

I have no questions at this time. I yield back to you, Senator.

[The prepared statement of Senator Domenici follows:]

PREPARED STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

This hearing provides an opportunity for the Committee to evaluate the recent decisions by the Department regarding use of polygraphs in their personnel security programs.

The large-scale use of polygraphs for routine employee screening at the national laboratories raised extremely serious concerns among technical staff. While these employees recognize the importance of secure operations to protect our national secrets, they are strongly opposed to reliance on a test that, in their view, is of marginal scientific utility and seriously prone to error.

I heard from many employees who questioned whether they wished to continue their contributions in national security programs at the labs if they were subjected to tests of questionable validity. That led me to craft legislation in 2001, together with Senator Bingaman, to require the Department to reassess their use of polygraphs after the National Academy released their study on the scientific validity of the polygraph.

Until I received the Department's testimony late last night, I did not realize that the Department had elected to substantially revise their earlier decision to continue large scale use of polygraphs. Their decision should substantially Sheen the UUratIVl of tthis hearing and significantl ychange the direction of our questions.

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Our two witnesses today will help us understand the Department's current thinking as well as the study completed by the National Academy of Sciences. The written testimony of each witness is a part of the record and I invite our witnesses to briefly summarize key points in their testimony.

Our first witness is Deputy Secretary of Energy, Mr. Kyle McSlarrow.

Our second witness, in the second panel, is Dr. Stephen Fienberg, chairman of the National Academy's National Research Council study on the accuracy of polygraphs.

Senator BINGAMAN. Thank you very much.

Let me also commend you and the Department for taking the academy's study seriously at this point. That is how I interpret your testimony. Frankly, I was not persuaded, when the earlier rulemaking came out, that there had been a serious effort in the Department to review what the academy had come up with and concluded. I appreciate the fact that you have decided to reduce the number of individuals who would be subject to polygraph exams because of what you interpret out of the National Academy study.

I still have a problem, and let me just state it very generally, and then I will ask you a couple of questions. It strikes me that what the academy determined was that use of the polygraph exam as a screening tool was unreliable and that therefore they did not recommend doing so. What you are now concluding is that because of the academy's study, the Department is going to continue to use it as a screening tool but not as much. That seems to me to be better than where we were, but it certainly is not where the logic would lead us.

This table that is in the National Academy study, table S-1, seemed to me, fairly important in its conclusions. As I read that table, it said that out of a population of 10,000, there would be about 1,600 who would give false positive results or, if given a polygraph test, would be shown to be lying essentially or misleading, but it would be a false indication. They also indicated that if there were 10 spies in that group of 10,000, 2 of those would go undetected.

By reducing the number of people who take the test, we are now saying that, say, 4,500 would be subject to the test; plus, a certain percentage of this pool of 6,000 would be randomly tested. So we would perhaps see 5,000 individuals that would be tested each 5 years. That is just an estimate that seemed to me to be consistent with what you are saying.

So under the academy's table, 5,000 is half of 10,000. Therefore, you would have 800 false positives instead of 1,600. That still seems to me a large number of scientists or others in our employ or in the employ of these contractors who would be placed under suspicion, inappropriately placed under suspicion. And I would be interested in your thoughts as to why that can be justified in light of what the academy has found?

Mr. MCSLARROW. I do not have the table in front of me, but I have stared at it so many times I think it is imprinted on my mind at this point.

[Laughter.]

Mr. MCSLARROW. To go back to the point the chairman made, the NAS study—I do not need it. Actually I am fine. Thanks. I really meant it. It is imprinted on my mind.

[Laughter.]

Mr. MCSLARROW. The NAS study moved me. I was in a different place as a matter of personal opinion than I am today. So it moved me probably not as far as the NAS would want me to go, but it did clearly have an affect on my thinking and I think the thinking of the Secretary.

To go to the point, you are quite correct. If all we were doing was reducing the number, we would just reduce the problem. We would not have eliminated the problem of false positives. And that is why I think it is important to think of this as a two-pronged approach. Regardless of what the numbers are, if the only result of a false positive—not that this is unimportant—is to take time and resources of the Department in order to see in a further investigation whether or not there is anything to the false positive, and ultimately a polygraph result, a positive one, does not result in any adverse decision to the employee, then I would argue you have taken care of the false positive problem. You have not addressed, of

course, the false negative, which is an entirely different set of problems.

Senator BINGAMAN. And you have not addressed the morale problem.

Mr. MCSLARROW. You have not addressed morale problems. But I think the first thing it is going to take is some leadership by the Department. I think we are going to have to do a better job of explaining that we really have internalized these issues. We really mean it, when someone has registered positive, just like every other clearance procedure, we are not going to base either access or personnel decisions solely on the results of a polygraph. Now, people either believe that or they will not. It is incumbent upon us to persuade them that we actually mean it. It is incumbent upon us to train our counterintelligence folks and those people who conduct the polygraph exams that we mean it. But at the end of the day, on balance I believe if you take care of the false positive program in terms of its effects on the employee, that the utility of the polygraph still stands.

Now, going back to the table, the interesting thing about the table is I think it really does present the conundrum very well, but I will point out it assumes that there is a 16 percent false positive rate. That would be the 1,600 number that you identified out of the 10,000. I will say this, although we would have to talk about numbers in a closed session, our positive rate is a far smaller figure.

The second aspect is that there is both the issue of accuracy—the NAS assumed for the purpose of that table that it was a 90 percent accuracy rate—and there is the issue of what decision threshold those people who conduct the exam are using. I think in that table they used an 80 percent. So it depends on your assumptions. I do not personally know whether or not any of those assumptions are correct. What I do know is it almost does not matter.

The point the NAS is making is well taken. For every exam that you are using as a screening tool in a population like DOE where the number of "guilty" parties has to be incredibly small, you risk, by virtue of that base rate, as they call it, a number of false positives. If you cannot eliminate it, I think you have to manage it. You have to manage it in a way that does reduce the morale problems for the Department.

Senator BINGAMAN. I think one of the things in your testimony—I guess this is in the notice of proposed rulemaking. It says DOE's priority should be on deterrence an detection of potential security risks, with a secondary priority on mitigating consequences of false positives and false negatives.

Is there any reliable scientific evidence that there is a deterrent value in the use of a polygraph? What does it deter anyone from doing? Do we know that there is any deterrent value?

Mr. MCSLARROW. I do not think we know that. One of the other things that actually impressed me about the NAS report is it was very honest in basically saying, look, the problem we have here is that there is very little useful or credible scientific evidence one way or another. And then they made the case, using logic and other tools, as to why these concerns that they presented are valid, and as I said before, I accept that.

They do go on to say that even if the case for validity of detection is minimal, as they clearly think in the case of screening use of the polygraph, that there is some likelihood of deterrent value just given our culture and given what people think about polygraphs. That is kind of an unknowable quantity. It only deters if someone actually believes the polygraph has utility. So of course, the farther we go down the road of undermining the polygraph's validity, the less likely I suppose that it will be effectively deterring people.

But I think just as an impressionistic matter, I believe that there is a significant deterrent value in the use of the polygraph, and it is one reason why I proposed to the Secretary that we use the random program. It allows us, with the most minimal number possible, to still have some deterrent value in a larger population. It may well be that it is a relatively modest deterrent, but I would go on to argue, again just because of the nature of the target in our three weapons labs and what is there, that it is incumbent upon us, even if it is a modest addition to deterrence to use it unless there are such overpowering countervailing considerations.

Senator BINGAMAN. I wish there was some way we could get at the question about this deterrence. Again, you have no scientific basis for your impression that there is a modest deterrent value; I have no scientific basis for my view. I guess I would assume, based on conversations I have had with people in our national laboratories, that the polygraph deters as many people from working for the labs as it does deter as many spies from seeking employment. I would think the reality is you have got a lot of patriotic Americans who just have other options that they would just as soon pursue and, as they see it, not have their patriotism questioned and not have to be hooked up to a machine to demonstrate that they are loyal citizens. So I just put that out for your consideration.

In 1953, 50 years ago, the Atomic Energy Commission terminated its polygraph program as a general screening tool based on the findings that false positives were detrimental "to employee morale, personnel recruitment, lab and public relations." Have you gone back and looked at that decision 50 years ago by the AEC in deciding what our policy should be today? It seems like we are sort of reliving history here a little bit. I think we should have learned something in the last 50 years, but it does not seem like we have learned very much.

Mr. MCSLARROW. I have not looked at that specifically. But I do accept as a premise—again, I do not know it—that somewhere, someplace someone has not either involved themselves in a program who is already a DOE or contractor employee or has even taken employment with the Department because they just did not even want to face the prospect of a polygraph. I know of a couple of instances where people have chosen other lines of employment within the complex because they did not wish to.

I think the test for us is are we or are we not getting the right quality of talent to do the job. While all of us as managers and certainly lab directors and Ambassador Brooks, the Secretary, and I worry about the morale effect, I cannot say right now that that has resulted in our having a workforce that is not up to the task. I do

not think that is the case. But it is a risk and a concern that we have to address and hence the recommendations I made.

Senator BINGAMAN. I would just like to ask one additional question, Mr. Chairman.

Under the recommendations you are now making to the Secretary, when someone took a polygraph test and failed the test, how would that person be dealt with differently under your recommendations than under the current situation in the Department?

Mr. MCSLARROW. Just focusing on the difference, I think there are really two chief differences. One is that if you cannot resolve it—say, they had a follow-up exculpatory polygraph, which is something they can do voluntarily, and it is still inconclusive or still showing deception—the new recommendation that I put before the Secretary is to have a counterintelligence review board. And the key about that is that you would have not just the program manager, the program in which access is being sought, and counterintelligence and security officials, but also the appropriate laboratory director so that a review is done that consists of people outside just the counterintelligence community, number one.

Number two, for the follow-on investigations I am making a recommendation that we be much more willing to do the kinds of investigations that are not typically done today for your background investigation for a Q clearance. There are a number of other tools that we do not use today that could be available to us. The whole point would be if the polygraph triggers an investigation, you go full bore to try to get an answer. At the end of the day, if you have no derogatory information and all you have is a test result, that is not good enough to stop somebody from getting access to a program or obviously retaining their employment. So it would be up to that review board, A, to manage it, and I think provide some additional protections for the employee, but also to have at a very serious level some people who will have a real interest in driving this forward to a speedy conclusion because the other problem is not necessarily that someone has access denied.

The other problem here is there is just not a decision ever made. People are unwilling to say, okay, we will give him access or her access in the absence of any data. At some point we have got to make a call. I think we owe it to the employee and to the Department that we make a call. And we may never get derogatory information.

But I am fairly confident—again, this is just personal judgment—that if you really had someone who was a true positive and you used all these other investigatory tools, we will find the information, and if we do not, that should tell us something.

Senator BINGAMAN. Thank you.

The CHAIRMAN. Thank you, Senator Bingaman.

Let me just say that I had been worried in the past about whether or not the laboratories have been consulted. In previous DOE programs, I do not believe that laboratory management was consulted in the prior program development. From your testimony and from comments from the labs, I gather that you did include the lab directors this time. Can you comment on the extent of involvement of lab personnel this time around and the general feedback that

you are hearing from the labs and from whom on this Department's revised program?

Mr. MCSLARROW. In terms of the review I conducted, it was fairly close-hold. So in terms of the labs, it was the directors and a few of their senior people, including their counterintelligence professionals. Probably I talked to Paul Robinson more frequently than any other single lab director about these issues.

But in addition, in more recent weeks, we had two quite lengthy video conferences with the lab directors and my team at headquarters, and there were other people obviously on the video conference at the labs who I cannot identify.

But as I started to refine my thinking, having sort of received more input that I could possibly digest, I went back one time and sort of said, here is where I am thinking. Tell me why I am wrong. People were only too happy to do so, and then about 2 weeks later I had to add one again and said I am really getting close to it. Let us go through this again.

While I do not want to speak for anybody, my sense is that probably no one was completely satisfied, but just about everybody in a leadership position in the Department, including laboratory directors, I believe certainly felt like they had input but I believe were comfortable with where we come out. And because it was a close-hold process until today, when it becomes public, I do not think we realistically will know what the impact or the thoughts of lab employees will be.

The CHAIRMAN. Well, Mr. Secretary, I want to thank you for the effort, commend you on putting this together and your testimony today. We know that you have, by a happenstance of time, a very heavy plate with a lot of things on it, and to take time out sufficient to get this done, because we set this hearing, is commendable. I want you to know that I greatly appreciate it. That is not to say that I do not appreciate the work. I think the work is very good. I think we will find that it is a giant step in the right direction. Thank you very much. You are excused.

Mr. MCSLARROW. Thank you, Mr. Chairman.

The CHAIRMAN. Our next witness, panel two, Dr. Stephen Fienberg, chairman of the National Research Council Committee to Review the Scientific Evidence on the Polygraph. Please proceed.

STATEMENT OF STEPHEN E. FIENBERG, CHAIRMAN, COMMITTEE TO REVIEW THE SCIENTIFIC EVIDENCE ON THE POLYGRAPH, NATIONAL RESEARCH COUNCIL

Dr. FIENBERG. Mr. Chairman, I am pleased to appear before you this morning. Accompanying me today is Dr. Paul Stern, who served as study director of the committee, and perhaps at a later occasion, if there are any questions that you want to direct to him, he would be happy to answer.

The CHAIRMAN. Which one is he?

Dr. FIENBERG. Right here.

The CHAIRMAN. All right.

Dr. FIENBERG. The committee's report, The Polygraph and Lie Detection, which was released last October, as you know, reviewed the scientific evidence underlying the use of polygraphs for security screening of employees at the national laboratories, and it also con-

sidered the potential alternatives to polygraph testing for the detection of deception. My testimony today is based on that report.

The written testimony that I submitted to the committee earlier this week was prepared before I was aware of what Deputy Secretary McSlarrow would say this morning. He did have the courtesy to call me yesterday evening, so I did have some advance notice, but I did not have an opportunity to change the document and I probably will for the record.

I should note that when somebody gives 2 years of his scientific life, which is what our committee members essentially did, to an enterprise like the activities of our committee, one typically looks for a response, and the response we saw in April was not exactly one that was heartening. After 2 years of effort, to be told that there would be no change in policy was not something that the committee reacted positively to, I think it is fair to say.

I am very gratified by the reaction evidenced in the Deputy Secretary's testimony today, and I will try to meld some of my written comments with responses to my understanding of what is there.

Our report begins by setting the context of the current discussion over the efficacy of polygraph testing in the context of the mystique that surrounds it. This includes a culturally shared belief that the polygraph is nearly infallible, often evidenced by the kind of ideas associated with Wonder Woman and her magic lasso. When someone was caught in the magic lasso, they were forced to tell the truth. So the notion that the polygraph really had that impact is widely shared among those who really do not know much about it. As we note in the report, the scientific evidence strongly contradicts this belief.

There were five key conclusions in our report, and let me just summarize them briefly.

The scientific evidence supporting the accuracy of the polygraph to detect deception is intrinsically susceptible to producing erroneous results.

Two, in populations of naïve examinees—and I want to emphasize the word "naïve"—untrained in countermeasures, specific incidence polygraphs can discriminate lying from truth-telling at rates well above chance, though well below perfection. The accuracy of the polygraph in screening situations is almost certainly lower.

Third, basic science gives reason for concern that polygraph test accuracy really can be degraded by countermeasures.

Fourth, the scientific foundations of polygraph screening for national security are weak at best and insufficient to justify reliance on its use in employee security screening in Federal agencies.

Then last, some potential alternatives show promise, but none has been shown to outperform the polygraph and none is likely to replace it in the short term.

In April of this year, when the Department of Energy released the new draft regulations on its polygraph testing program of eight classes of Federal employees and contractors, its new regulations proposed to continue a policy that was set in place in 2000 but suspended pending the report of our committee. So it might be natural to ask what was in the report of direct relevance to the proposed regulations.

The specific wording in the matter of security screening is worth repeating. "Polygraph testing yields an unacceptable choice for DOE employee security screening between too many loyal employees falsely judged deceptive and too many major security threats left undetected. Its accuracy in distinguishing the actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in Federal agencies."

The original regulations proposed in April paid only lip service to our conclusions and recommendations. The written document that I submitted earlier this week makes this clear, but I would like to try to highlight the major changes I see as a consequence of today's testimony of the Deputy Secretary and how they square with our report. I made a list of six key changes in the Department's position.

One, do fewer tests. That has two components. Do testing of restricted groups in highly classified settings, and with this is a new definition of what should be top secret. And secondly, random screening, something I will come back to. I want to note that although there are fewer tests, there are still a lot of tests, and with the large number of tests, we still get the attendant false positives and false negatives.

The second change is do less with the results of the tests. Although it was not in his oral testimony, in the written testimony Deputy Secretary McSlarrow talked about treating the results as more akin to anonymous tips than definitive evidence of deception. I think that if the Department got an anonymous tip about an employee, it would not lead to a full-bore investigation. So I think that there is still something to be worked out here.

There is clearly a problem with a positive test result because there is not a backup test. Once somebody tests positive on a polygraph, there is nothing that science has to offer for the Department and the security program to do as a follow-up test. Doing another polygraph is simply not good enough.

There is a second component to this change of doing less, and that is that there should be no adverse decision on access based solely on the results of the polygraph and also a recommendation to rely on the polygraph less for accelerated clearance. This is important in light of the false negative problem.

I said I wanted to come back to random screening. That was my third item. This is random screening for deterrence. I want to emphasize that in our review of the literature on the polygraph, we found no scientific evidence in support of the deterrent effect of the polygraph. That does not mean that it does not exist. It is that we have never done a serious investigation of it, and especially deterrence for possible spies.

The Deputy Secretary—this is my fourth point—talked about anecdotal reports of admissions. We, in the course of our deliberations, heard many anecdotal reports. We never received written documentation that would allow us to assess them carefully or to put them in context where their scientific usefulness could be assessed.

Point five, do more research. I can only applaud the Deputy Secretary's support for our position on this. He suggested in the writ-

ten testimony that we do not know much about the polygraph, but I want to say that we do know something about its limits and they suggest that it simply is not up to the task that we have before us. We should not expect to make the polygraph better, but we should look for better approaches.

In the original response to our report, the DOE continued to rely on polygraph screening as before and, in doing so, was doing more for the appearance of security than for the reality. The new proposals rely far less on the polygraph, but our committee made clear that while that was the case, we simply should not believe that the polygraph was going to be the answer in the future. While some potential alternatives show promise, none has led to scientific breakthroughs in lie detection. So we cannot look for a short-term fix to aid our quest for securing the Nation and its secrets. The labs need a strong security program, not a false sense of security. There are better alternatives than maintaining the current polygraph policy even in its revised form.

Last year, the DOE got two reports, our report and one from the Commission on Science and Security, the so-called Hamre Commission report. It recommended management and technological changes at the labs that could make unauthorized release of national secrets more difficult to conduct and easier to detect without relying on the polygraph or other methods of employee screening, all of which are seriously limited and have little or no scientific base.

So while there still may be a place for polygraph testing in the labs for investigations and for small numbers of individuals with access to the most highly sensitive classified information, if the test's limited accuracy is fully acknowledged—and this is what the DOE is now proposing to do at least in part—the question is how limited. In his statement today, Deputy Secretary McSlarrow suggests he agrees with the committee that the broad use of this flawed test for screening will probably do more harm than good, and we believe that national security is too important to be left for such a blunt instrument.

Let me just conclude by reminding you that polygraph testing rests on weak scientific underpinnings despite nearly a century of study. Much of the available evidence for judging its validity lacks scientific rigor, and our committee sifted that evidence and the report makes clear the limitations of the polygraph for the present context. Searching for security risks using the polygraph is not simply like a search for a needle in a haystack. It is true that of the large group of people being checked, only a tiny percentage of the individuals examined may be guilty of the targeted offenses. Unfortunately, tests that are sensitive enough to spot most violators will also mistakenly mark large numbers of innocent test-takers as guilty, and tests that produce few of these types of errors, such as those currently used by the DOE, will not catch the most major security violators and still will incorrectly flag truthful people as deceptive, both kinds of errors. Thus, the haystack analogy fails to recognize that unacceptable tradeoff I mentioned earlier in my testimony.

Our committee concluded that the Government agencies could not justify their reliance on the polygraph for security screening.

Today's testimony and the new proposals seem much more consistent with the scientific evidence. As a Nation, we should not allow ourselves to continue to be blinded by the aura of the polygraph. We can and we should do better. The NRC and I think the members of our committee look forward to the possibility of working with Mr. McSlarrow as the DOE refines its new proposals.

Thank you. I would be happy to answer your questions and amplify on these comments.

[The prepared statement of Dr. Fienberg follows:]

PREPARED STATEMENT OF STEPHEN E. FIENBERG, CHAIRMAN, COMMITTEE TO REVIEW THE SCIENTIFIC EVIDENCE ON THE POLYGRAPH, NATIONAL RESEARCH COUNCIL

Mr. Chairman, and Senators. I am pleased to appear before you this morning. I am Maurice Falk University Professor of Statistics and Social Science, in the Department of Statistics, the Center for Automated Learning and Discovery, and the Center for Computer and Communications Security, all at Carnegie Mellon University. I also served as the Chair of the National Research Council's Committee to Review the Scientific Evidence on the Polygraph. Accompanying me today is Dr. Paul Stern, who served as the Study Director for the committee. The committee's report, *The Polygraph and Lie Detection*, which was released last October reviewed the scientific evidence underlying the use polygraphs for security screening of employees at the national laboratories. It also considered the potential alternatives to polygraph testing for the detection of deception. My testimony today is based on that report.

THE NAS-NRC COMMITTEE REPORT

The committee's report begins by setting the current debate over the efficacy of polygraph testing in the context of the mystique that surrounds it—this includes a culturally shared belief that the polygraph is nearly infallible. As we note in the report, the scientific evidence strongly contradicts this belief.

Let me now briefly summarize the committee's principal conclusions:

1. The scientific evidence supporting the accuracy of the polygraph to detect deception is intrinsically susceptible to producing erroneous results.
2. In populations of naïve examinees untrained in countermeasures, specific incidence polygraph tests can discriminate lying from truth telling at rates well above chance, though well below perfection. But the accuracy of the polygraph in screening situations is almost certainly lower.
3. Basic science gives reason for concern that polygraph test accuracy can be degraded by countermeasures.
4. The scientific foundations of polygraph screening for national security were weak at best and is insufficient to justify reliance on its use in employee security screening in federal agencies.
5. Some potential alternatives to the polygraph show promise, but none has been shown to outperform the polygraph and none is likely to replace it in the short term.

I have appended the Executive Summary of the report to this testimony as it contains the specific wording of these conclusions and details explaining how the committee reached them.

THE DOE PROPOSED REGULATIONS

In April of this year, the Department of Energy released new draft regulations on its program of polygraph testing of eight classes of federal employees and contractors who have access to classified information. The new regulations would continue a policy that was set in place in 2000 but suspended in 2001, pending the report of the NAS-NRC committee. Thus it might be natural to ask what in the report is of direct relevance to the proposed regulations.

Let me return to the specific wording of the committee's recommendation on the matter of security screening:

> Polygraph testing yields an unacceptable choice for DOE employee security screening between too many loyal employees falsely judged deceptive and too many major security threats left undetected. Its accuracy in distinguishing actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in federal agencies.

How does DOE square these conclusions with its plan to continue the polygraph policy unchanged? It says that the polygraph, though "far from perfect, will help identify some individuals who should not be given access to classified data, materials, or information." This may be true, but two other things about polygraph screening are also true that should give pause.

First, for every such individual identified, hundreds of loyal employees will be misidentified as possible security threats. Our report make clear that, given DOE's own expected rates of security violations, someone who "fails" the DOE polygraph screening test has over a 99 percent chance of actually being a truthful person. Unfortunately, the DOE doesn't have any other scientific tool to fall back on to distinguish the security violators from the innocent people falsely accused.

Second, any spy or terrorist who takes the DOE's polygraph test is far more likely to "pass" the test than to "fail" it—even without doing anything to try to "beat" the test. Efforts at so-called countermeasures are likely to increase further the chances that a committed spy or terrorist will "beat" the test. This is the most serious problem with polygraph screening, especially in these times of terrorist threat: the possibility that security officials will take a "passed" polygraph too seriously, and relax their vigilance.

The DOE regulations give every indication that the agency has just this sort of overconfidence in polygraph tests that give "passing" results. The proposed regulations say, "DOE's priority should be on deterrence and detection of potential security risks with a secondary priority of mitigating the consequences of false positives and false negatives." The committee found little scientific evidence to support the effectiveness of the polygraph in this regard. Moreover, it concluded that the consequences of false negative tests—tests that deceivers "pass"—should have top priority, because it is those test results that leave the nation open to the most serious threat, from people whose continued access to sensitive information is justified because they "passed the polygraph."

The DOE, in continuing to rely on polygraph screening just as before, is doing more for the appearance of security than for the reality. Moreover, while some potential alternatives to polygraphs show promise, none has led to scientific breakthroughs in lie detection. Thus we cannot look for a short-term quick technological fix to aid us in our quest for securing the nation and its secrets.

The nuclear weapons labs need a strong security program, not a false sense of security. There are better alternatives than maintaining the previous polygraph policy. Last year, the DOE's *Commission on Science and Security* recommended management and technological changes at the labs that could make unauthorized release of national secrets more difficult to conduct and easier to detect without relying on the polygraph or other methods of employee screening—all of which are seriously limited and have little or no scientific base. There may still be a place for polygraph testing in the labs, for investigations and for a small number of individuals with access to the most highly sensitive classified information, if the test's limited accuracy is fully acknowledged. But broad use of this flawed test for screening will probably do more harm than good. National security is too important to be left to such a blunt instrument.

CONCLUSION

Let me conclude by reminding you that polygraph testing now rests on weak scientific underpinnings despite nearly a century of study. And much of the available evidence for judging its validity lacks scientific rigor. Our committee sifted the existing evidence and our report made clear the polygraph's serious limitations in employee security screening. Searching for security risks using the polygraph is not simply like search for a needle in a haystack. It is true that, of the large groups of people being checked, only a tiny percentage of individuals examined are guilty of the targeted offenses. Unfortunately, tests that are sensitive enough to spot most violators will also mistakenly mark large numbers of innocent test takers as guilty. Further, tests that produce few of these types of errors, such as those currently used by the DOE, will not catch most major security violators—and still will incorrectly flag truthful people as deceptive. Thus the haystack analogy fails to recognize the unacceptable trade-off posed by these two types of errors.

Our committee concluded that the government agencies could not justify their reliance on the polygraph for security screening. The proposed DOE regulations appear to disregard our findings and conclusions. As a nation, we should not allow ourselves to continue to be blinded by the aura of the polygraph. We can and should do better.

I would be happy to answer your questions and amplify on these comments.

The CHAIRMAN. Dr. Fienberg, thank you very much. Thanks to you and all those who worked with you for an excellent effort in behalf of your country. I am pleased that in this instance it is obvious that you have had a significant degree of success already. It did not take a long time. We got it today. I am sure it needs refinement and I would suggest that they continue to work with you, if you all are willing to work with them, as they attempt to refine it.

I am most interested in how the laboratory employees, the people that we worked so hard in behalf of, as we worried about their morale and their efficiency and other things. I am kind of worrying now about what their feelings are going to be, and we cannot find that out for a while. We are going to have to go out there and be tested and see what the employer can do with reference to their program. I hope you get a chance to review those results also from time to time.

Your report noted that there might be better technologies than the polygraph for detecting truthfulness. I have been particularly interested, for a completely different reason, in brain imaging technologies. Specifically I have had a long history of concern with the MEG, magneto-encephalography technology. That is also a creature of one of the laboratories, Los Alamos. It is a mighty technology that when tentacles are affixed to the skull, there are brain wave reverberations that come out, and now that we have the computer capacity that we have, we get images that are able to be read in a manner beyond anything we could do before in fixed time pictures of brain reaction.

I am not scientific enough to be suggesting that it will have a role because it might have no role just because it is too bulky. But I note that you are interested in new technologies and I wondered if, to your knowledge, has MEG been studied for use in lie detection, and do you think it might offer a promise? And what other technologies might there be, Doctor?

Dr. FIENBERG. I confess I probably would have had the same difficulty to pronounce the full name of MEG, and I am not sure I fully understand the details of that technology.

There are some related technologies that the committee did have an opportunity to study a bit; that is, we studied available evidence. One of these is referred to as brain fingerprinting which does involve recordings from the scalp in much the same way you described and something called the P300 wave. There have been several of these studies.

What the committee's report notes is that the nature of what is being measured in the P300 or the so-called brain fingerprinting technique is much more focused and useful for specific-incident situations. We were very hard-pressed to understand the extent to which it would be useful for security screening purposes. We, in fact, spoke with one of the foremost proponents of that technique, and I believe he agreed with us about the relative value of it.

The other area that is brain-related is the use of functional magnetic resonance imaging, or FMRI. I can pronounce that one. We actually had occasion to review three different studies, two published and one unpublished, on FMRI. It turns out that we are not very far in the use of that kind of technology. The three studies did detect the ability of FMRI to distinguish deception from truth-tell-

ing better than chance. So there is something there, but unfortunately, they discovered the part of the brain that seemed to be most helpful in this was different in the three studies. That unfortunately does not help us move rapidly ahead with a program in that area.

The CHAIRMAN. Incidentally, not that it makes a bit of difference, but the FMRI is currently being used by hooking it together with the MEG, and the results are rather fantastic only in that you can now get real-time pictures of the brain, not slices but real-time pictures, which is going to be a fantastic device. If applied to schizophrenia in sufficient test mode, you might find how the brain actually changes and moves with reference to diseases like that. Whether it is ever going to help in this area, I just threw it out here today just to show you I knew something.

[Laughter.]

The CHAIRMAN. If you will please let me leave and hold me excused, I am going to turn it over to Senator Bingaman and thank you and thank him for his consistent and persistent work in this regard and hope that you get your wish that we not only do what the Secretary said today, but we do better, and that a broader array of institutions find out about polygraph through you and through this and do not use it in other areas either where it is obviously being used beyond our laboratory employees. Thank you.

Senator BINGAMAN. Thank you.

The CHAIRMAN. Thank you, Doctor.

Senator BINGAMAN. Let me just ask a couple of questions before we end the hearing. Let me just summarize, and I join Senator Domenici in thanking you and the committee members for the good work you have done here. I think it is very important and I think it will have impacts on the use of polygraphs throughout the Government. I hope that is the case, and I believe it is.

As I understand it, you have concluded that in trying to detect the difference between deception and truth-telling, polygraphs can be a useful tool where you have a particular investigation that you are pursuing related to a particular individual or group of individuals. There is a higher incidence of accuracy in the use of a polygraph under those circumstances than there is when you are trying to use it to screen a large group of individuals to see whether they are engaged in anything improper. Is that a fair summary of what you have concluded?

Dr. FIENBERG. I think that that is reasonably correct.

Senator BINGAMAN. Now, what the Deputy Secretary today has advised us is that he has become persuaded, after reading your report, that the broad use of the polygraph for screening is not appropriate, broad meaning as broadly as they were previously using it. Therefore, they are going to reduce the number of people who are subjected to polygraphs, and they are going to reduce the extent to which they rely upon the results of those tests, but they are going to continue to use it for screening just as they have in the past, just do so in fewer cases. Is that your understanding essentially of what they have concluded?

Dr. FIENBERG. That is correct.

Senator BINGAMAN. The difference of opinion, which still exists between your committee's conclusions and what the Department is

doing, is they are continuing to use it as a screening tool where you believe that the scientific evidence does not support that.

Dr. FIENBERG. That is correct. In the report, we did make reference to the potential usefulness if there were truly a deterrent effect.

Senator BINGAMAN. But you have no evidence that there is a deterrent effect.

Dr. FIENBERG. But we have no evidence, and I think it is fair to say that there was a spectrum of opinion on the committee, ranging from those who believed that there was a deterrent effect, although it was impossible to quantify, through to those at the other end of the spectrum who believed that there was no effect whatsoever.

Senator BINGAMAN. When you say deterrent effect, what kind of deterrence are you talking about? Are you talking about deterring people who are spies from seeking employment in these jobs, or are you saying this would deter people who might consider engaging in some kind of disloyal activity from doing so? What are you thinking about?

Dr. FIENBERG. That is a wonderful question because I think it is fair to say that we were not very explicit about what it meant. Indeed, when people referred to the deterrent effect, they are rarely explicit about what behaviors it is, in fact, deterring. I think there is a belief that both of the kinds of circumstances you described would be lumped together, but I do not think people are explicit because they have nothing to rely on when in fact they talk about that.

In fact, the thing that I would emphasize is that in many ways—and this goes back to where you began. The polygraph is an interrogation tool. It is not a tool to learn about truth-telling. As an interrogation tool, it can deter people from engaging in activities because they may be afraid to be interrogated about them. So it is in that sense that people typically talk about deterrence.

But ultimately the utility, we also noted, depends on whether or not there is any scientific basis for the detection of deception. As people learn the truth—and it was not simply our committee that blew the whistle on the polygraph. People have been saying this for a long time—it is simply not appropriate in these circumstances for large-scale testing. And so the question is what is large scale I think at this point.

Senator BINGAMAN. Let me just ask a final question about this Atomic Energy Commission decision in 1953 to terminate their polygraph program at that time. This is information I believe you have come across in your studies. Could you give us any more information on that?

Dr. FIENBERG. At the time that we were preparing our report, I confess I did not know very much about this study. Nobody had brought it to our attention. Actually, as the report was undergoing revision, a historian, Ken Alder, who had done some research on the history of the polygraph, shared with me a number of documents, including some relatively recently unclassified documents about what happened.

Following the Manhattan Project, the AEC actually began a polygraph screening program at Oak Ridge in the 1940's. It was initi-

ated by Leonard Keeler, who was one of the original creators of the physical machine we call the polygraph today, and at the time the foremost polygraph tester. He started out with a couple of hundred tests, and within 6 months, they were screening all of the major employees at the labs. At one point—it is a little hard to get the numbers from the released documents—well over 5,000 people were undergoing regular polygraph screening, not by Keeler but by a contractor from the outside. All of this may sound sort of eerily familiar as we look backward. It involved testing managers, scientists, engineers, technical workers, and then later contractors.

Initially Keeler found nine people who admitted to having stolen product material as a result of the polygraph tests. When that was subject to closer examination and extended review, it turned out it was all a hoax. In fact, the polygraph had detected nothing at all.

Senator BINGAMAN. The polygraph had detected nothing in the sense that they may have stolen the material?

Dr. FIENBERG. No.

Senator BINGAMAN. Oh, they did not steal any material?

Dr. FIENBERG. It wasn't stolen material. It was a hoax. The polygraph believed people when they admitted having done things.

By 1952, the hue and cry was so great that the AEC was forced to set in motion a scientific review, and they created a five-person panel of what I would label as polygraph-friendly scientists, people who actually had either done studies or supported scientific articles. They reviewed what went on at the Oak Ridge facilities and pointed out that even though the polygraph had considerable value, there were major problems with the program at the time. There was Senate action. Senator Wayne Morse actually spoke out at length against the polygraph, and a bill was introduced in Congress to do a detailed scientific study at one point.

In March 1953, almost 50 years to the day prior to the DOE announcement in the Fed Reg, the Atomic Energy Commission issued a statement withdrawing the program as a result of both the objections and the concerns expressed by the polygraph-friendly scientific panel.

So it is an interesting episode. What for me is especially interesting is that in the intervening 50 years, we seem not to have learned much from that original lesson. We did not learn much science, except that maybe we more fully understood the limitations of the polygraph, and we did not learn about the implications of trying to impose a large-scale security screening program on a major facility in the absence of other kinds of security measures.

Senator BINGAMAN. I think that is a useful history for us to have in mind. So thank you very much for relating that, and thanks again for the report and for your testimony.

We will perhaps have some additional questions submitted for the record here in the next day or 2, and we will leave the record open for that purpose.

We will conclude the hearing at this point.

[Whereupon, at 11:17 a.m., the hearing was adjourned.]

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