Polygraph

Volume 14 MARCH 1985 Number 1

CONTENTS

PUBLISHED QUARTERLY

P.O. Box 74, Linthicum Heights, Maryland 21090

THE POLYGRAPH IN EMPLOYMENT:

APPLICATIONS AND LEGAL CONSIDERATIONS

By

David E. Nagle*

Introduction

Since its development the polygraph has been analyzed by the legal profession primarily in terms of its impact in matters relating to criminal law. For many years the literature has been dominated by discussions of the use of the polygraph in criminal investigations and the enduring controversy over admissibility of polygraph test results in criminal cases. Almost all of the papers have been drafted by polygraph examiners, police investigators, prosecutors, or criminal defense counsel.

During the last decade use of the polygraph in the workplace has increased dramatically, to a point where it is clear that the number of employment-related tests dwarfs the number of tests conducted for law enforcement purposes. Ironically, little has been written for the benefit of those affected by this transition. The attorneys and corporate executives called upon to answer questions frequently have little information to guide them beyond their perceptions of the polygraph gleaned from television and movies, the polygraph examiner's sales pitch, and the anguished cries of the civil libertarians which appear so frequently as headlines in the popular pulp.

This article is intended to serve as a primer for those individuals who bear responsibility for making decisions relating to use of the polygraph in employment. Part I reviews the polygraph and test procedures, while Part II explains business applications of the polygraph. Part III provides an overview of generally applicable legal considerations.

---

*David E. Nagle Esq. is engaged in the practice of labor and employment law, on behalf of management, in Richmond, Virginia. He is with the firm of Williams, Mullen & Christian, 919 East Main Street, Richmond, Virginia 23210, tel. 804/643-1991. Mr. Nagle has a Bachelor of Arts degree from the College of William and Mary, a Juris Doctor degree from the University of Richmond, and a Master of Laws (Labor Law) degree from Georgetown University. He is a member of the American and Virginia Bar Associations, the Virginia Trial Lawyers Association, the American Arbitration Association, and the American and the Virginia Polygraph Associations (affiliate member). For reprints, write to Mr. Nagle at P.O. Box 1320, Richmond, Virginia 23210.

A revised version of this article will appear in the University of Richmond Law Review.

I. POLYGRAPH

History

While the various mechanical devices which make up contemporary polygraphs have all been developed within the past century, efforts to devise a means of detecting deception date back thousands of years. The earliest primitive cultures attempted to determine whether an individual was telling the truth through various trials by ordeal, i.e., physical tests exacted upon the accused and, occasionally, the accuser. The earliest recorded methods involved ordeals by exposure to fire or water, the presumption being that the innocent would not suffer injury. The Code of Hammurabi (dating from approximately 2100 B.C.) required that one accused of sorcery "plunge into the sacred river" where drowning established guilt.[1] In India a test for deception involved holding fire in one's hands, while in Africa, the accused was required to place his arms in boiling water or ingest poison.[2]

Tests such as these relied exclusively upon the religious or superstitious hypothesis that some supernatural force would intervene to protect those wrongly accused. According to theory, those who were innocent of the allegations made against them would be protected against physical trauma by their innocence.

Other cultures developed a variety of means by which they attempted to detect deception, methods recognized today as relying upon psychophysiological principles. These tests are frequently seen as conceptual forerunners of the polygraph in that they depended upon the subject's faith in the procedure, his fear of detection, and his physiological reactions thereto.[3] In India, an accused was given dry rice to chew and spit out. Those who could spit it out were seen as having demonstrated their truthfulness; those unable to do so were considered liars. The principle relied upon was that fear produces activity of the autonomic nervous system which, in turn, controls the salivary glands. Fear, from the prospect of being revealed, leads to reduced production of saliva and, accordingly, would result in difficulty in spitting the dry rice out.[4] Similarly (albeit more painfully), a test utilized by the Arabs relied upon the effect of attempted deception to diminish the flow of saliva, so that when a hot iron was placed on the dry tongue of a liar, burning would result.[5] These tests were based upon a presumed physiological reaction to the stress brought about by intentional deception and the accused's fear of being revealed as untruthful.

The first test applying a principle which was subsequently utilized in the polygraph appears to have been the simple observation of the quickening of the pulse during emotional stress, as done by Erasistratus, a Greek physician in the royal court of Syria, about 250 B.C.[6] In the 1890's, Italian criminologist Cesare Lombroso developed the first scientific tests which were intended to reveal deception, publishing his results in 1895.[7] While the instrument Lombroso used, a hydrosphygmograph, had been developed by others, he is generally recognized as the first to study variations in the blood pressure and pulse measurements in an effort to detect deception.[8]

In 1914 Vittorio Benussi, using a pneumograph, completed and published studies of respiration comparing length of inspiration and expiration as a means of detecting deception.[9] His experiments indicated that the inspiration/expiration ratio was higher before telling the truth than after, and conversely, higher after telling a lie than before.[10]

In 1917 an American psychologist and attorney, William Marston, published the results of his experiments conducted at the request of the war-born National Research Council in which he had recorded intermittent blood pressure readings in an effort to evaluate the existence of physiological responses associated with deception.[11] His studies indicated that while the diastolic blood pressure responded to intellectual activity and pain, the systolic blood pressure responded to fear, anger and attempts to deceive. He concluded that "the fear of the lie being detected and the conflict associated with its expression caused the change in blood pressure."[12] Marston also experimented with use of the galvanometer, measuring changes in skin resistance, in the detection of deception.

In 1921 John Larson, a former California police officer who became a forensic psychiatrist and a professor at Berkeley, combined the theories of Benussi and Marston with an instrument called the "ink polygraph" which had been developed by Dr. James MacKenzie, a British cardiologist.[13] Larson's "cardiopneumopsychogram" continuously recorded blood pressure, pulse, and respiration. While Marston had taken his readings as a subject related facts, Larson applied a word association technique, and subsequently developed the procedure routinely utilized today pursuant to which the subject answers "yes" or "no" to all questions put to him.[14] Larson utilized the so-called relevant/irrelevant test format.

Larson's studies were advanced by his assistant, Leonarde Keeler, who went on to manufacture a portable polygraph, establish the first school of polygraph technique, and add to his Keeler Polygraph a galvanometer.[15] Keeler was also responsible for developing the card test used to bolster the subject's confidence in the test, and the peak of tension test, wherein the subject remains silent but his continuing level of physiological response to a series of words is recorded.[16]

In the 1940's John Reid of Chicago, an attorney and polygraphist, made further improvements to the instrument as well as to the procedure to be applied in using it. Reid observed that a subject could distort the results of an examination by unobservable muscular movements. In response, the Reid Polygraph included a device for measuring such movement in addition to the standard devices measuring changes in pulse, blood pressure, respiration, and galvanic skin response. However, Reid's most significant contributions were in the refinement of the so-called Polygraph Technique, particularly in the development of the guilt complex test, the comparative response or control question, and the systematic appraisal of behavior symptoms.[17]

Cleve Backster, the found of major polygraph training programs in New York and California, developed standardized polygraph test and chart interpretation procedures. While some examiners continue to use the relevant/irrelevant format, the others follow Reid's techniques, others today utilize Backster's zone of comparison technique in which responses to

adjacent relevant and control questions are recorded in a printed notepack, then compared and scored numerically. Some authorities consider the Backster technique superior due to this reliance upon standardized procedures.[18]

The Instrument

The polygraph is an instrument which measures and records certain physiological data of a subject under controlled conditions. The various units, described below, which make up a polygraph measure the sympathetic reactions of the autonomic nervous system. In its simplest form the theory upon which polygraph testing relies is that when a subject intentionally and knowingly tells a lie, his body will respond physiologically to that attempt to deceive in a predictable, recognizable manner.

A more thorough explanation was provided by Lynn P. Marcy, current president of the American Polygraph Association, in trial testimony supporting the admissibility of polygraph evidence.

> Within the autonomic nervous system of a human being there are two divisions known as the sympathetic and para-sympathetic nervous systems. The sympathetic nervous system is structured to respond automatically to any kind of emergency perceived by the senses and without the concurrence of the will or any possible control by the decisional processes of the mind. Thus, those sensations common to human experience which accompany fear or anxiety are produced by the autonomic nervous system, sympathetic division, in its effort to warn and protect the person of some threat or danger. Among the physiological responses which are stimulated by the autonomic nervous system are changes in the function of the cardiovascular system, respiratory changes, and variations in the conductivity of the skin of the hand, due to activity of the sweat glands which is not relevant to atmospheric or temperature conditions but is precipitated by fears and anxieties. The basic theory of polygraphy is that under certain circumstances, questions the truth of which may have grave consequences for the subject will stimulate the sympathetic division of the autonomic nervous system and cause physiological changes which can be measured, recorded, and analyzed. For this reason, the verbal answer which is articulated by the subject may not necessarily affect the physiological responses which is demonstrated by the instrument. That is to say, if the subject is asked the question, "Did you kill X?" and he is at that time aware that he did kill X, a physiological response would likely result even if he admitted his guilt and answered in the affirmative. On subsequent verifying or "clearing" polygrams, it is to be expected that the response to this question would be eliminated or diminished because the crisis of a concealment (an admission having been made) is past.
>
> If, in response to this question the subject were to untruthfully deny his complicity, the fear of discovery of the truth as he knows it will cause changes in the function of each of the systems measured and recorded by the polygraph and permit the

> examiner to view a visible physiological response which both in theory and as demonstrated empirically by hundreds of thousands of polygraph tests can be correlated with deception. If the subject were truthfully denying involvement in the crime, no crisis would be present and the question would not stimulate the sympathetic nervous system into action. The truthfulness of the denial would be demonstrable by the absence of any significant changes in the physiological functions measures by the instrument. Thus, the witness explained, the instrument is not so much a means of "lie detection" (an unfortunate misnomer) but is instead an instrument of truth verification. Simply put, the absence of responses must mean that the subject is telling the truth, whereas the presence of responses means and means only that he is withholding information which he believes to be relevant to the question put to him.[19]

The pneumograph measures the rate of respiration, illustrating the subject's breathing pattern. Respiration is recorded through the use of two pneumatic tubes which are positioned around the subject's torso (one to measure thoracic breathing, the other to measure abdominal breathing). Expansion of the subject's chest and stomach during breathing causes stretching of the tubes, the movements of which are transmitted through bellows to be recorded by pens on moving graph paper (the chart). A subject's pattern of respiration is considered by most authorities to be the most accurate and reliable measure of deception.[20]

The cardiosphygmograph is used to measure changes in the subject's blood pressure and pulse. This is done by means of a rubber cuff which is inflated around the upper arm over the brachial artery (or occasionally around the thumb or wrist). Blood pressure and pulse are recorded by a single pen on the polygraph. The changes which may occur with stress are revealed on the chart as variations in the frequency of the heartbeats, their amplitude, or a trend in the tracings.[21]

The galvanometer measures variations in skin resistance to electricity due to electrodermal activity. This physiological activity, variously referred to as GSR (galvanic skin response) or PGR (psychogalvanic reflex), is measured by attaching small electrodes to two of the subject's fingers through which a small amount of electrical current passes. Any variation in perspiration (a routine sympathetic response to stress) will be measured and recorded by another pen on the polygraph. GSR readings are generally considered to be most valuable significant in peak of tension tests.[22]

As previously mentioned, an additional unit on the Reid Polygraph is utilized to measure muscular activity in the subject's arms or legs through a series of metal bellows in the subject's chair.[23]

The kymograph is the basic machinery which moves the chart paper under the above-mentioned recording pens at a uniform speed of six inches per minute.[24] All of the above measurements are recorded simultaneously, and the chart should be marked by the examiner to identify the place where each question was asked, and each response was given. The response (yes or no), as well as other factors capable of causing physiological

responses (such as loud noises, or a cough) should be noted on the chart. [25]

The receptors described above are common to essentially all polygraphs and may be either mechanical or electronic in their operation. Several types of polygraph instruments are available, including those manufactured by C.H. Stoelting Co. (the Deceptograph) and Lafayette Instrument Co. (Polygraph). Although no longer manufactured, instruments were made by Associated Research, Inc. and Lee & Sons.[26]

The Subject

There are two prerequisites for an individual to be an appropriate polygraph subject. The first is that the person be in proper physical and mental condition. A person who is excessively fatigued or hungry, has been physically or psychologically abused, or who is under the influence of alcohol or drugs should not be examined. Individuals with heart or respiratory disorders as well as pregnant women should be examined only with a physician's approval, and even then an examination might not be effective.

The second, equally important, requirement is that the subject take the test voluntarily. This is required from legal and ethical standpoints, as well as for scientific reasons. Only when an individual cooperates fully may he be examined in a manner which will permit the polygraphist to form an expert opinion as to the presence or absence of deception in the subject's responses.

Controversy exists over the extent to which various physical or mental conditions may prevent an examiner from drawing accurate conclusions. Those who contest the reliability of the polygraph in general, nor surprisingly, assert that those with medical or psychiatric conditions are particularly unfit for testing, on the theory that such individuals are likely to produce inaccurate results.[27] On the other hand, one advocate asserts:

> With relatively few exceptions, almost everyone is capable of being accurately tested ... while the research findings have shown that psychotics, retardates, and children under the age of twleve should not be tested, because of the increased risk of error, the results for them tend to be inconclusive rather than inaccurate. Pain or excessive use of drugs may result in inconclusive findings, but there are no medical conditions, drugs, or countermeasures that would cause a truthful person to appear deceptive or a lying one to seem truthful. If one of the subject's physiologic functions is impaired so that adequate polygraph tracings cannot be obtained, he can still be evaluated through the other sensors. (footnotes omitted) [28]

Contrary to Doctor Abrams' above-quoted assertion concerning the effects of drugs, at least one recent study indicated that certain tranquilizers may effectively suppress physiological responses indicative of deception.[29]

An area of frequent concern to subjects is the effect of nervousness upon polygraph test results. While that characteristic should be lessened by the proper environment, explanation of procedures, and assurances from the examiner during the pretest interview (described below), nervousness may persist. In such cases, the tension leads to responses distinguishable from deception in that they are "uniformly irregular ... [that is,] the physiological changes or disturbances induced by nervousness usually appear on the polygraph record without relationship to any particular question or questions."[30] Furthermore, the use of control questions (described below) substantially diminishes the possibility of misinterpretation of responses induced by nervousness of the subject.[31]

The Examiner

Authorities in this field uniformly emphasize the importance of the qualifications of the examiner. Due to the subjective nature of determining truthfulness through a polygraph examination, competency of the examiner is the single most important factor.[32] The role of the examiner in interviewing the subject, designing the appropriate test questions, conducting the test, and evaluating and interpreting the charts is generally regarded as much more critical to an accurate determination of truthfulness than is the mechanical function of the polygraph itself.[33] Due to the fact that the examiner's function is to apply a diagnostic procedure rather than to act as a mere technician (as in drug analysis or firearms identification), absent sufficient training his test results may be worthless.[34]

For many years the field was plagued by lack of standardization and professionalism. As recently as 1953 the noted authorities John Reid and Fred Inbau wrote of some "grossly incompetent" and "unquestionably dishonest" examiners.[35] More recently, the same individuals testified that "only about 20 percent of the individuals who hold themselves out as examiners possess, in our opinion, the training and skill required for competency in the field."[36] While some authorities have observed considerable advances in the profession as a whole,[37] and the identification of experts qualified to present their opinions in court is not ruled out by the co-existence of unqualified examiners,[38] nonethless it must be acknowledged that the general claims of polygraph accuracy are undermined by this chronic problem. Many unqualified individuals, unidentified and unaccounted, continue to conduct polygraph examinations.[39]

Encouragement can be taken from the fact that the impetus for imposition of controls over examiner training has come largely from within the field. National, state and local societies of polygraph examiners have been established and are actively engaged in efforts to upgrade their knowledge, skills, and techniques through publications, seminars and the like.[40] The dominant organization, the American Polygraph Association, has established a code of ethics, accepts and evaluates complaints, accredits training facilities, conducts seminars, provides research assistance and publishes several periodicals. Perhaps the most important activity of the national and state associations has been their support of licensing legislation,[41] intended to put the unqualified examiner out of the market. The subjective nature of the polygrapher's task and the significant impact that the test results frequently have upon employment decisions

justify licensing to ensure at least a legislatively specified level of training. As one commentator wrote, "State regulation of polygraph examiner competence is a necessary and effective means of protecting persons who submit to polygraph tests from the unwarranted and potentially harmful errors of incompetent examiners."[42] Currently at least twenty-eight states and one county have legislation requiring that polygraph examiners be licensed plus two states have voluntary certification laws.[43] Massachusetts and Iowa provide that only licensed detectives may administer polygraph examinations. Louisiana and Indiana certify examiners on a voluntary basis. While the individual statutes vary widely, most require a college degree or extensive investigative experience, completion of requirements from an approved school of polygraphy, and satisfactory performance on a competency examination. Less frequent, unfortunately, are those statutes which provide for a period of internship prior to the awarding of a license,[44] and statutes or regulations requiring continuing education for polygraph examiners. There are currently at least twenty-nine accredited polygraph examiner training schools in the United States.[45] The courses of instruction required by American Polygraph Association standards include a minimum of 252 hours of instruction in the following areas: operation of the polygraph, question formulation, examination procedures, chart analysis, interviewing, physiology, psychology, legal aspects, ethics, instrument maintenance and calibration.[46] While strict licensing requirements and high standards for qualification as expert witnesses may temporarily limit the number of examiners qualified to testify as to their conclusions, the supply will increase as judicial acceptance renders the rigorous training economically desirable.[47]

The Polygraph Technique

Polygraph testing procedure is divided into three distinct phases: the pre-test interview, the test, and the post-test interview. Each segment is essential, developing the foundation for the examiner's conclusions.

The pre-test interview is the period during which the examiner assesses the suitability of the subject for testing, explains the nature of the test and the procedure to be followed, seeks to establish rapport with the subject, and formulates the questions to be asked in the test, and reviews the questions with the subject. No measurements of physiological data are taken during this phase. The explanation of the polygraph is important, in an effort to calm the subject and assure him that the test will be fair and accurate, as this should diminish the truthful person's apprehension but also serve to increase the deceptive person's concern over possible detection.[48] All questions must be reviewed, word for word, with the subject so that both parties have a clear, common understanding of their meaning, and the questions must be worded to facilitate unequivocal "yes" or "no" answers. Surprise questions are of no value because they are certain to result in a dramatic physiological reaction which may not be indicative of deception.[49] This phase may last up to several hours, but generally is thirty to forty minutes.

The test, which may follow any of a variety of patterns, is designed to elicit responses to be recorded on the chart and analyzed for evidence of deception. It consists of a series of questions, generally ten to

fifteen, at twenty second intervals. The polygraph records physiological data from start to finish, in tests which routinely are of less than five minutes duration.[50] At least two tests will be conducted, with subsequent tests modified to enhance responsiveness in an effort to resolve inconclusive reactions. While the test methods vary, as described below, there are generally three types of questions: irrelevant, relevant, and the so-called control questions.

An "irrelevant" question is one which concerns a known fact, unrelated to the case at hand, and which should produce little or no stress or deception. Topics may include the subject's name, age, location, or recent meals. These questions are primarily for the purpose of establishing the subject's normal physiologic baseline, illustrating truthful responses under test conditions. They also are used to terminate a lingering reaction to a previous relevant question, to terminate a shock reaction to extraneous noise, and to provide an outlet for a relief response after a relevant question.[51]

A relevant question is one which focuses upon the issue under investigation. Relevant questions (sometimes called critical questions) must be concise, clearly understood, and refer only to one particular act. Highly charged words which may themselves bring about a response should be avoided, with less emotional words substituted, and they must be based upon facts, not opinions. Relevant questions seek to determine the subject's knowledge, involvement in the matter being investigated.[52]

A "control" question is based on an assumed lie, and is developed during the pre-test interview. It was developed in recognition that even some innocent people will seem responsive to relevant questions.[53] As John Reid, who developed the control question described it,

> A control question is one which is unrelated to the matter under investigation but of a similar, though less serious nature, and one to which the subject will, in all probability, lie; or at least his answer will give him some concern with respect to either its truthfulness or its accuracy. For instance, in a burglary case the control question might be: "Have you ever stolen anything?" ...
>
> At the risk of oversimplification it may be said that if the subject responds more to the control question than to the crucial (relevant) questions, he is considered innocent. On the other hand, a greater response to the crucial questions, in comparison to no response or only a slight response to the control question, is suggestive of guilt, although several other test procedures are required before a definite conclusion to that effect is permissible.[54]

In addition, there are types of questions used, by some of the schools of training, in special situations. The "guilt complex" question, also developed by Reid, is used when there is a strong specific response to all relevant and control questions. This type of question, used to determine whether the subject will respond to accusatory questions about a fictitious incident similar in nature to the one being investigated,

represents a genuine control in the traditional, scientific meaning of the word.[55] Finally, the "outside issue" or "symptomatic" question, utilized by followers of the Backster school, serves to determine whether some outside factor may be distorting test results.[56]

The several schools advocate different orders in which the questions should be asked. Other variations of question format include the truth control test, the positive control test, and the relevant control test.[57]

The last test format utilized is the "peak of tension" test, which is appropriate in a case where the examiner has some specific knowledge of facts that have not been made public and, hence, should not be known by an innocent subject. The examiner proceeds through a series of questions, statements or photographs, which are known in advance by the subject, but to which he makes no oral response. The peak of tension test may reveal that the subject's respiration, blood pressure, pulse, or G.S.R. was distorted at the time the examiner mentioned the unpublicized fact. Perhaps most significant about this test is the distinction in the nature of the interrogation design: not to detect deception, but to detect guilty knowledge.[58]

After the tests, the charts are analyzed and interpreted. During the post-test interview the examiner discusses the results of the test with the subject (professional ethics require that an examiner advise a subject when the results indicate he was not being deceptive). Where the findings indicate deception, the examiner may seek to ascertain if the subject can provide any other explanation. In criminal investigations, this interview may be transformed into interrogation where the results clearly indicate that the subject is being untruthful. Confessions are so frequent at this stage of the procedure that John Reid was once quoted by the New York Times as asserting, "We get better results than a priest does."[59] Lykken wrote that polygraph examiners reported obtaining "damaging admissions" from 75% of the job applicants tested. Examiners of applicants for several police departments reported obtaining admissions of hundreds of undetected crimes. Clearly the polygraph is effective at eliciting confessions, independent of its validity as a "lie detector."[60]

Reliability and Validity

Reliability, in the polygraph test context, refers to the consistency of results when different examiners test the same subject, or examine the same chart. Validity, on the other hand, refers to the degree of accuracy with which the test results are equatable with deception.[61]

The relatively few reliability studies which have been conducted have produced evidence of consistent examiner evaluations in from 77 to 95 percent of the tests. While some critics assert that the total percent of tests in which there is agreement among examiners is a poor way of assessing reliability, no contradictory studies were identified.[63] Another criticism of some of these studies is based on the assumption that they employed the most qualified examiners available, and thus may not be representative of a majority of examiners.[64] While the abovementioned study by Horvath and Reid revealed that even the "inexperienced examiners"

averaged 79 percent correct judgments (as opposed to an average of 91 percent correct judgments for "experienced examiners"), nonetheless all in the study were graduates of accredited polygraph training facilities.[65] Those who have not undergone training in an approved course might be expected to demonstrate even less consistency in diagnosis.

Literally hundreds of articles have been published on the subject of the polygraph,[66] most of which make some reference to the validity of polygraphic examination. Almost without exception, those which focus upon validity attribute to the polygraph levels of accuracy ranging from 75 to 98 percent.[67] Nonetheless, the validity of the polygraph technique is still questioned by some. Critics frequently either ignore studies such as those mentioned above,[68] or sneeringly denigrate them through references to the influence of pecuniary self-interest.[69] Lykken, who is perhaps the most articulate opponent of polygraph usage in the employment context, focuses his criticism upon the test methodology utlized in some studies of polygraph validity, and the resulting statistical analysis.[70] Advocates of the polygraph acknowledge this weakness in some reports,[71] but authorities in the field of scientific evidence point to the substantial number of scientifically conducted studies which conclude that accuracy is in the range of 85 to 90 percent or higher.[72] Even Lykken admits that some of these were "reasonably good" in quality as an "objective, controlled scientific study" of polygraph accuracy.[73]

Having stumbled briefly into the thicket of arguments over polygraph validity, escape is found by referring the more ambitious reader to the authorities cited in notes 66 through 73. This issue is not cavalierly dropped for the purpose of expedience, but rather is left for those to whom knowledge of the precise degree of accuracy enjoyed by the polygraph technique is the ultimate question. As revealed below, those who utilize polygraph examinations are convinced that it has sufficiently demonstrated its effectiveness in the workplace.

II. USE OF THE POLYGRAPH IN EMPLOYMENT

Applications

In the employment context, the types of polygraph examinations are classified according to their application: pre-employment, periodic, and specific.

Employers utilize pre-employment polygraph examinations as a means to screen out undesirable job applicants.

> The best way to stop employee theft is simply not hire those employees inclined to steal. The best way is also impossible. What the employer must do is set up a screening process that will weed out the obvious security risks. Many experts believe that personnel screening is the most vital safeguard against internal theft.[74]

In pre-employment examinations, the most controversial, the polygraph is utilized to verify data on an employment application with respect to previous employment, criminal convictions, medical history and driving

record. It may also be used to detect propensities for alcohol and drug use, and to verify intentions of job permanency.[75] Most important to employers, however, is their desire to reduce employee theft through screening of applicants to uncover past wrongdoing and attitudes towards theft, in an effort to avoid hiring those who would be high risk employees.[76] Studies indicate that somewhere between 15 and 30 percent of the applicants tested are disqualified on the basis of the polygraph examination,[77] however, several authorities have explained that upwards of 90 percent of those rejected are disqualified on the basis of admissions made to the polygraph examiner, rather than on the examiner's conclusions as to whether or not the subject was deceptive.[78] Even advocates of polygraph screening of applicants caution that the results should constitute only one factor in personnel evaluation.[79] Many critics argue that polygraphs should not be used in this manner, due to the obvious risks inherent in using the polygraph results in an effort to predict future conduct based upon past behavior.[80] Authorities in the field, recognizing that pre-employment tests are the focus of most criticism of the polygraph, assert that personnel screening examinations are "the most complex, most difficult, and most important examinations."[81]

Periodic polygraph examinations are those given to all employees, or randomly selected employees, sometime after hire but not in response to any particular incident. Such examinations are viewed as preventive in nature, serving to deter employees from stealing when the opportunity presents itself.[82] Private employers may utilize them in an effort to prevent industrial espionage concerning trade secrets, patent information, or company strategy.[83] Recently there has been publicity concerning a proposal to dramatically increase periodic testing of employees of the Department of Defense in an effort to deter and detect espionage.[84] The periodic testing of the loyalty of government employees (particularly those in sensitive intelligence and law enforcement positions) has been done routinely for many years.[85]

Finally, employers use specific polygraph examinations in response to incidents of internal theft or shortages (cash or inventory), the release of restricted plans or secrets, sabotage, vandalism, or other acts of misconduct.[86] Recently polygraph testing has been utilized to investigate allegations of sexual misconduct.[87] When examinations concern a specific act of misconduct, which the subject must unequivocally admit or deny, the test procedure is the simplest, and results are the most accurate.[88]

Reasons for Use of the Polygraph

> Industrial security has always been important from an economic perspective, and it becomes increasingly important in economically troubled times. Employers, particularly small ones, cannot afford the risks attendant with lax hiring practices and unreliable employees. Additionally, as a matter of public relations and business reputation, employers may not be able to afford the costs of dishonest, or, sometimes, disloyal, employees. To protect themselves against these vices, employers have resorted to numerous devices to insure industrial security. These include the polygraph.[89]

The need for some means by which employee theft may be deterred and detected is abundantly clear, for the proportions of the dollar cost associated with internal theft, are staggering. While precise figures are non-existant, and estimates vary widely (and should be adjusted for inflation to arrive at current levels), the consensus seems to be that losses directly attributable to employee theft (more delicately referred to as "pilferage" or "shrinkage" according to the ACLU, unions, and other opponents of polygraph testing) amount to something in the range of 5 to 15 billion dollars annually.[90] There are estimates that nearly one third of the business bankruptcies are caused by employee theft,[91] that 70 percent of all workers steal something during their employment,[92] and that an employee may steal from his employer for an average of three years before being detected.[93] Even though discipline, not arrest, is the normal consequence, in 1982 approximately 335,000 American workers were arrested for theft from their employer.[94]

Employers utilize polygraph examinations, as explained above, primarily to screen applicants and employees in an effort to deter and detect theft. Consequently, the polygraph tests may reduce employee turnover, and the associated costs of training and unemployment compensation. The polygraph is also seen as a means of reducing suspicion and surveillance of employees, thereby reducing tension in the workforce.[95] Furthermore, the cost of polygraph testing is generally cheaper than private investigators, or hiring or retaining dishonest employees.[96]

In a survey of 400 firms drawn from Fortune's lists of largest companies in various industries, those using polygraph examinations were queried as to the reasons for their action. The results indicated that the primary considerations were the speed with which results could be obtained, the validity and reliability of the testing procedure, and the low cost of polygraph examinations.[97]

Extent of Use

Just as with accurate figures for employee theft, it is difficult to obtain accurate estimates of the number of employment-related polygraph examinations conducted annually, but the consensus is 500,000 to one million.[98] Overall estimates indicate that 20 to 30 percent of the nation's corporations utilize the polygraph, including retail stores such as McDonalds, Burger Chef, Zales Jewelers, and Gimbel's Department Stores; banks such as Chase Manhattan, Republic National, and Chemical Bank; security agencies such as Guardsmark; and manufacturers such as Adolph Coors Brewery.[99] The aforementioned study of polygraph usage among major U.S. corporations found that overall, 20 percent utilized the polygraph. The study further indicated that it is used by 50 percent of both commercial banks and retailers, 25 percent of the transportation firms, and 12 percent of the industrials. As to the nature of the polygraph testing utilized by these companies the survey revealed that 90 percent of the firms using the polygraph did so in the investigation of specific incidents, while 35 percent used it for pre-employment and periodic testing. Most firms that utilize the polygraph use it for more than one of these personnel functions.[100] Other studies indicate that employers find polygraph examinations to be an effective personnel tool, and intend to continue or expand their use of polygraph testing,[101] providing more

work for the estimated 4,000 to 7,000 polygraph examiners working today.[102]

III. LIMITATIONS IMPOSED BY LAW

The Constitution of the United States

The most frequently asserted objection to polygraph testing on Constitutional grounds is one based upon the "right to personal privacy." While there is no such right clearly stated in the Constitution, the concept has become well-established and frequently litigated. First expressed in an article by Warren and Brandeis,[103] it was specifically acknowledged by the United States Supreme Court some 75 years later.[104] The other Constitutionally based objections frequently heard come from the Bill of Rights: protection from unreasonable search and seizure (4th Amendment); privilege against self-incrimination (5th Amendment); and the right to assistance of counsel (6th Amendment).

No cause of action for the breach of these rights can be maintained without a finding of "state action," for these fundamental guarantees are applicable as restrictions on the actions of the federal government and the states (through the 14th Amendment), but not the actions of private parties.[105] It is therefore only public employees who have been able to mount successful challenges to required polygraph examinations. These cases are discussed, in the "Public Sector Employees" section below. The efforts of private sector employees, based on Constitutional grounds, have met with little success.

Federal Legislation

There is currently no federal legislation which prohibits or restricts employers from requiring that employees submit to polygraph examinations as a condition of hire or as a condition of continued employment. Furthermore, there is no federal legislation restricting or licensing those who conduct polygraph examinations. There has been, however, no shortage of proposed legislation on the topic over the past twenty years,[106] and some drastic proposals have been made.[107] In the last session of Congress, both a bill that would have prohibited polygraph testing of employees[108] and a bill that would have regulated polygraph testing of employees[109] failed.

State Legislation

Legislative enactments by the states may generally be classified as falling into one of three categories: examiner licensing provisions, statutes limiting use of the polygraph or statutes prohibiting the use of the polygraph. Six states both license examiners and prohibit mandatory tests.[110] There are nine states which neither restrict the use of polygraph testing, nor require licensing or examiners.[111]

Currently, twenty-six states require licensing of polygraph examiners.[112] As stated previously, rigorous licensing requirements can be utilized to ensure that all practicing examiners will have completed at least a specified minimum level of training.

Several states, with or without licensing statutes, have enacted limitations upon the questions that may be asked in an employment-related polygraph examination. Virginia, for example, prohibits requiring that a prospective employee answer questions about sexual activity, unless such activity has resulted in a criminal conviction.[113] Wisconsin prohibits testing an employee's honesty, as well as questions relating to sexual practices, religious views, political affiliation, or union activity, but permits tests directly related to employment applications and job performance.[114]

Currently twenty-one jurisdictions prohibit employers from requiring submission to a polygraph examination as a condition of employment.[115] Of those, the statutes in nine jurisdictions further prohibit an employer from even requesting that the employee submit to such an exam.[116] Law enforcement agencies are exempted from all but five of the statutes.[117] Penalties for violation vary from a $100 fine[118] to a $1,000 fine and one year in jail.[119]

National Labor Relations Act

Polygraph cases arising under the National Labor Relations Act[120] generally fall into one of two categories: those concerning polygraph exams to which employees are required or requested to submit, and those concerning an employer's obligation to engage in collective bargaining before implementing testing requirements.

First, where a collective bargaining representative of employees has been certified, the NLRB has held that imposition of a rule requiring that employees submit to polygraph examinations in a mandatory subject of collective bargaining, affecting the terms and conditions of employment. Failure to bargain over such a change would constitute an unlawful refusal to bargain in violation of Section (8)(a)(5) of the National Labor Relations Act.[121]

When employees do submit to polygraph examinations, any testing to discover their union sympathies or protected, concerted activity is violative of Sections 8(a)(1) and (3) of the Act.[122] Tests which lead to the discovery or admission of improper, unprotected activity may lawfully be used as grounds for discharge.[123] Of course, neither test results nor required submission to testing may be used as a pretext for an anti-union discharge.[124]

If the bargaining obligation has been fulfilled, then an employer may, in a non-discriminatory manner, require that employees take polygraph examinations,[125] and discharge for an unwarranted refusal to submit to such tests would not violate the National labor Relations Act.[126]

Arbitration

Cases involving polygraphs in arbitration can be divided into two categories: Use of polygraph test results as evidence, and the effect of an employee's refusal to submit to a polygraph examination.

In general, arbitrators have been reluctant to rely upon polygraph

evidence because of their doubts about the reliability of such evidence, though such doubts are not always directed at the validity of polygraph testing.[127] Arbitrators have refused to accept polygraph test results as evidence when both parties have not agreed to its admissibility;[128] when certain indicators on the machine were not operating properly;[129] when the examiner was inexperienced (having done only 150 cases);[130] when an examiner who did not work in a state requiring licensing had only testified in one or two arbitration cases;[131] and when an arbitrator concluded that an employee had not submitted voluntarily to the polygraph test.[132]

Although arbitrators are reluctant to rely very heavily upon polygraph evidence, the trend seems to permit consideration of test results. In a widely-cited case, a truck driver who was discharged for failing to report an accident subsequently submitted to a polygraph. The arbitrator held that "the results ... standing alone would not justify the discharge but they provide helpful supplemental evidence."[133] Several other cases have considered polygraph test results when they were supported and corroborated by other evidence.[134] When not so supported, polygraph test results are generally regarded as insufficient evidence to support a discharge for theft.[135]

Most arbitration decisions hold that an employee cannot be penalized for refusing to submit to a polygraph examination,[136] even if the employee had earlier consented to such an exam.[137] Where an employee handbook stated that employees "would be expected to submit to a voluntary polygraph examination," an arbitrator concluded that an employee's refusal to submit rendered the exam involuntary, and the handbook provision inapplicable--the discharge was overturned.[138]

There are, however, a few frequently cited cases (three involving the same employer), wherein discipline or discharge for refusing to submit to a polygraph examination has been upheld in arbitrations. One such case involved the temporary suspension of employees who refused to take polygraphs required of all employees after a theft. The arbitrator's opinion stated that that company was justified in using investigative methods as long as not illegal or in violation of the labor contract.[139] The second case also upheld the use of required polygraph tests as a valid employer investigative device which does not invade privacy, force self-incrimination, or constitute an unreasonable search and seizure. The opinion recognized the necessity for the use of polygraphs, and concluded that it was "not entirely unreasonable" to dismiss an employee for refusing to submit to such a test. The arbitrator also saw the topic of required polygraph examinations as an appropriate subject of collective bargaining.[140]

Public Sector Employees

The use of polygraphs in the public sector may be divided for analysis into those cases involving police officers, and those involving other than police officers. The vast majority of reported cases were brought by police officers and most held that a public employer may require an employee submit to a polygraph test or face dismissal. Cases involving public employees other than police officers are very few in number. When

they do require an employee to submit to a test, the reasoning parallels that used in the police cases.

The cases requiring that a police officer submit to a polygraph test as part of an investigation of the employee's conduct focus upon three issues: (1) the role of police in society (2) the duty to obey a superior officer in the para-military sense and (3) the reasonableness of the order to submit to the examination.

The prevailing view is that a police officer must be above suspicion of violation of the laws he is sworn to enforce,[141] must be a guardian of the peace, perform his duty to investigate crime, and maintain the public trust,[142] acknowledging that he is in a highly sensitive position, entrusted with the duty of protecting the community from the evils of crime and corruption.[143] On reasoning such as that above, courts have concluded that questions concerning the propriety of officers' actions must be resolved promptly, and have upheld the dismissal of officers who refused to submit to such exams. One court noted that the "personal integrity of [private sector employees] has little, if any, direct impact on the members of the public, however, the personal integrity of public employees has enormous impact on the public and is of serious concern." [144]

Another line of cases requires that an officer submit to a test based on his duty to obey a superior officer who orders the test, and holds an employee guilty of insubordination for refusing. This gives the employee very little choice but to submit to such an examination, or face discharge.[145]

Although the superior officer has broad powers to order a polygraph, the request still must meet a reasonableness test which includes a prohibition against requiring the employee to waive his 5th Amendment privilege against self-incrimination.[146] A few courts have not even required that the order be demonstrably or prima facie reasonable, reasoning that if an officer may refuse to obey a direct order from a superior and seek a judicial determination of the reasonableness of the order, there would be a severe weakening of the authority and discipline of the police force wihin its ranks.[147]

It has been held that refusal to submit to a polygraph exam did not constitute grounds for discharge of policemen in several situations. For instance, if the police manual merely requires that an officers be truthful (and not specifically requiring that an officer be willing to submit to a polygraph examination),[148] or if an employer may be found guilty, under the state statute, of disorderly conduct for forcing submission to an examination,[149] refusals to submit to exams have been permitted. [150]

Requiring non-police public employees to submit to polygraph exams has been upheld on the fact that the proceeding was investigatory rather than adjudicatory,[151] where public safety was threatened,[152] and in one simply rejecting the broad constitutional claims of the plaintiff, a sewer maintenance worker who was discharged for refusing to take a polygraph exam.[153]

The discharge of non-police public employees for refusing to submit to polygraph examinations have been overturned in several fact situations. One court held that in the absence of a specific rule to that effect, none could be required.[154] Another relied on the fact that the employee (a fireman) was not in law enforcement, and found no special duty to submit to such a test.[155]

Constitutional arguments have been raised with respect to mandatory polygraph examinations for public employees, or applicants. Challenges have been based upon (1) due process and the privilege against self-incrimination, (2) an inalienable property right inherent in a job, (3) equal protection, (4) right to counsel, and (5) right to privacy. The arguments have met with varying degrees of success, depending upon the nature of the job and the circumstances surrounding the required polygraph examination.

Due Process and the Privilege Against Self Incrimination: Five United States Supreme Court cases outline the use of the 5th Amendment privilege against self-incrimination, available in state proceedings through the 14th Amendment, to prohibit forcing an employing to incriminate himself. Although the cases do not involve forced use of the polygraph, they form a basis for subsequent state court decisions which do focus on polygraph use.[156]

Police officers, as public employees, may invoke the 5th Amendment to prevent the use, in a later criminal proceeding, of information obtained during a department disciplinary investigation, where a refusal to answer questions would have resulted in discharge.[157] However, in that decision, the Court specifically did not decide whether a police officer could be discharged for invoking the privilege when his conduct as a police officer was at issue.[158] Subsequently, the Court clarified its position, holding that a public employee cannot be discharged for refusing to waive immunity from a subsequent criminal prosecution based on his answers.[159] However, the Court distinguished that from the situation where employees are required to answer questions "specifically directed and narrowly relating to the performance of their official duties on pain of dismissal from public employment without requiring relinquishment of the benefits of the constitutional privilege ..."(emphasis added)[160] Thus, a public employee may be dismissed for his refusal to answer potentially incriminating questions relating to his duties, but may not be required to waive his constitutional right to prevent the information thereby obtained from being used in a later criminal proceeding.[161]

The analysis of the Supreme Court led to decisions by a number of state courts, permitting the discharge of public employees for refusal to submit to polygraph tests as tantamount to a refusal to answer.[162] It is important to note that in all of the cases, the public employees were law enforcement officers. The courts justified the dismissals for failure to submit to polygraphs on the employees' "insubordination" which interfered with the effective and efficient operation of a police department to thoroughly investigate crime[163] and which failed to comport with the need for a credible police force.[164] One court looked to the reasonableness of the requirement, as providing justification for discharge based upon the employee's refusal to submit.[165]

Inalienable Property Right Inherent in Job: Public employees have been unsuccessful in challenging dismissals due to refusal to submit to a polygraph when they base their argument on denial, without due process, of a property right. A police officer has no right to employment and cannot refuse to submit to a polygraph exam regarding his knowledge of the victim of a murder. His sworn duty to cooperate in investigating crime outweighs any rights to employment.[166] In addition, a city employee who is dismissed based on polygraphs he voluntarily took cannot argue that his prior tenure, or expectation of continued employment, or the future vesting of pension benefits constitutes a legally protected property interest in a job, unless supported by some claim of entitlement (a contract, or state statute).[167]

Equal Protection: In a case where only 10% of the police cadet applicants were required to submit to polygraph tests, a cadet discharged for refusing a test challenged the procedure on equal protection grounds, claiming the requirement must apply to all or none. A federal court disagreed, finding certain actions by the plaintiff provided the city with "a compelling interest in demanding that certain, but not all, of the applicants take the examination."[168]

Right to Counsel: A federal court in Illinois denied police officers the right to have their counsel present during polygraph examinations conducted pursuant to an investigation of their conduct. The case involved a purely civil matter, and the court noted that the effectivenes of police disciplinary proceedings would be impaired if the "full panoply of judicial due process" were required for every decision.[169]

Right to Privacy: Privacy can be defined as "the right of the individual to decide for himself when and under what conditions his thoughts, speech and acts should be related to others."[170] In order to use the Bill of Rights as a basis for an action based on invasion of privacy by the use of a polygraph, there must, as previously noted, be sufficient state action.

One commentator asserts that the polygraph exam constitutes an invasion of privacy per se, and that the public employee's "consent" is ineffective when employment is conditioned upon submitting to a test.[171] However, one court rejected a police officer's assertion that a required polygraph examination constituted an invasion of privacy and found him guilty of insubordination. Refusing to accept the notion that the polygraph seriously invades privacy, the court noted that it is merely an "extension of the age-old process of assessing the veracity of a witness."[172] On the other hand, the Ninth Circuit recently held that an examiner's intrusive questions into a police applicant's sexual activity, pregnancy and abortion constituted a violation of the applicant's constitutionally protected right of privacy.[173]

CONCLUSION

The foregoing article was intended to serve the several constituencies called upon to make decisions relating to use of the polygraph in the workplace--labor counsel, personnel administrators, and corporate security directors. A general understanding of the polygraph and the manner in

which it is used in employment-related testing should benefit those who must establish and implement corporate policy.

This article was also intended to alert those individuals to the legal considerations applicable to most employers all across the country --the constitutional challenges put forth by public sector employees, legislation prohibiting or limiting employment-related polygraph testing, and decisions from the National Labor Relations Board and arbitrators concerning use of the polygraph in unionized settings. Left unmentioned were two areas which have the potential to be of great significance in particular situations. First, the effect of polygraph test results, or an employee's refusal to submit to a polygraph examination, upon a discharged employee's claim for unemployment compensation benefits was not discussed. To collect this information would have been a monumental task, involving review of the statutes, court cases, and decisions of administrative agencies from all fifty states.

Second, this article does not examine the current proliferation of tort legislation in the state courts arising from the use of the polygraph in the workplace. Even when without merit, such cases may be expensive to defend due to the fact that plaintiffs' counsel frequently uses a "shotgun" approach. Theories as diverse as defamation, negligence, and conspiracy have been advanced in response to expanded use, and some abuse, of the polygraph in the workplace.

As a final note, the author wishes to take this opportunity to explain his reasons for opposing legislation prohibiting use of the polygraph in employment-related testing. Federal law limits the information which a company can obtain about its job applicants; thorough background checks are too expensive to be conducted routinely; and little information on applicants is generally available from wary former employers. Internal theft is a problem of truly staggering proportions, and some means of reducing vulnerability to such theft, by assessing applicants and investigating property losses is essential. This writer does not believe that an individual's "right" to a job is more compelling than an employer's "right" to an honest workforce. No one will be more enthusiastic about discontinuing polygraph testing at a business than an employer no longer faced with the need for such testing. The polygraph is effective in preventing and detecting theft, and even though its scientific validity is not 100 percent, it is indisputably more valid than the innumerable subjective considerations which are legally permitted to play a role in personnel decisions. The polygraph is less intrusive than some alternative security procedures, and more cost effective than others readily available. When used prudently, as one of several factors in personnel decisions, the polygraph is a reasonable and effective tool for reducing theft by employees, thereby aiding the employer in his effort to provide a secure, financially stable workplace.

FOOTNOTES

[1] Carroll, The Development of Civilization 25 (1961).

[2] Abrams, A Polygraph Handbook for Attorneys 11 (1977).

[3]
Lykken, A Tremor in the Blood: Uses and Abuses of the Lie Detector 26 (1982) [hereinafter cited as Lykken].
[4]
Lykken at 26.
[5]
Ansley and Abrams, The Polygraph Profession 10 (1980) [hereinafter cited as Ansley and Abrams].
[6]
Moenssens, "Licensing of Detection of Deception Operators in Illinois," 41 Chicago-Kent Law Review 116 (1964).
[7]
Lombroso, L'Homme Criminel 336-46 (2d ed. 1895).
[8]
Reid and Inbau, Truth and Deception: The Polygraph ("Lie Detector") Technique 2 (2d ed. 1977) [hereinafter cited as Reid and Inbau].
[9]
Benussi, "Die Atmungssyptome der Luege," 31 Archiv fuer die Gesamte Psychologic 244 (1914). Reprinted in English, "The Respiratory Systems in Lying." Polygraph 4(1)(March 1975): 52-76.
[10]
Reid and Inbau at 3.
[11]
Marston, "Systolic Blood Pressure Symptoms of Deception," 2 Journal of Experimental Psychology 117 (1917).
[12]
Abrams, supra note 2, at 19.
[13]
Gay, "The Search For Truth," 21 English Police Journal 284 (1948), cited in Reid and Inbau at 4, n. 9.
[14]
Larson, "The Cardio-Pneumo-Psychogram and its Use in the Study of Emotions, with Practical Applications," 5 Journal of Experimental Psychology 323 (1922). Also see Larson, Lying and its Detection (1932).
[15]
Abrams, "Polygraphy" in Scientific and Expert Evidence 765 (Imwinkelried ed. 2d ed. 1981) [hereinafter cited as Abrams].
[16]
Lykken at 31; Keeler, "A Method for Detecting Deception" 1 American Journal of Police Science 38 (1930).
[17]
Reid, "A Revised Questioning Technique in Lie Detection Tests," Journal of Criminal Law and Criminology 542-47 (1947); Reid and Arther, "Behavior Symptoms of Lie Detector Subjects," 44 Journal of Criminal Law and Criminology 104-08 (1953); Reid and Inbau at 3.
[18]
Lykken at 33; Bailey and Rothblatt, Investigation and Preparation of Criminal Cases 296 (1970) [hereinafter cited as Bailey and Rothblatt].
[19]
Bailey and Rothblatt at 303-04, citing Appellant's Brief for Leave to Appeal in People v. Lazaros (unreported, Michigan Court of Appeals, 1970) (Summary of Marcy's testimony).
[20]
Bailey and Rothblatt at 290.

[21]
Abrams at 777.
[22]
Moenssens and Inbau, Scientific Evidence in Criminal Cases 614 (2d ed. 1978) [hereinafter cited as Moenssens and Inbau]; Reid and Inbau at 277.
[23]
Reid and Inbau at 262.
[24]
Bailey and Rothblatt at 291.
[25]
Abrams at 778.
[26]
Bailey and Rothblatt at 290.
[27]
Floch, "Limitations of the Lie Detector," 40 Journal of Criminal Law and Criminology 651 (1950); Highleyman, "The Deceptive Certainty of the Lie Detector," 10 Hastings Law Journal 47 (1958); Lykken at 233.
[28]
Abrams at 779; accord, Reid and Inbau at 233-52.
[29]
Waid, Orne, et al., "Meprobate Reduces Accuracy of Physiological Detection of Deception," Science, April 3, 1981, at 71. A recently published study determined that neither valium nor the stimulate ritalin affected the accuracy of results in guilt-knowledge tests. Iacono, et al., "Effects of Diazepam and Methylphenidate on the Electrodermal Detection of Knowledge." 69 Journal of Applied Psychology 289 (1984).
[30]
Reid and Inbau at 216.
[31]
Moenssens and Inbau at 613.
[32]
Moenssens, "Polygraph Test Results Meet Standards for Admissibility as Evidence," in Legal Admissibility of the Polygraph 14 (Ansley ed. 1975).
[33]
Pemberton, "Polygraphy: Modern Rules and Videotape Technology to Promote the 'Search For Truth' in Criminal Trials," 10 Polygraph 273, 279 (1981).
[34]
Note, "The Emergence of the Polygraph at Trial," 73 Columbia Law Review 1120, 1124 (1973); Moenssens and Inbau at 605.
[35]
Inbau and Reid, Lie Detection and Criminal Interrogation 128 (3d ed. 1953).
[36]
Hearings Before a Subcommittee of the House Committee on Government Operations on the Use of Polygraphs and Similar Devices by Federal Agencies, 93d Cong. 2d Sess. 102 (1974); Inbau, "The Case Against the Polygraph," 51 American Bar Association Journal 857 (1965).
[37]
Abrams at 766; Ansley and Abrams at 32; Bailey and Rothblatt at 288; Note, supra note 34, at 1138.
[38]
U.S. v. DeBetham, 348 F.Supp. 1377 1388 (S.D. Cal. 1972).

[39]

Note, "The Polygraph and Pre-Employment Screening," 13 Houston Law Review 551, 554 (1976); Moenssens and Inbau at 605; Jones, "'Truth' When the Polygraph Operator Sits as Arbitrator," 31 Proceedings of the Annual Meeting, National Academy of Arbitrators 70, 88 (1978).

[40]

Abrams at 766.

[41]

Ansley and Abrams at 2-5.

[42]

Note, "Regulation of Polygraph Testing in the Employment Context: Suggested Statutory Control on Test Use and Examiner Competence," 15 University of California, Davis Law Review 113, 130 (1981).

[43]

States requiring licensing of polygraph examiners include: Alabama (Ala. Code tit. 34 Sexs. 25-1 to 36 (1977 & Supp. 1983); Arizona (Ariz. Rev. Stat. Ann. Secs. 32.2701-2715 (1976 & Cum. Supp. 1983); Arkansas (Ark. Stat. Ann. Secs. 71-2201 to 2225 (1979 & Supp. 1983); California (Cal. Bus. & Prof. Code Ch. 17.6 of Div. 3, Secs. 9300 to 9321 (1983); Florida (Fla. Stat. Ann. Secs. 493.561-.569 (West 1981 & Cum Supp. 1983); Georgia (Ga. Code Secs. 84-5001 to 5016 (1979 & Cum Supp. 1983); Illinois (Ill. Rev. Stat. ch. 111 Secs. 2401 to 2432 (1978 & Cum Supp. 1983); Indiana (certification) Code 25-30-2 (1984); Iowa, Public Safety 680, Ch. 2, p. 1 (private detectives); Kentucky (Ky. Rev. Stat. Secs. 329.010-.990 (1977 & Cum. Supp. 1981); Louisiana (certification) Title 37 LRS ch. 36A, 2831+; Maine (Me. Rev. Stat. Ann. tit. 32, Secs. 7151-7169 (Cum. Supp. 1983); Massachusetts, ch. 147:22-29 (private detectives); Michigan (Mich. Comp. Laws Secs. 338.1701-.1729 (1970 & Supp. 1983); Mississippi (Miss. Code Ann. Secs. 73-29-1 to -47 (1973 & Cum. Supp. 1983); Montana (Mont. Code Ann. Secs. 37-62-101 to -311 (1983); Nebraska (Neb. Rev. Stat. Secs. 81-1901 to 1936 (1981 & Cum. Supp. 1983); Nevada (Nev. Rev. Stat. Secs. 648.010-.290 (1983); New Mexico (N.M. Stat. Ann. Secs. 61-26-1 to -13 (1983); Erie County, New York, L.Law. Intro. 7 (1984); North Carolina (N.C. Gen. Stat. 74C1 to 20 Cum. Supp. 1983); North Dakota (N.D. Cent. Code Secs. 43-31-01 to (1978 & Supp. 1983); Oklahoma (Okla. Stat. tit. 59 Secs. 1451-1476 (West Cum. Supp. 1980); Oregon (Or. Rev. Stat. Secs. 703.010-.990 (1979); South Carolina (S.C. Code Secs. 40-53-10 to -250 (1976 & Supp. 1983); South Dakota (S.D. Codified Laws Ann. Secs. 23-3-35 (1984); Tennessee (Tenn. Code Ann. Sec. 62-27-101 to -124 (1982 & Supp. 1983); Texas (Tex. Rev. Civ. Stat. Ann. art. 4413 (29cc) (Vernon 1976 1976 & Supp. 1983); Utah (Utah Code Ann. Secs. 34-37-1 to -16 (1974 & Supp. 1983); Vermont (Vt. Stat. Ann. tit. 26, Secs. 2901-2910 (Supp. 1983); Virginia (Va. Code Secs. 54-916 to -922 (1978); West Virginia (W. Va. Code Secs. 21-5-5a to -5d (1983).

[44]

Several studies have indicated that the accuracy of experienced examiners (those practicing for over one year) is significantly (10 percent) better than that of inexperienced examiners (those practicing for less than six months). See Horvath and Reid, "The Reliability of Polygraph Examiner Diagnosis of Truth and Deception," 62 Journal of Criminal Law, Criminology, and Police Science 276 (1971); Hunter and Ash, "The Accuracy and Consistency of Polygraph Examiners' Diagnosis," 1 Journal of Police Science and Administration 370 (1971) (reprinted in Reid and Inbau at 389 and 395).

[45]
American Polygraph Association. List as of January 10, 1985: Academy For Scientific Investigative Training; Academy of Polygraph Science and Methodology; American Institute of Polygraph; Argenbright International Institute of Polygraph; Backster School of Lie Detection; Canadian Police College, Polygraph Training School; Carroll Institute of Polygraphy; Central Intelligence Agency; Gormac Polygraph School; Harrisburg Area Community College; International Academy of Polygraph; Keeler Polygraph Institute; Keeler Polygraph Institute of Sitka, Alaska; Las Vegas Academy of Polygraph Technology; Los Angeles Institute of Polygraph; Maryland Institute of Criminal Justice; National Academy of Lie Detection; National Polygraph Institute; New York Institute of Security and Polygraph Sciences; New York School of Lie Detection; Reid College of Detection of Deception; Rocky Mountain Security Institute; Southern School of Polygraph; Spokane Community College; Texas A & M University Polygraph School; U.S. Army Military Police School/TC; University of Houston-Downtown; Utah Academy of Forensic Polygraph; Virginia School of Polygraph; and Zonn Institute of Polygraph. Addresses available from APA upon request.

[46]
American Polygraph Association Newsletter, July-August 1982, at 26.

[47]
Dabrowski, "The Polygraph Revisited: An Argument for Admissibility," 4 Suffolk University Law Review 63, 73 (1969).

[48]
Reid and Inbau at 14.

[49]
Abrams at 783.

[50]
Abrams at 786, 790.

[51]
Reid and Inbau at 30.

[52]
Reid and Inbau at 24-28.

[53]
Abrams at 786.

[54]
Inbau and Reid, "The Lie-Detector Technique: A Reliable and Valuable Investigative Aid," 50 American Bar Association Journal 471 (1964).

[55]
Reid and Inbau at 48-49; Lykken at 32; Abrams, "A Survey of Attitudes of the Guilt Complex Technique," 6 Polygraph 123 (1977).

[56]
Abrams, supra note 2, at 76.

[57]
Lykken at 129-144.

[58]
Reid and Inbau at 55-59, 276-288; Lykken at 145-147.

[59]
Crowley, "The Truth About Polygraph," Security Management, 29, 35 December 1982, at 29, 35.

[60]
Lykken at 206-214; Harrington, "The Power of the Polygraph," Case & Comment, January-February 1983, at 3, 4.

[61]

Sevilla, "Reliability of Polygraph Examination," 14 American Jurisprudence Proof of Facts, Second Series 1, 11 n. 12; Lykken at 70, 74.

[62]

Abrams at 798-799 (citing three studies wherein consistency of evaluation ranged from 85-91 percent); Ansley and Abrams at 35 (citing six studies); Horvath and Reid, supra note 44; Hunter and Ash, supra note 44.

[63]

Lykken at 72.

[64]

Note, supra note 39, at 554.

[65]

Horvath and Reid, supra note 44.

[66]

Truth and Science, an index published by the American Polygraph Association in 1977, lists over 1700 articles on the topic.

[67]

A sample of some of the more widely reported studies and conclusions drawn as to accuracy includes: Abrams, "Polygraph Validity and Reliability, A Review," 18 Journal of Forensic Science 313 (11973) (83%); Barland and Raskin, "An Experimental Study of Field Techniques in 'Lie Detection'," 1 Polygraph 22 (1972) (81%); Barland and Raskin, "Validity and Reliability of Polygraph Examinations of Criminal Suspects," Report No. 76-1, LEAA Contract 75-NI-99-0001, U.S. Department of Justice (1976) (86%); Bersh, "A Validation Study of Polygraph Examiner Judgments," 53 Journal of Applied Psychology 399 (1969) (92%); Edwards, "A Survey: Reliability of Polygraph Examinations Conducted by Virginia Polygraph Examiners," 10 Polygraph 229 (1981) (98%); Horvath and Reid, supra note 44 (88%); Hunter and Ash, supra note 44 (86%); Slowic and Buckley, "Relative Accuracy of Polygraph Examiner Diagnosis of Respiration, Blood Pressure, and GSR Recordings," 3 Journal of Police Science and Administration 305 (1975) (87%); Staff of the Senate Subcomm. on Constitutional Rights of the Judiciary, 93d Cong., 2d Sess., Privacy, Polygraphs and Employment 6 (Comm. Print 1974) (87%).

[68]

Note, supra 39, at 554 ("At present there is only the assumption that the polygraph works"); Harrington, supra note 60, at 4 ("There have been relatively few scientific studies to determine accuracy and those that have been conducted resulted in alarming conclusions.")

[69]

Jones, supra note 39, at 85-88 ("But the commercial polygraph proponents persisted, managing to publish self-serving 'studies' in respectable criminology journals, the constant theme of which has been the near infallibility of this 'complete diagnostic technique' for the 'detection of deception' ... [s]ome of them seem to churn their files continuously for such reassuring statistics.")

[70]

Lykken at 63-81.

[71]

Abrams at 794 ("The claims of accuracy in the field must be evaluated with caution because of the many anecdotal reports that are not sufficiently controlled to be viewed as valid.")

[72]

Abrams at 798; Ansley and Abrams at 34; Bailey and Rothblatt at 300; Moenssens and Inbau at 616; Reid and Inbau at 304.

[73]
Lykken at 67.
[74]
Hearings on Polygraph Control and Civil Liberties Protection Act Before the Subcomm. on the Constitution of the Senate Comm. on the Judiciary, 95th Cong., 1st & 2d Sess. 149 (statement of the American Polygraph Association.
[75]
Coleman, "Safeguarding the Workplace From Theft, Fraud, and Other Breaches of Security," A.B.A. National Institute on Personal Rights in the Workplace 17 (1981); Ferguson, The Polygraph in Private Industry 6 (1966); Hindle, "The Use of the Polygraph in Private Industry," 3 Polygraph Review 7 (1977).
[76]
Business Week, February 6, 1978, at 101; Siatt, "Screening Survey: What Companies Are Doing About Employee Screening and Testing," Security World, April 1982, at 29, 32.
[77]
Business Week, January 13, 1973 at 88 (15%); Note, "Lie Detectors in Private Employment: A Proposal for Balancing Interests," 13 George Washington Law Review 936 (1965) (25%); Note, "The Working Man's Nemesis--The Polygraph," 6 North Carolina Central Law Journal 94, 101 (1974) (30%); Stephens, "Polygraph Preemployment Screening," Business Studies, Spring 1969, at 33.
[78]
Barland, "A Survey of the Effect of the Polygraph in Screening Utah Job Applicants," 6 Polygraph 318 (1977); Lykken at 187.
[79]
Inbau and Reid, supra note 54, at 473.
[80]
Comm. Print, supra note 67, at 4; Hermann, "Privacy, the Prospective Employee, and Employment Testing: The Need to Restrict Polygraph and Personality Testing," 47 Washington Law Review 73, 85 (1971); Note, supra, note 39, at 555; N.Y. Times, February 13, 1982, at F-4 (quoting Dr. David Raskin).
[81]
Weir and Atwood, "Applicant Screening Polygraph Examinations," 10 Polygraph 129, 131 (1981).
[82]
Ferguson, supra note 75, at 282; Lykken at 187.
[83]
Hindle, supra note 75, at 8; Lykken at 172.
[84]
American Polygraph Association Newsletter, November-December 1982, at 5; Washington Post, November 18, 1982, at 1, 4. This proposal was subsequently blocked by Congress, and led to the introduction of H.R. 39 which, if passed, would ban preemployment and periodic polygraph testing of applicants and employees of federal agencies other than the Central Intelligence Agency and the National Security Agency. Defense Department polygraph examinations are controlled under DoD Directive 5210.48, December 1984 and DoD Reg. 5210.48-R, January 1985.
[85]
Crowley, supra note 59, at 30; Ferguson, supra note 75, at 296; Reid and Inbau at 348; Weir and Atwood, supra note 81, at 131. It was recently

announced that the British Government would begin using polygraph testing "in the security and intelligence services as a additional barrier to penetration by the KGB in spite of opposition by the Civil Service unions." Hennessy, "Security Services Get Lie Detectors," The Times (London), November 16, 1983.

[86]

Ferguson, supra note 75, at 283; Hindle, supra note 75, at 8.

[87]

The author has been consulted in several such cases, where the polygraph test is evidence of the employer's investigation into the allegations, and may resolve credibility questions.

[88]

Coleman, supra note 75, at 19; N.Y. Times, supra note 80, at F-4; Note, supra 42, at 125; Weir and Atwood, supra note 81, at 131.

[89]

Coleman, supra note 75, at 1, 2.

[90]

American Polygraph Association Newsletter, supra note 84 at 21 ($15 billion in 1982); Business Week January 13, 1973, at 88 ($3 billion in 1973); Lykken at 185 (attributing the figure of $9.2 billion in 1981 to the U.S. Department of Commerce); Lykken, "Guilty-Knowledge Test," Psychology Today, March 1975 at 60 ($6 billion in 1974); Nation's Business June 1975, at 23 ($4 billion in 1974); Reid and Inbau at 302 (attributing the figure of $2.1 billion in 1974 to the U.S. Department of Commerce). Substantially higher estimates ($30 to $50 billion annually) have been attributed to Barefoot of the American Polygraph Assocaition. Abrams at 762; Lykken at 185. One 1978 study of internal theft concluded that losses amounted to $315 million strictly in chain drug stores. "Report on Polygraph Usage in Chain Drug Stores," 7 Polygraph 49 (1978).

[91]

Note, "The Working Man's Nemesis--The Polygraph," supra note 77, at 100.

[92]

American Polygraph Association Newsletter, supra note 84, at 21 (attributing the estimate to the Fireman's Insurance Company of New York City); Hearings on Privacy Issues in Private Sector Workplace Before Labor Department, January 29, 1980, at F-1 (statement on behalf of the American Polygraph Association).

[93]

Coleman, supra note 75, at 16, citing N.Y. Times, June 16, 1963, at 1.

[94]

American Polygraph Association Newsletter, supra note 84, at 22 (attributing the estimate to the Stores Protective Association in Los Angeles).

[95]

Ferguson, supra note 75, at 6; Hindle, supra note 75, at 9; Nation's Business, August 1975, at 16.

[96]

Pre-employment examinations generally cost $45 to $100, while specific examinations may cost up to $500. See Crowley, supra note 59, at 31; Harrington, supra note 60, at 8; Lykken at 184.

[97]

Belt and Holden, "Polygraph Usage Among Major United States Corporations," 57 Personnel Journal 80, 85 (1978).

[98]

Crowley, supra note 59, at 30 (500,000 to one million); Harrington, supra note 60, at 3 (one million); Hearings, supra note 36, at 10 (500,000 in 1968); Lykken at 2 (calling one million "the most conservative estimate"); N.Y. Times, supra note 80, at F-4 (500,000).

[99]

Lykken at 3; N.Y. Times, supra note 80, at F-4; Wall Street Journal, June 16, 1981, at 1.

[100]

Belt and Holden, supra note 97 at 82-85. Within chain drug stores, the breakdown of examinations by their application was generally consistent. "Report on Polygraph Usage in Chain Drug Stores," supra note 90, at 49-51.

[101]

Hindle, supra, note 75, at 10; Nation's Business, supra note 95, at 16 (over 80 percent of survey respondents objected to outlawing polygraphic screening); "Report on Polygraph Usage in Chain Drug Stores," supra note 90, at 52 (61 percent of the surveyed experienced decreases in theft after initiation of polygraph examinations); Siatt, supra note 76, at 33 (90 percent of survey respondents believe polygraph testing is very effective or somewhat effective; 41 percent intend to increase their use of polygraph testing).

[102]

Abrams at 766 (4300); Crowley, supra note 59, at 30 (6000); Lykken at 1 (4000-7000).

[103]

Warren and Brandeis, "The Right to Privacy," 4 Harvard Law Review 193 (1890).

[104]

Griswold v. Connecticut, 381 U.S. 479 (1965).

[105]

Comment, "Privacy: The Polygraph in Employment," 30 Arkansas Law Review 35, 42 (1976).

[106]

Generally advocates of polygraph testing (polygraph examiners and retail trade associations being the most outspoken) support licensing legislation, while opponents (labor unions and civil liberties groups) support legislation banning the use of the polygraph.

[107]

A study conducted pursuant to the Privacy Act of 1974 recommended "That Federal law be enacted or amended to forbid an employer from using the polygraph or other truth-verification equipment to gather information from an applicant or employee." Privacy Protection Study Commission: Personal Privacy in an Information Society, 239 (1977).

[108]

H.R. 2403, 98th Cong., 1st Sess. (1983). This bill would make it unlawful for an employer to permit, require, or request an applicant or employee to take a polygraph examination, and provides for a fine and/or imprisonment, as well as a civil action for an individual aggrieved by such action.

[109]

H.R. 4106, 98th Cong., 1st Ses. (1983). This bill would prohibit inquiry in polygraph examinations into matters which occurred more than seven years before the exam, or into the subject's opinions relating to

religion, race, politics, labor organizations, or, unless related to job performance, sexual behavior.
[110]

California, Michigan, Montana, Nebraska, Oregon, and West Virginia. See footnotes 43 and 115.
[111]

Colorado, Kansas, Louisiana, Missouri, New Hampshire, New York, Ohio, Wisconsin, and Wyoming. See footnote 43.
[112]

See supra note 43.
[113]

Va. Code SDec. 40.1-51.4:3 (1981). Some states accomplish the same objective through regulations which apply to licensed examiners.
[114]

Wis. Stat. Sec. 111.37 (1982).
[115]

States prohibiting required polygraph examinations include: Alaska (Alaska Stat. Sec. 23.10.037 (1962); California (Cal. Lab. Code Sec. 432.2 (West 1971 & Supp. 1983); Connecticut (Conn. Gen. Stat. Sec. 31-51g (1977 & Supp. 1983); Delaware (Del. Code Ann. tit. 19, Sec. 704 (1979); District of Columbia (D.C. Code Ann. Sec. 3-801 to 804 (1981); Hawaii (Hawaii Rev. Stat. Secs. 378-21 to -22 (1976); Idaho (Idaho Code Secs. 44-903 to -904 (1977); Iowa (House file 37, L. 1983, effective 7/1/83); Maine (Me. Rev. Stat. Ann. tit. 32, Sec. 7166 (Cum. Supp. 1983); Maryland (Md. Ann. Code art. 100 Sec. 96 (1979 & Cum. Supp. 1983); Michigan (Mich. Comp. Laws Ann. Secs. 37.201 to 208 (1983); Minnesota (Minn. Stat. 181.75 to .76 (1976); Montana (Mont. Code Ann. Sec. 39-2-3034 (Cum. Supp. 1983); Nebraska (Neb. Rev. Stat. Sec. 81-1932 (1981); New Jersey (N.J. Stat. Ann. Sec. 2C:40A-1 (West 1982); Oregon (Or. Rev. Stat. Secs. 659.225 to -277 (1981); Pennsylvania (18 Pa. Cons. Stat. Ann. Sec. 7321 (Purdon 1973); Rhode Island (R.I. Gen Laws Secs. 28-6.1-1 to -2 (1979); Washington (Wash. Rev. Code Secs. 49.44.120 to .130 (1983); West Virginia (W. Va. Code Sec. 21-5-5b (1983).
[116]

Alaska, Connecticut, Delaware, District of Columbia (exceptionally strict: "no employer or prospective employer shall administer, accept, or use the results of any lie detector test"), Massachusetts, Michigan, Minnesota, New Jersey and West Virginia. Other states appearing in note 115 merely prohibit required examinations.
[117]

Hawaii, Michigan, Minnesota, New Jersey, and Oregon.
[118]

Maryland.
[119]

Alaska and Hawaii.
[120]

U.S.C. Secs. 151-168.
[121]

Medicenter, Mid-South Hosp., 221 NLRB 670, 675, 90 LRRM 1576 (1975). See also Laney & Duke Storage Warehouse Co., Inc., 151 NLRB 248 (1965), enf'd. in pertinent part, 369 F.2d 859 (5th Cir. 1966). Where a union had acquiesced to polygraph testing, the Board declined to make any assertion with regard to an obligation to bargain over administration of polygraph examinations, holding that there had been no unilateral change in working

conditions. Gulf Coast Automotive Warehouse, Inc. 256 NLRB No. 84, 107 LRRM 1280 (1981).

[122]

St. Anthony's Center, 227 NLRB 1777, 1784, 95 LRRM 1099 (1977); Solo Serve Co., 219 NLRB 395, 398, 90 LRRM 1079 (1975); Coleman, supra note 75, at 25.

[123]

Falstaff Beer Distributors, 152 NLRB 1570, 1575, 59 LRRM 1442 (1965).

[124]

Glazer's Drug Co., 152 NLRB 467, 59 LRRM 157 (1965); Restaurant Management Services, Inc., 266 NLRB No. 144, 113 LRRM 1044 (1983).

[125]

Mariano's Restaurant, 230 NLRB No. 172 (1977); National Food Service, Inc., 196 NLRB 295, 296, 80 LRRM 1017 (1972). Even a known union activist may be required to submit to a test, as long as the purpose of the test is not violative of Section 8(a)(1). Fotomat Corp., 207 NLRB 461, 84 LRRM 1487 (1973), enforced, 497 F.2d 901 (6th Cir. 1974). When a union activist was improperly required to submit to a polygraph exam, the misconduct thereby revealed may be grounds for denying reinstatement. NLRB v. Fixtures Manufacturing Corp., 669 F.2d 547 (8th Cir. 1982). One recent decision, the full implications of which have yet to be felt, held that the polygraph testing itself was not unlawful, buit that the employer's refusal to accede to an employee's request that a union representative be present during all phases of the polygraph examination was a violation. Consolidated Casinos Corp., 266 NLRB No. 172, 113 LRRM 1082 (1983).

[126]

American Oil Co., 189 NLRB 3, 4, 76 LRRM 1506 (1971); Shoppers Drug Mart, Inc., 226 NLRB 901, 94 LRRM 1223 (1976).

[127]

Dennehy, "The Status of Lie Detector Tests in Labor Arbitration," 31 Labor Law Journal 430, 431 (1980); Miller, "Worker Privacy and Collective Bargaining," 33 Labor Law Journal 154, 160 (1982); Jones, supra note 35, at 84-103.

[128]

Kisco Co., Inc., 75 LA 574 (1980) (includes an extensive review of polygraph in arbitration).

[129]

Grocer's Supply Co., 59 LA 1280 (1972).

[130]

Holytex Carpet Mills, Inc., 79-1 ARB 8181 (1979).

[131]

Golden Pride, Inc., 68 LA 1232 (1977). Also, where the examiner was not found to be a "persuasive witness." Brinks, Inc., 78-1 ARB 82335 (1978).

[132]

An employee was told he would not be discharged for damage he allegedly caused if a polygraph test cleared him of the misconduct. Southern Biscuit Co., 74-2 ARB 8386 (1974).

[133]

Bowman Transportation, Inc., 64 LA 453 (1975). See also Nettle Creek Industries, 70 LA 100 (1978).

[134]

American Maize-Products Co., 71-1 ARB 8265 (1971); Koppers Co., Inc., 68-1 ARB 8084 (1968); City of Benton Harbor, 78-2 ARB 8337 (1978).

[135]

See B.F. Goodrich, 61-2 ARB 8497 (1961); Mount Sinai Hospital Medical Center, 73 LA 297 (1979) (includes a review of relevant arbitral authority).

[136]

Dennehy, supra note 127, at 437; Illinois Bell Telephone Co., 39 LA 470 (1962); Braniff Airways, Inc., 74 LA 304 (1979); Ralston Purina Co., 75 LA 313 (1980).

[137]

Where an employee's application for employment had contained a polygraph test consent form, the arbitrator held the consent form had expired at the end of the employee's probationary period. Buy-Low, Inc., 77 LA 380 (1981). At least one commentator has asserted that "The impossibility of a valid consent to the polygraph test is the best argument for the client who has signed one of these forms." Note, supra note 39, at 559.

[138]

Smitty's Super Value, Inc., 81-1 ARB 8209 (1981); see also Miller, supra note 121, at 160.

[139]

Bowman Transportation, Inc., 73-2 ARB 8336 (1973) (Whyte, Arb.).

[140]

Bowman Transportation, Inc., 61 LA 549 (1973) (Laughlin, Arb.). See also Bowman Transportation, Inc., 64 LA 453 (1975) (Hon, Arb.); Allen Industries, 26 LA 363 (1956); Warwick Electronics, 46 LA 95 (1966).

[141]

McCain v. Sheridan, 160 Cal. App.2d 174, 324 P.2d 923 (1958).

[142]

Roux v. New Orleans Police Dept., 223 So.2d 905 (La. App., 1969), writ refused, 254 La. 815, 227 So.2d 148, cert. denied, 397 U.S. 1008 (1970). See also Fichera v. State Personnel Board, 217 Cal. App.2d 613 (1963).

[143]

Dolan v. Kelly, 76 Misc. 2d 151, 348 NYS2d 478 (1973).

[144]

State Dept. of Highway Safety and Motor Vehicles v. Zimmer, 398 So.2d 463 (Fla. App. 1981). See also Frazee v. Civil Service Board, 170 Cal. App.2d 333, 338 P.2d 943 (1959). See also Szmaciarz v. State Personnel Board, 79 Cal. App.3d 904 (1978) (correctional officer).

[145]

Eshelman v. Blubaum, 114 Arz. 376, 560 P.2d 1283 (1977); Piotrowski v. State Police Merit Board, 85 Ill. App.3d 369, 406 NW2d 863 (1980); Roux v. New Orleans Police Dept., supra note 142; Sorbello v. Maplewood, 610 SW2d 375 (Mo. App. 1980). One court rejected an officer's religion-based refusal as an "insincere pretext." Ainsworth v. Cronvich, No. 77-1117 (E.D. La., October 22, 1979).

[146]

See Seattle Police Officers Guild v. City of Seattle, 80 Wash.2d 307, 494 P.2d 485 (1972).

[147]

Myers v. Cook Co. Police and Corrections Merit Board, 67 Ill.App.3d 223, 384 NE2d 805 (1978); Williams v. Police Board of Chicago, 8 Ill.App. 3d 345, 290 NE2d 669 (1972).

[148]

Molino v. Board of Public Safety, 154 Conn. 368, 285 A2d 805 (1966).

[149]
Engel v. Woodbridge, 124 N.J. Super. 307, 306 A2d 485 (1973). See also Farmer v. City of Ft. Lauderdale, 427 S.2d 197 (Fla. 1983), cert. denied, No. 82-1814 (October 3, 1983); Kaske v. City of Rockford, 450 N.E.2d 314 (Ill. 1983), cert. denied, No. 83-22 (November 5, 1983).
[150]
See also Stape v. Civil Service Comm., 404 Pa. 354, 172 A2d 161 (1961) (refusal did not constitute "just cause" for discharge); Jackson v. Wilson, 152 Ga. App. 250, 262 SE2d 547 (1979) (officer indicated willingness to be tested, but refused to sign consent form).
[151]
Brown v. Gardner, Fire Chief, No. 78-334-N (E.D. Va., July 18, 1978) (order denying temporary restraining order).
[152]
Gulden v. McCorkle, 680 F.2d 1070, (5th Cir. 1982), cert. denied, 103 S.Ct. 1194 (1983).
[153]
McGinigle v. Greenburgh, 48 NY2d 949, 425 NYS2d 61, 401 NE2d 184 (1979).
[154]
Re Fairbanks, 287 NW2d 579 (Iowa 1980).
[155]
Talent v. Abilene, 508 SW2d 592 (Tex. 1974).
[156]
Toomey, "Compelled Lie Detector Tests and Public Employees: What Happened to the Fifth Amendment?," 21 South Texas Law Journal 375 (1980).
[157]
Garrity v. New Jersey, 385 U.S. 493 (1967).
[158]
Spevack v. Klein, 385 U.S. 511 (1967).
[159]
Gardner v. Broderick, 392 U.S. 273 (1968).
[160]
Uniformed Sanitation Men Ass'n., Inc. v. Commissioner of Sanitation, 392 U.S. 280 (1968).
[161]
Lefkowitz v. Cunningham, 431 U.S. 801 (1977).
[162]
Fichera v. State Personal Board, 217 Cal. App.2d 613, 32 Cal. Rptr. 159 (1963); Coursey v. Board of Fire & Police Commissioners, 90 Ill. App.2d 309, 234 NE2d 339 (1967); Roux v. New Orleans Police Department, supra note 142; Richardson v. City of Pasadena, 500 SW2d 175 (Tex. Civ. App. 1973) rev'd on other grounds, 513 SW2d 1 (Tex. 1974); Seattle Police Officers Guild v. City of Seattle, 80 Wash.2d 307, 494 P.2d 485 (1972).
[163]
Coursey, supra note 162, at 344.
[164]
Richardson, supra note 162, at 177.
[165]
In Seattle Police Officers Guide, supra note 162 at 493, the court set forth the following elements of the test of reasonableness:
(1) it is a direct order to submit to a polygraph;
(2) it asserts the questions to be asked will be specifically, directly and narrowly related to the employee's official duties;

(3) it guarantees that the employee will not be required to waive any immunity from criminal prosecution and;
(4) it advises the subject that information gained by the results of the test cannot be used against him in any criminal proceeding.

[166]

Roux, supra note 162; Frey v. Dept. of Police, 288 So.2d 410 (La. App. 1973).

[167]

Overstreet v. City of Roanoke, No. 80-294, slip op. at 4 (W.D. Va. July 24, 1981). The court stated that, at most, the only property interest is a legitimate claim to access to and compliance with grievance procedures for dismissal proceedings pursuant to a city code (citing Graham v. Haner, 432 F.Supp. 1083, 1088, (W.D. Va. 1976). Thus, the 14th Amendment protection merely assures the employee that he has access to grievance procedures which are followed and does not assure a due process right to retain the job.

[168]

Hepburn v. Alioto, No. C-71-2309 (N.D. Cal. Nov. 21, 1974) (unpublished). See also Civil Service Association, Local 400 v. Civil Service Commission, 188 Cal. Rptr. 806 (1983). More frequent have been challenges based on alleged violations of Title VII of the Civil Rights Act of 1964, as amended. 42 USC Sec.2000 et seq. See Brown v. State of Tennessee, 693 F.2d 600 (6th cir. 1982); Ramirez v. City of Omaha, 678 F.2d 751 (8th Cir. 1982); United States v. City of Miami, 614 F.2d 1322 (5th Cir. 1980).

[169]

Grabinger v. Conlisk, 320 F.Supp. 1213 (N.D. Ill. 1970).

[170]

Hermann, "Privacy, the Prospective Employee, and Employment Testing: The Need to Restrict Polygraph and Personality Testing," 47 Washington Law Review 73, 127 (1971).

[171]

Comment, supra note 105 at 44. He also asserts that the invasion of privacy argument may be combined with the self-incrimination argument, relying upon dictum in Schmerber v. California, 384 U.S. 757, 764 (1966), where the Court noted that "lie detector tests ... may [elicit] responses which are essentially testimonial [and that is sufficient to] evoke the spirit and history of the Fifth Amendment."

[172]

Fichera, supra note 105, at 614.

[173]

Thorne v. City of El Segundo, No. 80-5618 (9th Cir. Dec. 7, 1983).

* * * * * *

EFFECTS OF DIFFERING NUMERICAL CHART EVALUATION SYSTEMS ON POLYGRAPH EXAMINATION RESULTS

By

Richard S. Weaver

It is generally assumed that a large number of variables are capable of affecting the accuracy and outcomes of field polygraph examinations. The subject being tested (sex, age, level of socialization, education, psychological/physiological condition), the examiner (education, experience, ability), testing conditions, type of case, instrumentation, and techniques employed are but a few of the considerations which must be given attention when attempting to evaluate the validity/reliability of a given polygraph examination.

The practice of utilizing numerical scoring techniques to evaluate polygraph charts has gained wide acceptance throughout the polygraph community. During an earlier article (Weaver, 1980) numerical chart evaluation systems advocated and taught by the Backster School of Lie Detection, the United States Army Military Police School (USAMPS) and the University of Utah - Detection of Deception Workshops were carefully summarized and contrasted. Despite many similarities, a number of important differences between each system were noted, including differences in comparing relevant and control test question responses, interpretation criteria, and methods of assigning and summing numerical values. Additionally, provisions for establishing numerical "cut-offs" in order to determine the truthful (NDI), inconclusive, and deceptive (DI) ranges were found to differ.

One earlier study (Koll, 1979) addressed differing methods of comparing relevant and control test question responses in a zone comparison technique structure, and the effect that these varying methods had on numerical scores/final outcomes reached.

To further explore differences of the Backster, USAMPS, and Utah numerical scoring systems, a study was undertaken at the Wisconsin State Crime Laboratory during 1981. The purpose of this study was to independently evaluate random sets of polygraph charts collected during specific incident polgyraph examinations, applying the rules and guidelines of the Backster, USAMPS, and Utah systems. The final numerical scores computed and the final decisions (outcomes) rendered were then compared.

Richard S. Weaver is a polygraph examiner for the United States Department of Defense at Ft. Meade, Maryland and is also Chairman of the APA Committee on Standards and Ethics.

Requests for reprints to the author at 10615 Whiterock Court, Laurel, Maryland 20707.

Acknowledgements to Marcia Garwood, Ph.D. for her invaluable assistance in organizing and analyzing the data collected.

METHODS

Fifteen (15) specific incident polygraph examinations were randomly selected from files of the Wisconsin State Crime Laboratory. All of the examinations were conducted by the author during 1979; all of the subjects tested were either suspects or defendants charged with committing serious, felony crimes. The Utah testing technique structure was used during all of the examinations; however, only two relevant questions (position #5 & #7) and two control questions (position #4 & #6) were included during each examination. No questions were added beyond test question position #8. Three polygraph charts were collected during each examination.

The author independently evaluated each set of polygraph charts, carefully applying the respective criteria and rules for the Backster, USAMPS, and Utah systems.

RESULTS

Table 1 lists the number of deceptive, nondeceptive, and inconclusive decisions obtained with each scoring system. Differences in decisions with the three systems involved changing a DI or NDI decision to inconclusive. Most of the differences in decisions involved an inconclusive Backster decision and a NDI Utah and USAMPS decision. Utah and USAMPS agreed in 14 of the 15 cases. Cochran's test (Hays, 1963) was used to determine if the probability of making a DI/NDI decision versus making an inconclusive decision differed for the three scoring systems. The significant effect ($Q_2 = 8.40$, $p < .025$) demonstrated that fewer DI/NDI decisions and more inconclusive decisions were made with the Backster System than with the USAMPS and Utah systems.

	TECHNIQUE		
	BACKSTER	USAMPS	UTAH
DI	5	6	6
NDI	1	5	4
INC	9	4	5

Table 1.
Number of Cases (Random Sample of 15 from Total N = 93) Classified Deceptive, Nondeceptive, or Inconclusive By Each Scoring System.

The numerical field scores and the differences between a subject's numerical field score and the value needed to make a decision also were analyzed. Both of these dependent measures were analyzed in a 3 (group) x 3 (scoring system) repeated measures analysis of variance. Subjects were divided into the three groups (DI, NDI, and inconclusive) based on the decision made with the USAMPS system. The Greenhouse and Geisser procedure (Winer, 1962) was used to correct the degrees of freedom. Tables 2, 3, and 4 list the means and standard deviations for the two dependent measures for each scoring system.

		TECHNIQUE		
		BACKSTER	USAMPS	UTAH
Scores	$\overline{X}$	-15.33	-9.50	-9.67
Difference Between Scores and Criteria	DI $\overline{X}$	2.33	3.50	3.67
	SD	2.50	2.43	1.03

Table 2.
Mean and Standard Deviation for Backster, USAMPS, and Utah Numerical Scores, and Difference Between Scores and Deception Criteria (Using Cases Classified DI According to the USAMPS Technique).

		TECHNIQUE		
		BACKSTER	USAMPS	UTAH
Scores	$\overline{X}$	+7.80	+11.00	+8.60
Difference Between Scores and Criteria	NDI $\overline{X}$	-5.20	+ 5.00	+2.60
	SD	4.38	3.54	2.30

Table 3.
Mean and Standard Deviation for Backster, USAMPS, and Utah Numerical Scores, and Difference Between Scores and NDI Criteria (Using Cases Classified as NDI According to the USAMPS Technique).

		TECHNIQUE		
		BACKSTER	USAMPS	UTAH
Scores	$\overline{X}$	-.75	1.50	0.00
	SD	3.10	4.51	3.46

Table 4.
Mean and Standard Deviation for Backster, USAMPS, and Utah Numerical Scores for Cases Classified Inconclusive by the USAMPS Methods.

For the DI group, the numerical scores were significantly more negative with the Backster system than with the USAMPS and the Utah systems. There were significant differences between the numerical scores obtained with the three systems for the NDI and inconclusive groups. Significant effects were obtained for group ($F_{2,12} = 77.99$, $p < .01$), scoring system ($F_{1,12} = 22.07$, $p < .01$), and group X scoring system ($F_{2,12} = 3.98$, $p < .05$) and comparisons among means were made with the Tukey HSD procedure (HSD = 3.68).

Results were different when the difference between a subject's numerical field score and the value needed for a decision was analyzed. The Backster scores were further from the value needed to make a decision than either the USAMPS and Utah scores for both the NDI and inconclusive groups. The three systems were not significantly different for the DI group. Significant effects were obtained for group ($F_{2,12} = 18.63$, $p < .01$), scoring system ($F_{1,12} = 58.18$, $p < .01$), and group X scoring system ($F_{2,12} = 12.36$, $p < .01$), and comparisons among means were made with the Tukey HSD (HSD = 3.68).

The USAMPS and Utah scoring systems were not significantly different in either type of decision, numerical field score, or the difference between numerical field score and the value needed to reach a decision. However, the Backster system did differ from both the USAMPS and Utah systems.

For subjects classified DI by USAMPS, Backster scores were significantly more negative. This occurs because the Backster system generally evaluates the response of a relevant question against the weakest control unlike USAMPS or Utah. However, since the Backster system has a high criterion for a deceptive or nondeceptive decision (13 versus 6), the higher criterion compensates for the more negative scores. When the difference between the numerical score and the value needed to make a decision was analyzed, there was no difference between the Backster, USAMPS, and Utah systems for the DI group.

The opposite results were obtained with the NDI and inconclusive groups. Backster numerical scores were not significantly different from USAMPS or Utah scores for these groups. However, the Backster system did differ in the difference between numerical score and the value needed to make a decision. The Backster scores were further from the value needed to make a decision than both USAMPS and Utah scores for both the NDI and inconclusive groups. These results are due to the higher value needed to make a decision in the Backster system.

The sample is small; however, the results support predictions about the expected outcome with the three scoring systems. The Backster scoring system produced a similar number of DI decisions, more inconclusive decisions, and fewer NDI decisions than either USAMPS or Utah.

RECENT CHANGES IN BACKSTER SYSTEM

During late 1983 and early 1984, Cleve Backster began incorporating changes to the Backster system, partially in response to criticism received regarding the complexity of rules to be followed and the unrealistic numerical cutoff values required (especially with truthful subjects) in order to reach a conclusive determination.

In order to simplify chart analysis, Backster now lists 9 separate primary chart analysis rules and 4 secondary rules to be followed by examiners. Although an additional 3 upgrading rules and 4 "tracing oddities" are listed, major emphasis is focused on the 13 primary and secondary rules during the Backster School of Lie Detection course of instruction.

The criteria and rules for determining presence of or lack of reaction (as well as indications of relief) have also been reduced and simplified.

More importantly, however, are the changes made in computing the numerical "cut off") values to define the truthful, inconclusive, and deceptive range. Motivated by a realization that a truthful as later verified subject will not physiologically react with the same degree of magnitude or duration to control test questions as the deceptive as later verified subject will physiologically react to relevant test questions, Backster now has lowered the numerical score required to reach a truthful result. Current methods involved in computing numerical cut-offs with the Backster system can be summaried as follows:

(1) The entire range of numerical possibilities (excluding any upgrading from +/- 2 to +/- 3) is determined. This is done by first multiplying the number of relevant test questions asked during each chart by the total number of polygraph charts collected. This number is then multiplied by 6 (representing the maximum +/- score that could result from evaluating each of the three physiological tracings at each relevant test question position). The number computed now represents the maximum +/- total numerical score that could be produced. This number must then be multiplied by 2 to determine the entire numerical range of scores.

Example:
2 relevant test questions
x 3 polygraph charts
6 relevant test question positions

6 relevant test questions procedures
x -/+ 6 possible numerical score at each position
+/- 36 possible numerical examination total

+/- 36
x 2
72

(2) The numerical range computed is then divided by 3 in order to establish 3 evenly distributed segments within the range. The number will represent the total number of possible scores within the truthful, inconclusive, and deceptive segments.

Example: Range = 72

72 divided by 3 = 24 (Total number of scores within the truthful, inconclusive, and deceptive segments of the range)

+36 thru +13 (truthful segment)	+12 thru -12 (inconclusive segment)	-13 thru -36 (deceptive segment)

(3) Truthful and deceptive cut-off points are represented by the lowest numerical value within each respective segment (in the previous mentioned example +/- 13 would be the numerical cut-off points). This cut-off represents the minimum numerical value required in order to render a conclusive determination.

However, since the ability for a truthful as later verified subject to react strongly and consistently to control test questions may be less than the ability of a deceptive as later verified subject to react strongly and consistently to relevant test questions, a 50% reduction in the numerical cut-off point required to reach a truthful determination is then computed.

This is accomplished by taking the upper limit of the inconclusive segment (on the + side of zero) and dividing by 2. This number computed will now represent the new upper limit of the inconclusive range. The very next number will thus represent the adjusted numerical cut-off required to reach a truthful determination.

Example: Range = 72

Unadjusted segments

+36 thru +13 (truthful segment)	+12 thru -12 (inconclusive segment)	-13 thru -36 (deceptive segment)

upper limit of the inconclusive segment (+ side of zero) = +12

+12 divided by 2 = +6 (adjusted upper limit of the inconclusive segment)

+6 + 1 = +7 (adjusted numerical cut-off required to reach a truthful determination)

Adjusted segments

+36 thru +7 (truthful segment)	+6 thru -12 (inconclusive segment)	-13 thru -36 (deceptive segment)

The following tables illustrate both the old and new even distribution numerical cut-offs according to the Backster System:

(OLD)

BACKSTER ZONE COMPARISON TEST VARIATION ("EVEN DISTRIBUTION NUMERICAL CUTOFFS")

"YOU" PHASE TEST WITH TWO RELEVANT QUESTIONS (Spot II & III used)

ONE CHART (Projection)	(+18)	+12 TO +5 TRUTH	+4 TO -4 INDEFINITE	-5 TO -12 DECEPTION	(-18)	(SPAN = 24)
TWO CHARTS	(+36)	+24 TO +9 TRUTH	+8 TO -8 INDEFINITE	-9 TO -24 DECEPTION	(-36)	(SPAN = 48)
THREE CHARTS	(+54)	+36 TO +13 TRUTH	+12 TO -12 INDEFINITE	-13 TO -36 DECEPTION	(-54)	(SPAN = 72)
FOUR CHARTS	(+72)	+48 TO +17 TRUTH	+16 TO -16 INDEFINITE	-17 TO -48 DECEPTION	(-72)	(SPAN = 96)

"YOU" PHASE TEST WITH THREE RELEVANT QUESTIONS (Spot II, III & IV used)

ONE CHART (Projection)	(+27)	+18 TO +7 TRUTH	+6 TO -6 INDEFINITE	-7 TO -18 DECEPTION	(-27)	(SPAN = 36)
TWO CHARTS	(+54)	+36 TO +13 TRUTH	+12 TO -12 INDEFINITE	-13 TO -36 DECEPTION	(-54)	(SPAN = 72)
THREE CHARTS	(+81)	+54 TO +19 TRUTH	+18 TO -18 INDEFINITE	-19 TO -54 DECEPTION	(-81)	(SPAN = 108)
FOUR CHARTS	(+108)	+72 TO +25 TRUTH	+24 TO -24 INDEFINITE	-25 TO -72 DECEPTION	(-108)	(SPAN = 144)

[50% ⓖINDEFINITE REDUCTION] (NEW

(December 15,1983 Revision)

BACKSTER ZONE COMPARISON TEST VARIATIONS

("ADJUSTED DISTRIBUTION NUMERICAL CUTOFFS")

"YOU" PHASE TEST WITH TWO RELEVANT QUESTIONS (Spot II & III used)						
ONE CHART (Projection)	(+18)	+12 TO +3 TRUTH	+2 TO -4 INDEFINITE	-5 TO -12 DECEPTION	(-18)	(SPAN = 24)
TWO CHARTS	(+36)	+24 TO +5 TRUTH	+4 TO -8 INDEFINITE	-9 TO -24 DECEPTION	(-36)	(SPAN = 48)
THREE CHARTS	(+54)	+36 TO +7 TRUTH	+6 TO -12 INDEFINITE	-13 TO -36 DECEPTION	(-54)	(SPAN = 72)
FOUR CHARTS	(+72)	+48 TO +9 TRUTH	+8 TO -16 INDEFINITE	-17 TO -48 DECEPTION	(-72)	(SPAN = 96)

"YOU" PHASE TEST WITH THREE RELEVANT QUESTIONS (Spot II, III & IV used)						
ONE CHART (Projection)	(+27)	+18 TO +4 TRUTH	+3 TO -6 INDEFINITE	-7 TO -18 DECEPTION	(-27)	(SPAN = 36)
TWO CHARTS	(+54)	+36 TO +7 TRUTH	+6 TO -12 INDEFINITE	-13 TO -36 DECEPTION	(-54)	(SPAN = 72)
THREE CHARTS	(+81)	+54 TO +10 TRUTH	+9 TO -18 INDEFINITE	-19 TO -54 DECEPTION	(-81)	(SPAN = 108)
FOUR CHARTS	(+108)	+72 TO +13 TRUTH	+12 TO -24 INDEFINITE	-25 TO -72 DECEPTION	(-108)	(SPAN = 144)

To assess the effect that these changes in the Backster System will have on overall polygraph decisions, the data in this study were reanalyzed using the new cut-off values (+7 for 2 relevant questions/3 charts). Backster results now agreed with USAMPS results in 13 of 15 cases, and Utah results in 14 of 15 cases. Cochran's test demonstrated that the three scoring systems did not significantly differ in the number of DI, NDI, and Inconclusive decisions ($Q = 4.00 > .05$).

	TECHNIQUE		
	BACKSTER	USAMPS	UTAH
DI	5	6	6
NDI	4	5	4
INC	6	4	5

Table 5.
Number of Cases (Random Sample of 15 from Total N = 93) Classified Deceptive, Nondeceptive, or Inconclusive by Each Scoring System, Using Newly-Revised Backster Numerical Cut-Offs.

DISCUSSION

Although the same size of the study is admittedly small, it appears that the changes incorporated into the Backster System will serve to reduce the number of inconclusive decisions. The reduction in the numerical cut-off requirement to reach a truthful determination appears to be justified on a realistic recognition that truthful subjects may not produce large overall (+) numerical totals, as earlier predicted by Backster.

More importantly, it appears that the numerical evaluation systems taught and advocated by the Backster School of Lie Detection, the United States Army Military Police School and the University of Utah Detection of Deception Workshop (despite their differences) result in similar decisions when applied to the same sets of polygraph charts. Further research into exploring these differences with a larger sample size is suggested.

* * * * * *

GREAT BRITAIN - HOUSE OF COMMONS REPORT ON THE POLYGRAPH

This is a report of the Employment Committee of the House of Commons. In this "Third Report," the Committee summarizes their findings and recommendations. Previous reports included the testimony of witnesses, letters and reports received by the Committee and other details of their work.

THIRD REPORT

The Employment Committee have agreed to the following Report:

THE IMPLICATIONS FOR INDUSTRIAL RELATIONS AND EMPLOYMENT OF THE INTRODUCTION OF THE POLYGRAPH

The Inquiry

1. In April 1984 the Employment Committee decided to undertake an inquiry into the implications for industrial relations and employment of the introduction of the polygraph.

2. The Government were in process of introducing a pilot scheme at Government Communications Headquarters (GCHQ), following the recommendations of the Security Commission in their report on the Geoffrey Prime case,[1] to test the feasibility of polygraph security screening in the intelligence and security agencies. This had met with strong opposition among the staff affected and their unions. The Committee felt concern that the Government's action might appear to give official backing to the device and encourage organisations in the private sector to consider using polygraph examinations and so provoke similar industrial relations problems in a wider field.

3. There were already signs of moves to introduce the polygraph into the general commercial field. Polygraph Security Services Ltd., an affiliate of the Zonn Corporation of America, had recently begun to offer polygraph services to business firms, in such areas as pre-employment screening of job applicants, "honesty maintenance programmes", and investigation of specific losses. A National Polygraph College had also been established which offered training for polygraph examiners and seminars on polygraph techniques.

4. Following the announcement of the inquiry we received memoranda from Polygraph Security Services Ltd.; Dr. Douglas Carroll, University of Birmingham; the Council of Civil Service Unions (CCSU); the Trades Union Congress (TUC); and Mr. Charles Irving, M.P. Information was also provided by the British Psychological Society.

5. The Secretary of State for Employment was invited to give his views, but he thought it would be more appropriate if any response to the Committee awaited publication of our Report.

6. We wrote to the Secretary of State for Foreign and Commonwealth Affairs asking if the Director of GCHQ or other appropriate official, together with a polygrapher, could give oral evidence. The reply was that

there was no staff at GCHQ trained in the use of the polygraph, and it was not considered that the Director of GCHQ or any of his staff could at that stage make a useful contribution to the work of the Committee.

7. We also sought the views of the Home Office, and a letter was received,[2] in which it was made clear that polygraphs are not used by any police force in England and Wales. The Home Office is not aware that any chief officer of police is contemplating their acquisition and has no plans to issue any guidance to police forces on the subject of polygraphs.

8. Oral evidence was given on 16 May 1984 by Polygraph Security Services Ltd., and on 20 June 1984 by Dr. David Raskin, University of Utah, USA; Dr. Carroll; the CCSU; and the TUC.

9. We sought certain additional information about their operations from Polygraph Security Services Ltd., but they were reluctant to supply it, even in confidence, and only provided it after protracted correspondence. Such an uncooperative attitude towards a Select Committee must be deplored, and Sir George Terry informed us during the course of our inquiry of his decision to resign from the chairmanship of the company.

10. We invited two of the firms which had used the services of Polygraph Security Services Ltd. to give oral evidence. One did so on 5 December 1984: They told us that their experience of the use of the polygraph had been unsatisfactory and that they would not use it again.[3] The other, after agreeing to appear, failed to attend; by that time we had accumulated enough evidence to come to a view on the use of the polygraph and we decided not to exercise our power to require them to attend on another day, but sent a letter expressing displeasure at their discourtesy.

11. After consulting the American Polygraph Association, we wrote to a number of American firms which had made substantial use of polygraph examinations, asking about their experiences and views. We are grateful for the information which was provided in reply.

THE POLYGRAPH

12. Although it is often referred to as such, the polygraph is not a "lie detector". It is simply an instrument which when connected to a person, "the subject", records a number of physiological functions in the form of graphs. The physiological reactions of the subject during questioning produce variations in the graphs. The conduct of the questioning and the interpretation of the graphs is the job of the polygraph examiner, or polygrapher.

13. A demonstration of a polygraph was given to the Committee by Polygraph Security Services Ltd. The instrument recorded four functions: thoracic breathing; abdominal breathing; cardio-vascular activity (blood pressure and rate and strength of pulse); and galvanic skin response (the change in the moisture content of the skin). To record breathing, tubes were wrapped round the subject's chest and abdomen; for blood pressure, a cuff was wrapped round his arm; and skin moisture was recorded by attaching sensors to his fingertips.

14. Polygraph Security Services Ltd., emphasized that the demonstration did not simulate an actual polygraph examination.[4] For this there would need to be a careful preliminary discussion between the polygrapher and the subject[5] in which the polygrapher would explain the procedure and the purpose of the test, and discuss and agree the questions to be put, all of which would be phrased so that they could be answered either yes or no. This discussion could take up to an hour before the actual test, which would itself take only a few minutes and be repeated two or three times to check the consistency of the responses.[6]

15. When a subject reacts strongly to a particular question put to him the marked change in the graphs indicates this reaction, but tells nothing about its cause. It might be due to guilt, deceit or lying, but it could also be due to other emotions, such as anger, fear, or embarrassment. It is for the polygrapher, in preparing the questions and studying the polygraph results, to attempt to judge how the graphs should be interpreted. In his report the answers to questions are classified as truthful, deceptive, or inconclusive.[7]

16. It is clear that the skill of the polygrapher is crucial to the use of the polygraph. There is no body of trained polygraphers in the United Kingdom at present, and we therefore invited an American polygrapher of many years standing, Dr. David Raskin, Professor of Psychology at the University of utah, to give oral evidence. His attendance gave us the opportunity to discuss not only the work of polygraphers, but also American experience generally in the use of the polygraph.

DIFFERENT USES OF THE POLYGRAPH

17. It became clear in the course of our inquiry that there are three areas where the polygraph may be used, where very different considerations prevail. They are (i) the use of the polygraph in the investigation of specific incidents and crimes, e.g., a theft; (ii) its use in the assessment of the general honesty and reliability of individuals, e.g., in selecting people for jobs or for subsequent appointments to sensitive posts within an organisation; and (iii) its use in the field of national security. We consider these three areas in turn.

SPECIFIC INCIDENTS AND CRIMES

18. An example will illustrate how the polygraph can be used in investigating a specific incident or crime, e.g., a theft. There will often be only a limited number of people under suspicion. In drawing up the questions to be put to them individually the polygrapher would commonly adopt a technique known as the "control question test". In this test, the polygrapher would ask "relevant questions" which deal directly with the issue of the examination (e.g., Did you take that ring from the desk?) and "control questions" which typically cover issues of a similar nature in the past history of the individual (e.g., Have you ever taken anything which did not belong to you?). The theory is that the guilty person would be more disturbed by the questions directly relevant to the incident than by the other questions, whereas the innocent person who is telling the truth about the specific incident would be more disturbed by the general control questions. The polygrapher compares the reactions of the various

individuals to the relevant and control questions and attempts to assess deception or truthfulness in the responses to the relevant questions.[8]

19. Opinions differ about the efficacy and value of polygraph examinations in the investigation of specific incidents and crimes. Those, like Polygraph Security Services Ltd., who advocate the use of the polygraph claim very high accuracy for it,[9] and make the point that confessions are often elicited during the preliminary discussions that precede the actual polygraph test.[10] Others, like Dr. Carroll, challenge the use of the polygraph even in criminal investigations, particularly because of the risk of innocent people being classified as guilty, of which there have been a number of cases.[11]

20. Direct experience of the use of the polygraph in the United Kingdom is at present minimal. The main experience is to be found in the USA, where there is a considerable polygraph industry, and the polygraph has been used in criminal investigations for many years. Here according to Dr. Raskin the evidence on its use in investigating specific incidents such as a crime indicates a substantial degree of accuracy when the examination is properly performed by competent and well trained individuals.[12] There is support for this view in the replies we received from American firms which have used the polygraph in investigating thefts of money and company property, etc. The polygraph is commonly used only as part of an investigation; it can rule out people who are clearly not involved and allow the law enforcement agency to concentrate on more productive areas.[13]

21. Our concern however is with employment and industrial relations situations, and we make no recommendations about the use of the polygraph in investigations of specific incidents and crimes.

THE GENERAL EMPLOYMENT FIELD

22. We now turn to the use of the polygraph by commercial and other organisations in assessing the honesty and reliability of people when considering them for initial employment or for subsequent appointments to particular posts, e.g., ones of a sensitive and responsible kind, and other uses in the commercial sector.

23. In tests of applicants for a job, the questions cannot in the nature of the situation be so sharply focussed as in the investigation of specific incidents or crimes. Dr. Raskin's testimony was that the accuracy of polygraph tests in the screening of employees is substantially lower than in the investigation of specific incidents,[14] and that it is extremely difficult to draw any firm conclusions from reactions in pre-employment tests.[15]

24. One of the problems is that the standard of the ordinary polygraphers in this field is inadequate.[16] Dr. Raskin laid great stress on the importance of proper training and appropriate qualifications for polygraphers. The typical training in the United States consists of an 8 week course at a polygraph school. That is not sufficient in itself. In addition to specialised training in polygraphy, educational qualifications, training and experience in psychology, preferably to degree standard,

should also be required.[17] A licensing system for polygraphers, together with an approved code of practice, would also help to improve standards, and some American States adopt this approach.

25. The low standards among polygraphers in the United States have led to many law suits in civil courts, in which people discharged or subjected to other sanctions as a result of polygraph tests have sought restitution or damages.[18]

26. There has also been much litigation in the United States over intrusive questions put by polygraphers, e.g., inappropriate questions about sexual behaviour.[19] Intrusive questions in polygraph tests have also led to labour disputes, a notable example being a strike a few years ago at a major brewery in which questions about people's political beliefs, sexual preferences and union activities were asked during polygraph examinations. In general according to Dr. Raskin the attitude of organised labour towards polygraphs is very negative.[20]

27. Defenders of the polygraph claim that participation by employees is voluntary: Polygraph Security Services Ltd. stress this in their advertising brochure. But this claim is open to serious question. If for example an employer invites applicants for a job to take a polygraph test on a voluntary basis, someone who does not wish to take the test is likely to feel that if he does not do so he will not get the job, and simply be told that there were better qualified applicants. Similarly, if existing employees are asked to take a polygraph test on a voluntary basis when an appointment is to be made to a particular post (e.g., one of a sensitive and responsible nature), refusal to take the test is likely to result in non-selection, as was effectively conceded by Polygraph Security Services Ltd. in their oral evidence.[21]

28. In the foregoing paragraphs we have identified a number of arguments against the use of the polygraph in the general employment field: The low level of accuracy of polygraph tests in that field; the inadequate training, education, and experience of the general run of polygraphers; problems over intrusive questioning into irrelevant matters; the psychological pressure affecting individuals' rights not to take the polygraph tests; the effects on the morale of the workforce when polygraph testing is introduced into an organisation; and the opposition of trade unions. For these reasons among others there is much concern in the United States about the use of the polygraph in the general commercial field, and some 20 or more States limit or prohibit its use in the private sector.[22]

29. When a polygrapher classifies a subject's responses in a polygraph test as truthful, deceptive, or inconclusive, he is making a psychological assessment. The use of the polygraph is thus a matter in which the views of professional psychologists are of interest. The British Psychological Society in their considered statement on the issue say that there is no available research evidence which demonstrates the validity of the polygraph for personnel screening purposes. In view of this and the substantial amount of negative data available, the Society considers that the polygraph technique should not be used for personnel screening purposes.

30. In the light of all the evidence we have received, we have no doubt that in this country the introduction of polygraph tests as a tool of management in the general employment field, whether in the private or the public sector, would be widely seen as a most undesirable development, with implications that would be damaging to individuals rights and harmful to good industrial relations. At present, the use of the polygraph in personnel screening in the general employment field in Britain appears virtually non-existent and the Committee believe that, if that indeed is the case, legislation to ban or strictly to control it may be unnecessary. Nevertheless, the spread of American-based companies in Britain and the use of the polygraph by the Government on a trial basis at GCHQ Cheltenham suggest that it could become established in the private sector during the period of the GCHQ trial and afterwards. We recommend, therefore, that the Government keep under review the situation in the private sector so that, at the first signs of change in that direction, the Government can be in a position to take firm action to control developments. As a minimum, there would need to be a strict licensing system for polygraphers, supported by a code of practice approved by Parliament. There would be a powerful case for considering the stronger course of legislation to ban the use of polygraph tests in the general employment field for such purposes as pre-employment and post employment screening of staff. It was strongly represented to the Committee that the risk to individual rights was sufficiently great to justify urging the Government to introduce a code of practice and a licensing system for polygraphers without waiting to see whether or not the use of the polygraph becomes more widespread in this country. The Committee is, however, agreed that such a step is not justified in the immediate circumstances, provided the position is kept under review as recommended above.

NATIONAL SECURITY

31. We turn now to the use of the polygraph in the field of national security.

32. In their report of May 1983 on the Prime case, the Security Commission included a section on the polygraph, reviewing United States experience of its use for personnel security screening.[23] In considering the lessons to be learnt from the American experience they reached the conclusion that the only measure of which it could be said with any confidence that it would have protected GCHQ from Prime's treachery would have been the polygraph. This led to the recommendation that a pilot scheme should be undertaken with a view to testing the feasibility of polygraph security screening in the British intelligence and security agencies and, if found feasible, to establishing the nucleus of a polygraph screening organisation.[24]

33. The Government accepted this recommendation, and the test, which the Foreign and Commonwealth Office have informed us will take about two years, is under way.

34. We noted that all members of the Security Commission initially regarded the utility of the polygraph as an aid to personnel security with a degree of scepticism,[25] and we wrote to ask what had caused them to modify their initial scepticism to the extent of feeling able to make

their recommendation about a pilot scheme. In reply the chairman of the Commission said that he thought that the report gave a reasonably full account of the considerations, but went on to refer to extensive consultations that had been held with security authorities in the United States, during which much confidential information was given to the Commission.

35. We have not had the benefit of such confidential information and cannot comment therefore on the judgment of the Commission that a pilot study is warranted on security grounds. Nevertheless as explained above we are very concerned about the use of the polygraph in the selection of people for particular posts. Recent research has indicated moreover that it may well be possible to train people to beat polygraph tests, and those most likely to receive this training would be those acting as agents for foreign governments.[26] We therefore consider it essential that, while the special circumstances of security may be held to override other considerations to the extent of holding a pilot scheme, an impartial assessment should be made of this pilot scheme before any decision is taken to establish a permanent polygraph screening organisation in the intelligence and security field.

36. The CCSU have also suggested that there should be an independent evaluation of the pilot scheme, and this possibility has not been ruled out by the Secretary of the Cabinet and Head of the Home Civil Service, who has agreed to give further thought to it as the pilot scheme proceeds.[27]

37. We recognise the special considerations of security that will arise, but consider that it should be possible to find independent persons who, granted the necessary security clearance, could be entrusted with access to the security information involved in assessing the pilot scheme. We therefore recommend that at the end of the pilot scheme at GCHQ it should be evaluated by appropriate independent persons who have had experience of national security matters. In the Committee's view, it is particularly important for the safeguards we have discussed above to be applied to the use of the polygraph for any purpose once an employee has been engaged.

SUMMARY OF FINDINGS

38. The object of the inquiry was to examine the implications for industrial relations and employment of the introduction of the polygraph.

39. It is necessary to distinguish clearly between three different uses of the polygraph:

(i) in the investigation of specific incidents and crimes;

(ii) in the assessment of the general honesty and reliability of individuals, e.g., in selecting people for jobs or for subsequent appointments of a sensitive and responsible nature within an organisation; and

(iii) in the field of national security.

40. Experience in the United States seems to indicate that the

polygraph may play a useful auxiliary part in the investigation of specific incidents or crimes, provided the polygraph examination is properly performed by competent and well trained individuals, though we note that in general the polygraph has not been admitted by the courts as a form of evidence.[28] Criminal investigations and the like do not raise major issues of employment or industrial relations policies or practices, and we therefore make no recommendations in this field.

41. The use of the polygraph in the general employment field for screening staff, however, is a matter of great concern to us. Here American experience is much less satisfactory, and it provides strong arguments against the use of the polygraph in this country: The low level of accuracy of polygraph tests in this field; the inadequate training, education and experience of the general run of polygraphers; problems over intrusive questioning into irrelevant matters; the psychological pressure affecting individuals' rights not to take polygraph tests; the effects on the morale of the workforce when polygraph testing is introduced into an organisation; and the opposition of trade unions.

42. We consider that the use of the polygraph in employment situations is undesirable and of insufficient reliability. We recommend that the Government keeps the position under review and introduces, either immediately, or, if the use of the polygraph were to increase, a strict licensing system for polygraphers supported by a code of practice approved by Parliament. We are in no doubt that the use of the polygraph has unwelcome implications both for employment practice and for the rights of individuals.

43. The field of national security presents special problems. Following the report of the Security Commission on the Prime case the Government have set in train a pilot scheme at GCHQ to test the feasibility of polygraph security screening in the intelligence and security agencies. We recommend that at the end of the pilot scheme at GCHQ it should be evaluated by appropriate independent persons who have had experience of national security matters.

Footnotes

[1] Cmnd 8876.
[2] See HC(1984-85), 98-ii.
[3] Q332.
[4] Q16.
[5] Q3.
[6] PSSL memo p. 3.
[7] Q87.
[8] Q148.
[9] PSSL memo p. 4.
[10] Q14, 87.
[11] Dr. Carroll's memo p. 58.
[12] Q146.
[13] Q186.
[14] Q146.
[15] Q148.
[16] Q154.

[17] Q147.
[18] Q155.
[19] Q192.
[20] Q171.
[21] Q52.
[22] Q155.
[23] Cmnd 8876, para. 9.6-9.13.
[24] Ibid., para. 9.14.
[25] Ibid., para. 9.6.
[26] Q172.
[27] CCSU memo, para. 3.3, p. 83, 86.
[28] Q168.

MEMORANDA LAID BEFORE THE COMMITTEE

Memorandum submitted by Mr. Charles Irving, MP

ENQUIRY INTO "THE IMPLICATIONS FOR INDUSTRIAL RELATIONS AND EMPLOYMENT OF THE INTRODUCTION OF THE POLYGRAPH"

INTRODUCTION

I am aware that the Committee's terms of reference extend far beyond the controversial proposal to introduce the lie detector--the "polygraph"-- at Government Communication Headquarters, Cheltenham (GCHQ). I hope, however, that the opportunity which I have had, as the local M.P., to observe at close hand the reactions to the proposal will be helpful to the Committee in their wider deliberations.

From the time of the announcement in the House on 25 January by the Foreign Secretary I had numerous meetings with GCHQ representatives all of which consisted of equal numbers of Trade Union and non-Trade Union members of staff and which were similar to the Deputation I took to see the Foreign Secretary at the Foreign Office on Tuesday 31 January.

The Committee will undoubtedly receive evidence direct from the Civil Service Unions involved about the precise nature of the management's methods in seeking to introduce the polygraph and the negotiations with the Unions so I wish simply to stress certain key points derived from my own contacts with the Unions and other individuals.

THE DAMAGE TO INDUSTRIAL RELATIONS

It is crystal clear to me that a great deal of bitterness and ill will has been generated by the attempt to introduce the polygraph. Indeed many of the staff believe that it was resistance to its introduction that led the Government in the person of the Foreign Secretary to make the shock announcement on January 25, 1984 that employees at GCHQ would no longer be permitted to remain members of a Trade Union. I do not need to describe to the Committee the repercussions which flowed from that event!

[17] Q147.
[18] Q155.
[19] Q192.
[20] Q171.
[21] Q52.
[22] Q155.
[23] Cmnd 8876, para. 9.6-9.13.
[24] Ibid., para. 9.14.
[25] Ibid., para. 9.6.
[26] Q172.
[27] CCSU memo, para. 3.3, p. 83, 86.
[28] Q168.

MEMORANDA LAID BEFORE THE COMMITTEE

Memorandum submitted by Mr. Charles Irving, MP

ENQUIRY INTO "THE IMPLICATIONS FOR INDUSTRIAL RELATIONS AND EMPLOYMENT OF THE INTRODUCTION OF THE POLYGRAPH"

INTRODUCTION

I am aware that the Committee's terms of reference extend far beyond the controversial proposal to introduce the lie detector--the "polygraph"-- at Government Communication Headquarters, Cheltenham (GCHQ). I hope, however, that the opportunity which I have had, as the local M.P., to observe at close hand the reactions to the proposal will be helpful to the Committee in their wider deliberations.

From the time of the announcement in the House on 25 January by the Foreign Secretary I had numerous meetings with GCHQ representatives all of which consisted of equal numbers of Trade Union and non-Trade Union members of staff and which were similar to the Deputation I took to see the Foreign Secretary at the Foreign Office on Tuesday 31 January.

The Committee will undoubtedly receive evidence direct from the Civil Service Unions involved about the precise nature of the management's methods in seeking to introduce the polygraph and the negotiations with the Unions so I wish simply to stress certain key points derived from my own contacts with the Unions and other individuals.

THE DAMAGE TO INDUSTRIAL RELATIONS

It is crystal clear to me that a great deal of bitterness and ill will has been generated by the attempt to introduce the polygraph. Indeed many of the staff believe that it was resistance to its introduction that led the Government in the person of the Foreign Secretary to make the shock announcement on January 25, 1984 that employees at GCHQ would no longer be permitted to remain members of a Trade Union. I do not need to describe to the Committee the repercussions which flowed from that event!

I believe that the staff are right in their interpretation that opposition to the polygraph was the real reason for the introduction of the ban although it is not possible obviously to offer positive proof. However, as the Committee will be aware, the reasons offered by the Government for imposing the ban were weak in the extreme, particularly in the light of the Trade Union's willingness to meet the Government's requirements so fully. Furthermore the Government had a strong fall-back position in as much as they could have imposed a ban if the Union side guarantees had proved to be worthless. It follows, therefore, that there must have been other, hidden, reasons for the ban.

THE POLYGRAPH AND THE UNION BAN

There is a widespread belief that the banning of Trade Unions at GCHQ can be attributed to opposition to the introduction of the polygraph. There was no attempt to seek the view of the staff involved while the Security Commission was deliberating and the timing of the Commission's Report coincided with the dissolution of Parliament in May which precluded any democratic debate. As a result the findings of the Commission were accepted without question. GCHQ management then decided, in November, that it was "now necessary to make initial provision for the polygraph pilot scheme" by establishing without any consultation, a post to handle administrative details. December saw the publication of newsletters at GCHQ advising members not to co-operate with the polygraph pilot scheme, followed on 25 January by an announcement removing the right to belong to a Trade Union at GCHQ and, significantly, that staff will be subject to any recommendation of the Security Commission accepted by the Government.

It is vitally important that one aspect is appreciated: Nowhere in the General Notice or in the Director's letter which accompanied it, is mention made of industrial action in 1979, 1981 or at any other time. What it does say is that the right to belong to a Trade Union is being removed after 37 years, the right to appeal to an Industrial Tribunal is being denied and that the Security Commission's recommendations as accepted by the Government will apply to all staff. Although paragraph 4 of the General Notice that organisations such as GCHQ should be freed from the risk of industrial action, the main emphasis was on the need to keep "details of GCHQ's operations being discussed before an Industrial Tribunal". Such a Tribunal would have been the inevitable consequence of disciplinary action against staff who refused to take part in the polygraph pilot scheme.

The Security Commission clearly never intended its recommendations regarding the pilot scheme to be steam-rollered through in the way the Government and management are now doing. To quote from the Commission's Report: "we believe that reasonable people ... when they fully understand the nature and purpose of the scheme (will) accept the logic and fairness of a test from which no loyal servant has anything to fear." This requirement for the nature and purpose of the scheme to be fully understood has been blatantly ignored despite declarations of good intent early on. I am given to understand that Sir Robert Armstrong, in what must be one of the most shameful actions committed during this affair, instructed his Office to reply to the CCSU's repeated requests for a meeting in the following terms on 29 November: "As you know the Government accepted the

Security Commission's recommendation and is committed to carrying out the pilot scheme. A further meeting prior to the commencement of the pilot scheme does not, therefore, seem necessary."

Requests for information about the polygraph such as the precise nature of the questions to be used met with totally unhelpful responses from GCHQ management. Hence: "I regret that I am unable to help over the provision of literature on the polygraph as there is no authoritative documentations concerning its reliability available in the Department" was the reply on 10 June. In short, not only has there been no attempt whatever to fulfill the intentions of the Commission that staff should understand the nature and purpose of the scheme but there has been active obstruction at all levels. Questions put by the Trade Union side regarding what will happen to records of the pilot scheme, what penalties will be imposed for refusal to co-operate in the scheme and how the success or failure of the scheme will be judged: All these remain unanswered.

DOUBTS ABOUT THE ACCURACY OF THE POLYGRAPH

Seven separate reports prepared for or by US Congressional Committees over the last 20 years have arrived at the same conclusion--that lie detectors are unreliable and counterproductive.

Dr. John H. Gibbons, Director of the Office of Technology Assessment, US Congress, testified to the US House of Representatives on 19 October, 1983: "there is legitimate concern that Department of Defense use of the polYGraph for screening purposes may incorrectly identify significant numbers of innocent persons as deceptive. This could result in misdirecting DOD security resources and, even if errors are caught and corrected, could then have an adverse impact on employee morale. If persons can be trained to beat the polygraph then increased polygraph use could lead to a false sense of security." Similar findings by Kleinmuntz and Szucko of the Department of Psychology at the University of Illinois "suggest that polygraphic lie detection as currently used is flawed and might best be replaced by an alternative method."

These are just two more conclusions reached by authoritive academics --the latest in a long line--and represent some evidence which has become available since the Security Commission reported a year ago. It is just not good enough for the Government and the Management and Personnel Office simply to claim that the Commission's recommendations have been accepted and that there is a commitment to carry on with the pilot scheme. Indeed, as we have already seen with the "Lion Intoximeter," disturbing evidence questioning the reliability of the machine coupled with widespread public concern has resulted in the Government authorising changes in the procedures. Specifically the new arrangements will enable the readings of the machine to be compared with the more accurate scientific results of a blood or urine test. Unfortunately, there is no such reliable "touch stone" test applicable to the polygraph: The only reasonable alternative is for the pilot scheme in its present form to be halted and for the machines to be rigorously tested under controlled conditions in an independent academic institution.

THE POLYGRAPH-LOGICAL AND FAIR?

In its report the Security Commission asked what reasonable person could object to a test which was logical and fair. It stated that a loyal subject would have nothing to fear. It would have caught or deterred Prime and, by implication, others like him.

As to the first of these two assertions upon which the case for the polygraph is supposed to rest, GCHQ employees are now expected to have confidence in a machine which statistical studies and field tests show to be capable of indicating up to 50 percent of innocent people of concealing the truth. The Royal Commission on Criminal Procedure examined American tests on the polygraph and concluded that it was not reliable enough to be admitted as evidence in a British Court of Law.

It is in the nature of Positive Vetting that serious notice will have to be taken of anything which casts suspicion on an employee: Results of tests will have to be recorded. When there are two candidates for a particularly sensitive post, or say a promotion, which one is going to be successful: The one who is cool, calm and collected, or the one who, although totally loyal, happened to register an adverse reaction. One thing is certain: The person concerned will never know the reason. Floyd Fay of Toledo, accused of murder, had no hesitation in submitting to a polygraph test to prove his innocence. He failed it. At his request a second test with a different examiner was arranged. He failed again. After more than two years the real killers were caught and they confessed thereby exonerating Fay who was promptly released. The GCHQ employee has no access to Positive Vetting files and so has no means of appeal.

The Commisioners have got it all wrong: It is the spy who has nothing to lose and the loyal subject who has everything to fear.

The second assertion, that the threat of a polygraph test would have deterred Prime, is more difficult to examine. It is quite feasible that Prime's controllers would have been able to train him to pass the test but the risk of detection may well have deterred him. However, in Prime's case the damage has already been done and no retrospective action can undo that damage. In any case even if the detection risk were increased by the introduction of the polygraph there is no guarantee that it would deter a new recruit with evil intentions: In other words, there is nothing to lose by trying. Indeed, if the polygraph is such an effective deterrent why then have there been, as Peter Hennessy of the Times quotes 57 known American spies caught or who have defected since World War II. He gives comparative UK figures as 25.

CONCLUSION

Why has the Government been so determined to push the polygraph, whose evidence is inadmissible in a British Court of Law, on to GCHQ in the face of damning evidence as to its efficiency and of resentment and mistrust on the part of the staff? It would seem from the meetings which the Union side have had with Sir Robert Armstrong on 8 July and at other times that the Government is quite prepared to force the polygraph upon its own loyal and dedicated employees at the demand of an American

Administration which itself is suffering embarrassing set-backs in Congress in its own attempts to spread the use of this pseudo-scientific machine.

Congress have, at least, had the opportunity of making their condemnation heard--an opportunity denied to the House of Commons.
May 1984.

Statement by the British Psychological Society

THE USE OF THE POLYGRAPH FOR PERSONNEL SCREENING

The detection of deception has been attempted by various methods throughout the centuries, with the human pulse probably providing the first physiological measure. It was not however until the late 19th Century that instruments for measuring and recording blood pressure and pulse rate were developed. In 1921 John A. Larson constructed an instrument that simultaneously recorded blood pressure, pulse and respiration and, as an employee of the Berkeley Police Department, he used his instruments on criminal suspects. This was the first version of the polygraph (or "lie-detector" as it is commonly known) and since then the equipment has been refined quite significantly. Its use in the US has grown considerably in the fields of law, and in business where it is applied in attempting to detect dishonesty in current or prospective employees. Estimates of numbers tested in the US range from 300,000 (Washington Post, 1977) to perhaps as many as a million per annum (Lykken, 1974). In contrast, the use of the polygraph in the UK has until recently been extremely rare, partly perhaps because such evidence is not permissible in court. Media attention was however focused on the technique in 1983 in the wake of the Government's proposal to try it out for an experimental period in GCHQ, Cheltenham, and also because a private organisation, Polygraph Security Services Ltd., was set up recently to market a polygraph service. Media concern highlighted the fact that operators, including retired policemen, had been sent off to the US for a six week training course and returned "qualified" to operate the polygraph.

This statement is designed to review the scientific evidence on the instrument and to highlight some of the practical and theoretical implications.

As Gudjonsson (1983) points out:

> "It is important to remember that these instruments were not developed for lie-detection purposes. They were first intended for medical advances and only subsequently did people discover their potential in the field of lie detection. The polygraph does not detect lies. Early claims of a specific lie response (e.g., Marston, 1938) have not been substantiated. What is detected is a physiological response and the examiner must infer whether or not such reactions are indicative of lying."

DESCRIPTION OF A POLYGRAPH TEST

A useful description is provided by Grings and Dawson (1978). The

standard test currently used typically involves the simultaneous recording of three physiological responses (skin resistance, respiration and cardiovascular response) on a polygraph whilst the subject answers a number of questions.

(i) Skin Resistance Responses (SRR) are measured from electrodes placed on the subject's palms and fingers. Whilst most field researchers have generally found SRR to be less useful than the other two, most laboratory studies report it to be the best.

(ii) Respiratory Responses are measured by means of a pneumatic tube placed around the subject's chest or abdomen. Changes in breathing rhythm or amplitude are considered by some practitioners to be one of the most reliable indicators of deception.

(iii) Cardiovascular Responses are measured by means of applying a sphygmomanometer pressure cuff to the upper arm. A tube connects the cuff to a pressure transducer that records pressure variations. Any changes probably reflect a complex combination of blood volume in the area and relative blood pressure changes. Pulse rate can also be observed, but cannot be quantified very accurately using this equipment.

These three readings are recorded by a pen on a moving roll of paper.

TECHNIQUES OF ADMINISTRATION

Currently there are two fundamentally different questioning techniques used in attempts employing a polygraph to measure deception: the Control Question Test (CQT) and the Guilty Knowledge Test (GKT).

The CQT entails asking the subject both control questions, which bear no direct relationship to the crime in question and concentrate on the subject's possible past dishonesty and misdemeanour (e.g., Did you ever steal anything before you were 18?) and relevant questions (e.g., Did you steal the 500 pounds which is missing?). A series of questions is usually presented two or three times. Deception is inferred if the subject's physiological response is consistently greater to the relevant questions than to the control questions. The basic assumptions are that if the person is innocent, then his psychological set will be directed to the control questions to which his attention and concern has already been drawn in a pre-test interview. If a person is being untruthful in responding to the relevant questions, then his psychological set will remain directed towards those questions about which he is being deceptive. Prerequisites for success of this method are:

(i) presentation of a suitable list of control questions for all subjects; and

(ii) a highly skilled examiner.

The GKT is directed not towards deception but to identify the possession of specific information about a crime or other situation being investigated. A pre-requisite for use of this method is that a guilty subject has some knowledge about an incident which an innocent subject

could not possess. The GKT usually entails the presentation of groups of five items where only one is relevant to the investigation. Normally the subject is asked only to listen, not to respond orally to questions. For example, suppose a watch had been stolen and only the thief could know the identity of this item. A typical cluster of items might be (a) money (b) ring (c) watch (d) necklace and (e) bracelet. If the physiological response is consistently greater to the relevant items than to the irrelevant items, the guilt is inferred.

In the US the CQT is much more commonly used than the GKT, for criminal investigations, pre-employment screening and internal company fraud investigations. The main reasons for the greater usage of the CQT is that in criminal investigations, the GKT requires that no one other than the guilty person should possess relevant knowledge. In security screening, it is not usually possible to draw up lists of relevant clusters.

STUDIES OF RELIABILITY AND VALIDITY

These concepts are widely used in psychology and in the personnel assessment field. Methods are well-developed to assess traditional techniques such as the inteview and psychometric tests. The reliability of an instrument, in this context, refers to the degree of agreement between independent judges (examiners) or, if the measures are taken on two or more occasions with the same subject, the degree of agreement between the separate readings. The term validity generally refers to the extent to which an instrument measures what it purports to, or is designed to, measure. Implicit in this definition is that a criterion or criteria exist of the construct being measured. The reliability of an instrument will set a limit to its validity, so it is impossible for an unreliable instrument to be valid.

There is now quite a large body of research information available on the polygraph, almost all of which originates from criminal studies conducted in the US. Some of these were carried out in laboratories and some in the field. It has been argued that the value of results tend to be purpose specific and that serious questions hang over the results of artificial studies carried out in laboratories (see, e.g., Gibbons 1983, below).

The evidence on reliability is reasonably consistent. Firstly, looking at the degree of agreement between repeated polygraph test results, Gudjonsson (1984) concluded that "the results suggest that subjects generally respond fairly consistently to the same test administered on two occasions during the same testing session, although the precise agreement may be partly related to personality characteristics and psychiatric status". Several studies have investigated the reliability between different examiners of common polygraph charts and the results showed high inter-rater reliability (Edel and Jacoby, 1975). One study often quoted (Barland and Raskin, 1975) involved the inspection of previously unseen polygraph charts by a number of different examiners. The average rate of agreement between examiners was 86 per cent. Such inter-rater reliabilities are relatively high when compared with equivalent reliabilities found with other assessment techniques, especially subjective ones. It must be emphasized, however, that the high reliability of an instrument gives no indication of whether or not it is valid.

The validity of the lie detector (the extent to which it measures deception or guilt) is one of the most important and contentious current issues in applied psychology in the US. One important reason why studies have shown conflicting conclusions is that the validity of such a complex test is very difficult to assess, and may vary widely from one application to another. The accuracy obtained in one situation or research study may not generalise to different situations or to different types of persons being tested.

The two main protagonists in the debate in the US are Professor David Raskin, a trained polygrapher and psycho-physiologist, and David Lykken, Professor of Psychiatry and Psychology at the University of Minnesota. Raskin (1982) reviewed five studies where the control question techniques had been used with actual criminal suspects and concluded that the technique was 90 per cent effective with guilty subjects, and 89 per cent effective with innocent subjects. Raskin's review covered 1,204 interpretations of polygraph charts conducted by 55 different examiners. Lykken (1981) claims that various methodological limitations of these studies may have produced an over-estimate of the effectiveness of the control question technique. Lykken often cites the results of a study by Horvath (1977) where 77 per cent of guilty subjects were correctly identified but 49 per cent of innocent subjects were also classified as deceptive. Gudjonsson (1984) points out, however, that there were also some methodological weaknesses in this study. Nevertheless, a recent study by Kleinmuntz and Szucko (1984) also found that the misclassification rate of innocent people (found deceptive by the polygraph) was as high as 50 per cent, with an average of 37 per cent. Furthermore, when information obtained during interrogation was added to polygraph data, they found that two out of three innocent people were judged to be guilty by one examiner. The results of these two studies do highlight the central problem--the high proportion of innocent subjects likely to be classified as guilty by the polygraph when the Control Question Technique is being used.

One of the most comprehensive and authoritative reviews of this field was carried out recently by the US Office of Technology Assessment (OTA). In his evidence to a US House of Representatives Committee on 19 October 1983, Dr. J.H. Gibbons (1983), Director of the OTA, reported that the OTA had found 28 studies which met minimum acceptable scientific criteria in criminal investigations. "Correct guilty detections ranged from 17 per cent to 100 per cent. Overall, the cumulative research evidence suggests that, when used in criminal investigations, the polygraph test detects deception better than chance, but with significant error rates". He then referred to the problem of the incorrect identification of innocent persons as deceptive, and concluded that it is "probably highest when the polygraph is used for screening purpose". The reason is that, in screening situations, there is usually only a very small percentage of the group being screened that might be guilty. Gibbons put forward a hypothetical example of where only one person in 1,000 is engaged in unauthorized activity and, even if one assumes that the polygraph is 99 per cent accurate, "the laws of probability indicate that one guilty person would be correctly identified as deceptive, but 10 persons would be incorrectly identified".

The OTA concluded "that the available research evidence does not

establish the scientific validity of the polygraph for personnel security screening." OTA identified only four studies carried out on personel screening applications, but none of these specifically assessed validity, and all had serious limitations in study design. The CIA does claim to possess classified research to support their use of the polygraph but this was not reviewed by OTA. Gibbons considered that, while there is some evidence for the validity of polygraph testing as an adjunct to criminal investigations, there is very little research or scientific evidence to establish polygraph test validity in screening situations, whether they be pre-employment, pre-clearance, random or "dragnet". He finally concluded that substantial further research, beyond what is currently available or planned, would be needed to establish such validity.

COUNTERMEASURES

Gibbons (1983) also raises the issue of countermeasures to the polygraph. "The concern with false negatives (guilty persons incorrectly identified as non-deceptive) is that, apart from any errors inherent in the polygraph test itself, the guilty person may be able to escape detection through the use of countermeasures". These are deliberate techniques some subjects use to to appear non-deceptive. The most effective method is to intentionally produce physiological responses to the control questions in order to reduce the discriminatory power of the relevant questions. There are numerous examples of countermeasures which are well-documented and the research on them is reviewed admirably by Gudjonsson (1983).

Countermeasures can be divided into three broad categories:

1. MENTAL TECHNIQUES: subjects can employ various tactics.

(a) Mental Dissociation, whereby the subject attempts to ignore the content of the test and to answer the questions automatically. He may focus his attention upon some irrelevant object or thought. A modified form of yoga can also be used.

(b) Rationalisation can be used, and may be effective if the subject really believes the rationalisation.

(c) Emotionally arousing thoughts can be evoked by the subject to produce artificial responses to the irrelevant questions.

(d) Hypnosis and biofeedback: These methods can be used, once subjects have been trained in such techniques, to generate artificial responses, and to suppress genuine responses.

2. PHYSICAL MANIPULATIONS:

(a) Voluntary contraction of a muscle group within the body may produce responses that resemble true physiological responses. Tensing and relaxing the arm on which the cardiac cuff is attached can also produce distortion.

(b) Pressure: Pressing the toe against the floor or the thighs against the chair can sometimes produce distortion.

(c) Production of Physical Pain: This can be done by concealing a drawing pin within the subject's shoe or under his tongue. Slight pressure would produce considerable pain.

3. CHEMICAL AND PHARMACOLOGICAL AGENTS:

(a) Anti-perspirants applied to the hands prior to testing can diminish electrodermal reactivity.

(b) Depressants appear potentially useful since they have been found to reduce autonomic reactivity. Alcohol, barbiturates and tranquillizers have some potential as countermeasures.

In Gudjonsson's (1984) opinion "the research evidence suggests that lie-detection techniques are fairly resistant to countermeasure strategies, although some people can skillfully distort the polygraph recording and deceive the examiner. Certainly within a laboratory setting it is known that multiple countermeasures and/or intensified training may to some extent enhance the effectiveness of countermeasure attempts (Honts and Hodes, 1982 and 1983). Unfortunately, research into the effectiveness of countermeasure strategies in a field setting is seriously lacking and can only be used as a very crude guide".

Gibbons' (1983) conclusions were more sceptical, "The research on polygraph countermeasures ... has been limited and the results conflicting ... some research (e.g., Honts and Hodes, 1982) suggests that polygraph examiners may not be able to easily detect certain physical countermeasures. The research results for drug and psychological countermeasures are mixed". He also highlights the problems that even a small false negative (guilty person not detected) rate could have serious consequences, and that those people the government would most want to detect may well be the most motivated and perhaps the best trained to avoid detection.

INDIVIDUAL DIFFERENCES

A number of other factors relating to the individual are likely to affect the accuracy of polygraph measures. People with emotional or psychiatric disturbances are likely to produce questionable readings which can lead to incorrect identifications of guilty or innocence, according to Gudjonsson (1982). Professor Venables from the University of York, a psycho-physiologist of international repute, has expressed specific concerns about psychopaths. Since many of them do not respond physiologically to stress to the same extent as normal individuals, they are less likely to be detected as deceitful. As it is not unlikely that many of the persons that a screening instrument is applied to detect might have psychopathic tendencies (either because of their criminal tendencies, or because they were security risks), it is worth noting that these are the very people who give questionable autonomic; and particularly Skin Resistance, responses (Hare, 1970) and are thus least likely to be detected.

There might well also be ethnic differences in polygraph response. Robinson (1978) looked at polygraph records from personnel screening applications and found that those applicants with Black and Spanish surnames tended to "fail" the test significantly more often than whites.

RECOMMENDATIONS

The evidence from criminal studies does suggest that, when the polygraph is used by highly-trained and well qualified examiners (e.g., by physiologists and psychologists) the detection rate of guilty subjects can be high, especially when the guilty knowledge test is used. Some validity results compare favourably with other personnel assessment techniques, such as interviews, group simulation exercises and psycholgoical tests (although these methods are not designed to detect, and are not capable of detecting deception). There is, however, a fundamental concern about the extremely high proportion of innocent(honest) subjects who will be classified as deceptive by the polygraph when the Control Question Technique is used. Some studies have shown that the detection rate is no better than chance, i.e., the toss of a coin would have been as effective in identifying innocent people. Even if the accuracy was 99 percent, with large numbers being tested, a significant number of innocent people would be classified as untruthful, dishonest or guilty. This is because the base rate of "guilty" people in a sample to be tested is likely to be extremely low. If someone "fails" a selection interview, the result is unlikely to be seen in the future as a slur on the individual's honesty and integrity, but misclassifications of innocent people by the polygraph will be interpreted as just that. Results would most probably be recorded on personnel files and these innocent people are unlikely to have any opportunity to challenge such records, even if they are aware that the records exist.

There is no available research evidence which demonstrates the validity of the polygraph for personnel screening purposes. In addition, the criminal studies were historical, in that they looked back at past misconduct. There has been no attempt at predictive validation, to determine whether a person will commit a crime or cause a breach of security in the future.

Substantial doubts also exist relating to guilty subjects' deliberate attempts to produce false readings. Although the research evidence is equivocal on this subject, some techniques or tactics will produce false readings, especially if subjects are highly trained. This is particularly important as far as national security screening is concerned since intelligence agents are likely to be extremely highly trained, and so will be more likely to avoid detection. There are also grave doubts about the accuracy of polygraph recordings when subjects who are emotionally disturbed, who have psychopathic tendencies or who belong to some ethnic groups, are tested.

In view of the absence of supportive research data on the polygraph's validity for personnel screening, and the substantial amount of negative data available at present, the British Psychological Society considers that the polygraph technique should not be used for personnel screening purposes, either for pre-employment or for current employee screening (for fraud or for security breaches). The Society deplores the possibility that, despite the evidence, the polygraph might still be used. If this is to be the case, the Society believes that the following precautions must be taken:

(a) polygraph evidence should never be taken in isolation;

(b) every possible safeguard should be taken to protect the rights of the relatively large number of innocent people who will be classified as guilty. These safeguards should include independent scrutiny of the records by a nominee of the individual under investigation, with subsequent right of appeal; guarantees on the confidentiality of the polygraph records and clear specification of who will have access to them; the destruction of such records within a short, stated period; and assurances that they will not be used in making other decisions concerning the individual's employment;

(c) a major research programme should be carried out to provide answers to some of the questions raised above, and to attempt to improve the validity of the polygraph technique, although the society considers that the chances of success are not particularly high.
June 1984

References

Barland, G.H. and Raskin, D.C. (1975). An evaluation of field techniques in detection of deception. Psychophysiology, 12, 321-30.

Edel, E.C. and Jacoby, J. (1975). Examiner reliability in polygraph charts analysis: Identification of physiological responses. Journal of Applied Psychology, 60.

Gibbons, J.H. (1983). Testimony before the sub-committee on Legislation and National Security. Committee on Government Operations. US House of Representatives. Scientific Validity of Polygraph Testing. 19 October, 1983.

Grings, W.W. and Dawson, M.E. (1978). Emotions and Bodily Responses. Academic Press, London and New York.

Gudjonsson, G.H. (1982). Extraversion and the detection of deception: comments on the paper by Bradley and Janisse. Personality and Individual Differences, 3, 216.

Gudjonsson, G.H. (1983). Lie detection: Techniques and countermeasures. In Evaluating Witness Evidence, (Eds. Lloyd-Bostock, S.M.A. and Clifford, B.R.). Wiley, London.

Gudjonsson, G.H. (1984). The Validity of Polygraph Techniques in Lie Detection, in Papakostopoulos, D., Butler, S., and Martin, I. Eds. Clinical and experimental neurophysiology. Croom Helm Ltd. (In press).

Hare, R.D. (1970). Psychopathy. Wiley, New York.

Honts, C.R. and Hodes, R.L. (1982). The detection of physical countermeasures. Polygraph, in press.

Horvath, F.S. (1977). The effect of selected variables on interpretations of polygraph records. Journal of Applied Psychology, 62, 127-136.

Kleinmuntz, B. and Szucko, J. (1984). A field study of the fallibility of polygraph lie detection. Nature, 29 March 1984, 449-450.

Lykken, D.T. (1974). Psychology and the lie detector Industry. American Psychologist, 29.

Lykken, D.T. (1981). A tremor in the blood: Uses and abuses of the lie detector. McGraw Hill, London.

Raskin, D.C. (1982). The scientific basis of polygraph techniques and their uses in the judicial process. In Trankell, A. (ed.) Reconstructing the past: The role of psychologists in criminal trials. P.A. Norstedt and Soners, Stockholm.

Robinson, T.N. (1978). Limitations of the polygraph test as an employment-screening tool. Paper presented to the New Jersey Association of Black Psychologists' Conference, 21-22 October.

Washington Post (1977). Employers' use of lie detectors tests attacked, defended at Senate hearing. 16 November.

Letter to the Chairman, The Security Commission from the Chairman, Employment Committee

The Employment Committee have embarked on an inquiry into the implications for industrial relations and employment of the introduction of the polygraph. We shall be taking evidence from a number of organisations and individuals in both the public services and the private sector.

We have read the report of the Security Commission in May 1983 (Cmnd 8876), which contains some most interesting passages about the polygraph, and would like to ask whether you could help us with some factual information.

In paragraph 9.6 if is said that "all members of the Commission initially regarded the utility of the polygraph as an aid to personal security with a degree of scepticism", but in the event the Commission recommended that "a pilot scheme should be undertaken to test the feasibility of polygraph security screening in the intelligence and security agencies".

We wonder whether it would be possible for you to tell the Committee what arguments, documentary guidance, research findings or other information caused the Commission to modify their initial scepticism to the extent of feeling able to make a positive recommendation of this nature. Did any members of the Security Commission witness any actual use of the polygraph, and with what results?

We would also like to invite the Commission to give oral evidence to the Committee about your views on the effects of the use of the polygraph on good industrial relations and employment practices, not so much in the security field, as in other fields in both the public and private sector. Did you consider, when making your report, the likelihood that acceptance of your recommendation might encourage its use elsewhere in both the public and private sectors? If you felt able to help us in this way, we would ask the Clerk to consult you about possible dates, and would carry

out the appropriate formalities which have to be followed when a Committee of the House of Commons wishes to invite members of the House of Lords to appear before them.
9 May 1984

Letter to the Chairman, Employment Committee from the Chairman, the Security Commissions

Thank you for your letter of 9 May, I had thought that the report of the Security Commission (Cmnd 8876) on the Prime case gave a reasonably full and clear account of the considerations which led the Commission from its initial scepticism to the conclusion that it would be appropriate to recommend a strictly limited pilot scheme (to test the feasibility of polygraph security screening in the intelligence and security agencies" (see chapter 10 recommendation 6). I would particularly draw your attention to paragraphs 9.5 to 9.10.

During our visit to Washington in the course of the Prime inquiry, General Sir Hugh Beach and I had full and extensive consultations with senior staff of the NSA and CIA. We were given much confidential information regarding success achieved by the polygraph in personnel security screening; we saw a polygraph in operation; we had very full discussions concerning the efficacy of the polygraph both with senior operators and with other senior staff responsible for personnel security generally. Naturally we communicated all the information we had been able to obtain in Washington to our colleagues on the Commission who accepted our assessment.

I do not think it would be appropriate for the Commission to give oral evidence to your Committee on the subjects which you raise in the last paragraph of your letter. The Commission was established for the sole purpose of investigating security matters and has, in my view, no warrant publicly to express opinions outside that sphere. As to the use of the polygraph in the security context, the Commission said what it thought appropriate to say in its report to the Prime Minister, and there would be nothing that I could add to that in evidence to your Committee.
21 May 1984

Letter to the Secretary of State for Employment from the Chairman, Employment Committee

As you know the Employment Committee have been engaged over the last few months in an inquiry into the implications for industrial relations and employment of the introduction of polygraph. We have already taken evidence from a number of witnesses, and are seeking further information from other sources before making a Report to the House.

We should be glad to know whether you wish to give your views on the subject to the Committee at this stage. I am therefore writing to invite you, if you so wish, to provide the Committee with a paper on the subject.
11 July 1984

Letter to the Chairman, Employment Committee from the Secretary of State for Employment

Thank you for giving me the opportunity to put my views on the polygraph to the Employment Committee. I think it would be more appropriate if any response to the Committee awaited the publication of your report.
23 July 1984

Letter to the Secretary of State for Foreign and Commonwealth Affairs from the Chairman, Employment Committee

The Employment Committee have been engaged over the last few months in an inquiry into the implications for industrial relations and employment of the introduction of the polygraph. Our interest is in the implications for the UK labour market as a whole, not any particular sector. Nevertheless the matter of the introduction of the polygraph at GCHQ has been raised in written and oral evidence by the CCSU. We do not wish in any way to trespass in matters of national security, but there are certain practical questions arising out of the evidence we have received where the experience at GCHQ could be of assistance to us in our general inquiry. We therefore wish to seek information on certain aspects of the pilot scheme which is being introduced at GCHQ, and have obtained the agreement of the Foreign Affairs Committee to approach you in the matter.

The polygraph is only a machine and its usefulness depends entirely on the skilled interpretation by the polygrapher of the graphs it produces. We know of no polygraphers at present operating in the United Kingdom other than those at GCHQ, and would welcome the assistance of one of them in studying the use of the machine. We should like to have information about the qualifications and training of polygraphers as well as the methods of operation, and would therefore be grateful if the Director of GCHQ or other appropriate official, together with a polygrapher, could come before us to give oral evidence at a mutually convenient date. We might also wish to invite you or one of your Ministerial colleagues to give oral evidence later.
26 July 1984

Letter to the Chairman, Employment Committee from the Minister of State, Foreign and Commonwealth Office

In Geoffrey Howe's absence I am replying to your letter of 26 July.

As you know, the Security Commission recommended that a pilot scheme should be introduced to test the feasibility of using polygraph examinations in security screening in the intelligence and security agencies. The Government have accepted this recommendation and the test is under way. The pilot scheme will take about two years and it is not until this is complete and the results evaluated that the Government will be in a position to make an assessment of the polygraph's utility in the limited area of intelligence and security.

Responsibility for conducting the polygraph pilot scheme lies with

the Security Service. So far there are no staff at GCHQ trained in the use of the polygraph. In view of this I do not think that either the Director of GCHQ or any of his staff could at this stage make a useful contribution to the work of your Committee.
9 August 1984

Letter to the Deputy Parliamentary Clerk, Home Office, from the Clerk of the Committee

The Employment Committee are conducting an inquiry into the implications for industrial relations and employment of the introduction of the polygraph. In the course of correspondence with the American Polygraph Association about American experience, the Association informed us they had supplied a large amount of information to a member of the Home Office Information Service at St. Albans and said that he "is writing a state of the art review for the Home Office on the polygraph as used by law enforcement. The report will be available to police agencies throughout England."

I have been asked by the Chairman of the Committee to seek certain information from the Home Office, and have informed the Clerk to the Home Affairs Committee, who gave me your name as Liaison Officer.

The main areas on which we should like information are:

1. Can the Home Office confirm that a member of the Information Service is engaged in a review of the use of the polygraph in law enforcement, the report on which will be available to police officers throughout the country?

2. What is the purpose of the review?

3. Does the Secretary of State contemplate authorising the use of the polygraph by police authorities, and in what circumstances?

We should be grateful for a reply at your early convenience, as the Committee are hoping to complete their own enquiry by Christmas.
22 November 1984

Letter to the Clerk to the Committee from the Deputy Parliamentary Clerk, Home Office

Thank you for your letter of 22 November about polygraphs. The position is as follows.

So far as scientific evaluation of the polygraph is concerned, the Home Office is aware of the views of the Royal Commission on Criminal Procedure, in the light of the research which the Commission had itself commissioned, that the polygraph's lack of certainty from an evidential point of view, told against its introduction for the purpose of court proceedings. For its part the Home Office has not conducted any scientific evaluation of the polygraph, nor has it received any request for such an evaluation from the police service.

As with other equipment, the decision whether or not to seek to acquire a polygraph for police use would be a matter for the chief officer of police concerned, subject to the financial authority of his police authority and taking into account any guidance from the Home Office. In practice polygraphs are not used by any force in England and Wales, and the Home Office is not aware that any chief officer of police is contemplating their acquisition. For its part the Home Office has no plans to issue any guidance to police forces on the subject of polygraphs.

With regard to the enquiries to which you refer, these were made by a clerical officer at the Sandridge Laboratories of the Home Office Scientific Research and Development Branch (SRDB). The SRDB has an interest in keeping up-to-date with technical developments which are, or which potentially might be, of interest to the police. The Branch provides an information servide for police forces seeking details of police-related research and equipment. On 6 July this year the clerical officer received a telephone call from a police sergeant asking for information on polygraphs. He found that the information available was not sufficient to answer this enquiry to his satisfaction, so he wrote to a number of organisations. It was within his discretion to make enquiries to enable him to deal with the query which he had received, but he exceeded his authority in saying that a state of the art review was being conducted and that a report would be available to police forces. In fact the Branch is not conducting a state of the art review and a report is not being prepared; the information collected at Sandridge (including that supplied in response to the clerical officer's enquiries) will however be retained and may be drawn upon in dealing with any future queries.

I hope this explains the position. Naturally, the information collected at Sandridge is available if you wish to consult it.
5 December 1984

Letter to Norman Ansley, American Polygraph Association from the Assistant to the Committee

The Employment Committee, which is one of the Select Committees set up by the House of Commons, is at present holding an inquiry into "the implications for industrial relations and employment of the introduction of the polygraph", and as part of that inquiry the Committee would like to get some evidence from firms who have used the instrument. At present, there is only one firm in the UK, (Polygraph Security Services Ltd.), who offer such a service, and they have very few clients so far. In documentation that the Company submitted to the Committee, there was a partial list of Companies that are served by their US affiliate, the Zonn Corporation, but the Committee would welcome your advice on a reasonable short list of Companies (not necessarily Zonn's clients) which would give then a fair cross section of typical polygraph clients in the United States.

The idea would be that we would then write to them to ask if they could provide information on their experience of the polygraph--type of use (e.g., pre-employment selection, screening of employees, criminal investigation), length of experience, views on reliability, etc.

I should be grateful if you could provide the information at your early convenience, as it is the Committee's intention to make a Report of their findings to the House before the end of this year.
9 August 1984

Letter from Mr. Norman Ansley, American Polygraph Association

In response to your request for information on the polygraph I am sending an extensive bibliography (Truth and Science), some reprints of articles, and a copy of a report on the accuracy and utility of the polygraph published by the United States Department of Defense. [These documents are available for inspection in the House of Lords' Record Office.]

The Defense study will provide you with comparisons of interviewing and the use of the polygraph, and background investigations and the use of the polygraph. There is brief discussion and table of the results of surveys of persons who have taken polygraph examinations, including tests given in the private sector. There are also tables and examples of the type of information obtained during the pre-employment screening operations of the U.S. government where the polygraph is used.

You asked for the names and addresses of companies in the United States that use the polygraph. A survey of several years ago showed that 25 percent of the major U.S. companies use the polygraph in either investigations or screening. In addition, about a third of the law enforcement agencies in the U.S. use the polygraph in pre-employment screening. Here are a few suggestions for contacts. [The names and addresses of five companies were supplied.]

The routine use of the polygraph to screen applicants began in 1932 in Chicago with the Lakeshore National Bank. Today, in the United States there are thousands of companies, large and small, that use professional polygraph services as part of their selection process. There are constraints on the instrumentation and qualifications of examiners in thirty of our fifty states through licensing laws. There are minimum training standards for polygraph courses and schools, both in universities and those in government or private service. The extremely detailed requirements are established and enforced through inspection by the American Polygraph Association. Even the government courses in the United States and Canada are so accredited. The topics that may be asked of an applicant in the United States are the same as those that any interviewer may ask, and no more; as the rules are set under federal legislation and enforced by the Equal Employment Opportunities Commission. The federal law, and many state laws, provide for criminal sanctions and facilitate private law suits for damages against those who violate the rules. Sixteen of our states limit the use of the polygraph in the private context, often making it entirely voluntary on the part of the applicant or employee. A frequent exception is the application to law enforcement agencies and another common exception is the use of the polygraph on those who manufacture, distribute or sell narcotics and controlled dangerous substances. No state or federal law limits the use of the polygraph in law enforcement for investigative purposes.

If you need additional information, do not hesitate to write.
29 September 1984

Letter to five Companies in the United States from the Assistant to the Committee

[The Committee received four responses, one of which was in confidence to the Committee, and has not been reported.]

The Employment Committee is a Select Committee of the House of Commons, and is at present engaged in an inquiry into the implications for industrial relations and employment of the introduction of the polygraph. As the instrument is in its infancy in Great Britain and there are no companies here using it to any extent, we felt that it was necessary to get in touch with a few companies in the United States, where the polygraph has been used in the private sector for many years to screen and select applicants for jobs or promotion. We wrote to Mr. Norman Ansley, the Editor of the American Polygraph Association Newsletter, and he suggested that you might be able to help us with the information that we require.

The questions that we would like answered are:

1. What are the main fields of work of your company?, and how many people does your company employ?

2. Do you use the polygraph as a pre-employment screening device?, and if so, are all potential employees screened, or just ones for potentially sensitive posts?

3. Would the questions asked of job applicants be confined to matters such as age, falsifying the application form, previous experience, or health matters etc.? or would you inquire into such areas as any criminal record, sexual and/or political orientation, or alcohol and/or drug dependence? Are the questions discussed beforehand, and agreed with the applicant?

4. Do you use the polygraph on existing employees as a matter of course (say, every 2 years or so)? or in a situation where the honesty, reliability or suitability of a candidate needs to be confirmed--e.g., for reasons of promotion or transfer to a different department or section of your company?

5. Have you had occasion to use the polygraph to investigate crimes or specific incidents and with what results?

6. How long has your company used the polygraph and to what extent?

7. Has the use of the polygraph affected industrial relations?--have there been complaints to management by individual employees, trade unions or civil rights organisations? If so, how have any disputes been resolved or potential disputes avoided?

8. Have there been instances where applicants or existing employees

have refused to take a polygraph test? If so, were they denied a job or promotion because of their refusal?

9. Do you consider that the use of the polygraph is a worthwhile and effective way of selecting and screening staff? Do any savings made due to reduced theft or fraud compensate for the cost of conducting the tests or labour disputes stemming from the use of the instrument?

We would appreciate any answers that you felt about to give to these questions as soon as is convenient, and preferably within the next 4 weeks as the Committee are aiming to Report to Parliament before Christmas.

I should like to stress that if you so requested, any information supplied would be treated in confidence, and only divulged to the Members who serve on this Committee.
9 November 1984

Letter from Cadet Uniform and Career Apparel,
(Buffalo, New York), in response to letter of 9 November

Our business is industrial uniform rental and retail chain dry cleaning stores. We employ approximately two hundred persons and have utilized polygraph for all employees for more than twenty-five years. I am a polygraphist, presently inactive, and a full member of the American Polygraph Association.

With the advent of polyester fabrics some years ago, most chain cleaners in the United States ceased operation. The use of polygraph is the most significant reason for our being able to profitably continue.

In answer to your questions:

1. Industrial uniform rental and forty retail outlet stores, all processing being done in our main facility. Employment two hundred.

2. Pre-employment tests are given for potentially sensitive posts such as store clerks who will be handling cash. Production personnel are tested after their training period.

3. We ask only what we feel is of value in determining applicants chances of being a good employee for the company. We do not feel sexual and/or political orientation makes much difference compared to honesty, drugs, alcohol, etc. We do not ask any questions that are in violation of any governmental rules, regulations or laws, etc. If a person appears fit for the job we do not care about age as we do not have a pension plan where age is an important consideration. If a person has a bad back we do not want to put them at something that may aggrivate the problem. Falsifying the application, criminal record, alcohol and/or drug dependence, serious theft from a previous employer are all of very much concern to us and we cover these areas if allowed to do so under existing law. We discuss the and agree with the applicant to all questions prior to the tests.

4. We do periodic testing, following an employees pre-employment test. The time span varies from three months to five years depending on the conclusiveness of the pre-employment test, if the position held is sensitive, if the branch store where the employee works is doing well or poorly, if the employee has had two or three or four tests and done very well in all tests, etc.

5. We have had many occasions to use the polygraph to investigate crimes and specific incidents with excellent results. What we like best here is not pinpointing the guilty party, but clearing the innocent people who were in a position to be involved but were not.

6. We have used polygraph continuously for more than twenty-five years for all employees.

7. The polygraph very definitely has improved industrial relations at our facility and every other non-union facility where it is used properly. The simple reason is that with polygraph an employer tends to eliminate bad employees, those who are deep into drugs, dishonest, troublemakers, etc. And these are the type of employee who are going to promote poor industrial relations.

In a union facility, usually the bad employees are protected by the union bosses because they are strong union supporters and when there is polygraph involved these bad employees will do everything in their power to fight it.

Our only complaints from employees have been that a particular polygraphist has not been as polite as they thought he should have been. But this type complaint has been not more frequent than that a store is too hot, a machine does not work properly, lighting is not adequate, the wash room is dirty, etc. These complaints come to management and we look into all of them and all have been resolved to the employees satisfaction as far as we know. We are not aware of any of our employees complaining to an outside source regarding polygraph.

Trade Unions and civil rights organisations continually complain about polygraph, apparently because it promotes good relations between employer and employee and when you have these good relations you likely will not have employees voting a union in.

8. When we instituted polygraph many years ago less than ten per cent of existing employees refused to take polygraph tests. We granted an amnesty in that any prior stealing would be forgiven, which it was. Those who had been stealing were tested again within six months and those who remained honest in that period were retained. A small percentage of applicants refuse to take polygraph test. After twenty-five years it has become apparent that most refusals are non-desirable applicants.

A refusal to take a polgyraph test is taken into consideration along with other information at hand in making a decision to promote or to hire.

9. Polygraph is the most valid aid in selecting staff known to man.

Savings made due to reduced theft and fraud far outweigh the cost of giving tests. The polygraph, properly utilized, prevents labour disputes.
23 November 1984

Letter from Days Inns of America, Inc. (Atlanta, Georgia), in response to letter of 9 November

I am pleased and honoured to offer your Committee any assistance possible concerning your inquiry into the use of the polygraph.

Your request is a timely one. As Chairman of the Georgia State Board of Polygraph Examiners, appointed by the governor, I have just finished a project where our existing state laws governing the use of polygraph were reviewed by a senate study committee. Also involved in the project was a total rewriting of our state law. I have enclosed a copy of the draft which will be presented to the Georgia General Assembly for passage in January of 1985.[These documents are available for inspection in the House of Lords' Record Office.] I believe it is possible that some of the same questions and concerns your committee might have were addressed by our state committee.

My answers to your questions are as follows:

1. Days Inns of America, Inc., is the nation's sixth largest hotel chain. Our hotels or motels consist of guest rooms, a gift shop, and a restaurant. Some properties have gasoline operations. We currently employ approximately ten thousand people.

2. Yes, all applicants for management positions or sensitive posts within our corporation are given a pre-employment polygraph. However, everyone applying for a job signs a condition of employment at the time they fill out the application stating that, if requested, they will submit to a polygraph examination.

3. Attached is a list of the questions covered with all applicants during a pre-employment examination. All questions are fully discussed and agreed upon prior to the examination. (See annex).

4. No.

5. Yes, with a success rate of eighty-five to ninety-five per cent. In the past eight years, we have recovered in excess of one million dollars in stolen company money or property by using the polygraph as an investigative tool.

6. Eight (8) years, pre-employment and specific incidents.

7. No, to all parts of question seven.

8. Yes, employees have refused to be examined, but not in the pre-employment stages. We have had employees refuse the exam only in specific investigations. We have then terminated them for violating their condition of employment, not for refusing the polygraph.

9. We feel that the use of the polygraph is worthwhile and that the cost is justified. It has also had a tremendous impact on reducing thefts in our company. If the polygraph is used properly, there would be no grounds for labour disputes, as evidence in our company.

I am also enclosing a copy of a pamphlet entitled "Basic Facts About the Polygraph", which we give to people prior to administering examinations.[Document available for inspection in the House of Lords' Record Office.] We have found the pamphlet to be very helpful. I hope my input will help your Committee. I will be more than happy to make myself available to you for any further assistance you might need.
12 December 1984

Annex

PRE-EMPLOYMENT EXAMINATION QUESTIONS

Did you use your correct name on your employment application?
[] Yes [] No
Are you using your correct age and date of birth?
[] Yes [] No
Was your application filled out truthfully?
[] Yes [] No
Have you ever been fired from a job?
[] Yes [] No
Have you ever been convicted of any crime?
[] Yes [] No
Have you ever taken merchandise or property from an employer without permission?
[] Yes [] No
Have you ever taken any money unlawfully from an employer?
[] Yes [] No
Have you ever accepted an illegal gratuity or kick-back on a previous job?
[] Yes [] No
Have you ever borrowed money from an employer and failed to repay it?
[] Yes [] No
Have you ever used any type of illegal drugs?
[] Yes [] No
Have you ever sold any type of illegal drugs?
[] Yes [] No
Have you ever had any kind of a drinking problem?
[] Yes [] No
Are you currently under a doctor's care?
[] Yes [] No
Have you ever been injured at work?
[] Yes [] No
If you were in the military is your discharge other than honourable?
[] Yes [] No
Have you ever been involved in any type of an unsolved crime?
[] Yes [] No
Are you presently wanted by any law enforcement agency?
[] Yes [] No
Have you ever committed any act which could leave you open for pressure or blackmail?
[] Yes [] No

Is there anything in your past which you would like to discuss prior to this examination?
[] Yes [] No

Letter from the McKesson Corporation
(San Francisco, California) in response to letter of 9 November

In regard to your inquiry on the use of polygraph by a major corporation, I will attempt to reply to your very thorough and lengthy nine questions.

1. McKesson has been in business as a corporation headquarters in the United States for just over 150 years. Primarily, we are a wholesale distributor. We also own a few proprietary lines. Corporate-wide, we employ approximately 12,000 people. Our major groups are:

McKesson Drug Group, where we are the world's largest distributor of drugstore products.

McKesson Beverage Group, the world's largest distributor of wines and spirits, and in the western United States, a major distributor of bottled water.

McKesson Chemical Company is our third major operating group, the largest distributor in the United States of industrial chemicals.

We have a fourth major group called McKesson Development Group, and it is under this umbrella that all of our smaller operating units report.

2. Our use of the polygraph is primarily as a pre-employment screening device for applicants. We use this method to screen new hires when they are employees who would have access to money or merchandise.

3. As for the scope of the questions used during the polygraph examination, we are careful to limit our question series to such matters as falsifying application, current use of drugs, criminal convictions, theft from past employers, any history of shoplifting, verification of medical history, or committing any serious unsolved crimes. All questions are reviewed and agreed to by the applicant prior to the examination. We have never allowed questions concerning political or sexual orientation (nor do I know of a major corporation in the United States which does so).

4. Although several companies use the polygraph on a routine basis every one or two years, our policy has been that we test only applicants. The only reason an existing employee would ever be tested would be in regard to a specific investigation. We do not routinely test all employees, nor do we use the polygraph for promotions or transfer reasons.

5. We have had occasion to use the polygraph relative to specific incidents, with very favourable results. Primarily, the polygraph serves to clear the innocent employee of suspicion or allegations, and also to identify the perpetrator of the act.

6. We are in our 31st year of corporate-wide use of the polygraph.

7. The polygraph has not materially affected the efforts toward a

positive employee relations program which we are very sensitive to. There have been occasional complaints by labour unions or civil rights organisations, but these are very seldom, and have always been resolved to everyone's satisfaction.

8. Occasionally, an employee or an applicant has refused to take a polygraph test, and in such situations, never been denied a job or a promotion because of their refusal. In the case of applicants, we point out that the polygraph is used as a screening device and that all new employees must have a security clearance. The applicant can elect a method, either polygraph or more traditional background investigation. Our experience shows that nearly all employees elect to take the polygraph examination. In the case of existing employees, it should be pointed out that a polygraph examination is not the first step in an investigation, but usually one of the latter steps. Many of our investigations are resolved without having to request employees to take an examination. Here again, it is seldom that we find an employee refusing to take the polygraph.

9. By now, I'm sure you have concluded that since we have been using the polygraph for 31 years, we are quite satisfied with it and find it an extremely effective way of not only selecting applicants but also increasing employee morale and obtaining an overall higher quality work force. The savings are difficult to measure in the sense that, by not hiring people who would steal from us, we cannot be sure of how much we have saved. It is nearly impossible to assign specific numbers to that set of circumstances, but our senior management continues to be extremely satisfied that it is a cost-effective measure.

I hope these answers are helpful for you. You may feel free to share the information with any Members on your Committee.
13 December 1984

Letter from Dr. Frank Horvath
Associate Professor, Michigan State University

Recently I was sent a copy of Dr. D. Raskin's testimony before the Employment Committee on 20 June 1984. In reading that testimony it became apparent that the Committee Members were very interested in a wide range of issues about polygraph testing but particularly in its use in employment situations. That being the case I am concerned that the committee members will accept Dr. Raskin's views to be representative of those held by others who have both practical and scientific training and experience in polygraph testing. For that reason I feel compelled to write you and to offer my views on some of the issues raised in Raskin's testimony.

In his testimony Raskin described for the Committee his view of how pre-employment polygraph testing is "commonly" done in this country and what were the issues to be considered in assessing the value of such testing. Because I have written papers in which I addressed both of these points I have enclosed copies of them for your information. As you will see, the most recent of these papers, presented to the American Association for the Advancement of Science in June 1984, discusses pre-employment polygraph testing in a manner quite different from the way in which most

critics address the issue. It is my view that the value of and the important concerns about pre-employment polygraph testing are often misunderstood and misrepresented by the critics, particularly those who have scientific but not practical experience. In the other paper I think you will see that what was described to the Committee as being the common way in which pre-employment screening is done is different from my experiences. While I would certainly acknowledge that there are abuses, I have not observed that the great majority of polygraph examiners in this country engage in them.

There were numerous other issues raised in the testimony about which I would like to comment in some detail. However, many of these are also issues about which I have written previously in published articles. For that reason I have enclosed copies of publications on polygrpah testing which, though not dealing specifically with pre-employment screening, do point out some of the topics about which there is little consensus in the scientific community, Raskin's testimony notwithstanding.

In reading the enclosures you will perhaps see that my views on the nature and value of polygraph testing are in many respects not only different from those which the Committee heard but also are quite a bit more favourable. I am convinced that polygraph testing, properly used, serves an important and irreplacable role in both criminal and noncriminal situations. Although there are indeed problems in the field that need to be dealt with, the field has come a long way in the 20 years I have observed it; almost all of the credit for improvements in the field, by the way, belongs to the efforts of members of the American Polygraph Association.

It is perhaps sufficient at this time merely to call to your attention the fact that the views expressed by Raskin in a number of areas are not representative of those held by others in the scientific community who are familiar with the polygraph testing field. Should you or the Committee Members wish more detailed responses in specific areas I would welcome the opportunity to provide them. Given that your country has the opportunity to avoid many of the developmental problems encountered here, it is very important that before a decision is made about polygraph testing that the issues are properly framed and that the evidence on all sides is considered.
12 December 1984

Letter from Dr. Stanley Abrams (Portland, Oregon)

I am writing you at the request of the American Polygraph Association. They asked if I would read and comment on the remarks of David Raskin who testified before your Employment Committee on June 20. While my response is undoubtedly late, I will take the liberty of bringing out several areas in which I disagree with Dr. Raskin.

Although I am a clinical psychologist, I play a large role in forensic psychology including the use of the polygraph.

In regard to testing in the employment realm, there is no question

that it has been a very effective means of reducing theft losses. I would agree with Dr. Raskin that there is relatively little research in this area, but the demand for its usage by business attests to its value. The real objection to its use does not lie in its lack of effectiveness, but rather in the realm of civil rights. Unions' which control a large bloc of votes, have attempted to protect their membership by fostering anti-polygraph legislation. They have been partially successful in accomplishing this resulting not only in losses to the employer, but since these losses are passed on to the consumer, to the public as well.

When employee testing is utilized as it is in most of our states, there are basic procedures applied: pre-employment testing, periodic examination and testing for specific losses. The latter approach is exactly the same technique as used in criminal investigations and, therefore, has equally high accuracy. Periodic testing has been shown to be a highly effective deterrent to employee theft. When an individual is aware that he will be tested every six months, it greatly reduces the likelihood of his stealing.

The third and probably most controversial approach is that of applicant testing. This procedure is much like the guilty knowledge test or peak of tension test employed in criminal investigation. If, for example, there are five suspects in a shooting all of whom claim to have no knowledge of what occurred, the following technique could be used. Each suspect would be asked the following questions:

1. Do you know if Smith was shot with a 22?
2. Do you know if Smith was shot with a 25?
3. Do you know if Smith was shot with a 32?
4. Do you know if Smith was shot with a 38?
5. Do you know if Smith was shot with a 44?
6. Do you know if Smith was shot with a 45?

The innocent subjects, not knowing the caliber of the weapon used would probably respond in much the same manner to each question asked. In contrast to this, the guilty individual would demonstrate a much greater physiologic reaction to the critical item, thereby indicating his guilty knowledge. This is one of the most powerful and valid polygraph procedures. Applicant testing is rather similar in nature to this in that each question serves as a control for the other questions. Therefore, the individual who is asked if he has stolen from a previous employer will react to that question if he has been involved in that activity, but he will not react to other questions if he is being truthful.

The question of employee testing is not whether it is an effective approach in reducing shrinkage, instead it is a civil rights issue. It will reduce the losses of an employer and save money for the consumer but the cost is the loss of some of the civil rights of the worker.

Dr. Raskin has indicated that he has a low opinion of almost all polygraph examiners. I do not share his views in this area. Like he, I have examined charts throughout most of our country and I have been quite impressed with the ability of a great many polygraphists. Many of these examiners are law enforcement officers or former officers who have many

years of investigative experience. On the other hand, psychologists and psychiatrists with little experience in this realm are most often quite gullible and naive when it comes to dealing with antisocial individuals. Because of this, some of the best examiners are police officers. I would agree, however, that a higher level of training would be desirable than that of our country.

I would strongly recommend the utilization of polygraphy in your intelligence sector. Unquestionably countermeasures will be employed, but this approach would be one more very valuable tool to add to your armamentarium.

If polygraphy were to be introduced in England you would have the opportunity of learning from our mistakes. High standards for polygraphists could be set, effective training programs could be developed, quality control could be instituted and you would have the opportunity to research the validity of your techniques from their onset.

I wish you well in your program whatever decision you make and certainly feel free to contact my office if you require any specific information.
27 December 1984

* * * * * *

ABSTRACTS

Electrodermal

"The Effect of Stimulus Significance on Skin Conductance Recovery." By Cynthia L. Janes, Barbara D. Strock, David G. Weeks, and Julien Worland. Psychophysiology 22 (2)(March 1985): 138-146.

"The relationship between skin conductance (SC) recovery time and stimulus meaning was investigated. Previous research has shown that a strong relationship between prestimulus electrodermal activity (prior activity) and recovery time makes it necessary to control prior activity before the relationship of recovery time and stimulus meaning can be evaluated properly. In this study prior activity was controlled by experimental design. We examined the effects of stimulus meaning on skin conductance recovery time and amplitude in 55 teenage and young adult subjects in a continuous performance paradigm. Tones were presented monaurally to left and right ears. Subjects were required to make a pedal press after any tone in the left or right ear that followed a right-ear tone. Recovery time was computed for left-ear and right-ear tones not requiring a press because they had been preceded by a left-ear tone. SC recovery was longer for signal (right-ear) than for nonsignal (left-ear) tones with the effects of prior SC activity and amplitude removed. These findings replicate those of a pilot study (Janes, 1982). We conclude that stimulus significance can affect SC recovery time and that in this paradigm differences in prior SC activity cannot account for the recovery time differences observed." [Author abstract]

years of investigative experience. On the other hand, psychologists and psychiatrists with little experience in this realm are most often quite gullible and naive when it comes to dealing with antisocial individuals. Because of this, some of the best examiners are police officers. I would agree, however, that a higher level of training would be desirable than that of our country.

I would strongly recommend the utilization of polygraphy in your intelligence sector. Unquestionably countermeasures will be employed, but this approach would be one more very valuable tool to add to your armamentarium.

If polygraphy were to be introduced in England you would have the opportunity of learning from our mistakes. High standards for polygraphists could be set, effective training programs could be developed, quality control could be instituted and you would have the opportunity to research the validity of your techniques from their onset.

I wish you well in your program whatever decision you make and certainly feel free to contact my office if you require any specific information.
27 December 1984

* * * * * *

ABSTRACTS

Electrodermal

"The Effect of Stimulus Significance on Skin Conductance Recovery." By Cynthia L. Janes, Barbara D. Strock, David G. Weeks, and Julien Worland. Psychophysiology 22 (2)(March 1985): 138-146.

"The relationship between skin conductance (SC) recovery time and stimulus meaning was investigated. Previous research has shown that a strong relationship between prestimulus electrodermal activity (prior activity) and recovery time makes it necessary to control prior activity before the relationship of recovery time and stimulus meaning can be evaluated properly. In this study prior activity was controlled by experimental design. We examined the effects of stimulus meaning on skin conductance recovery time and amplitude in 55 teenage and young adult subjects in a continuous performance paradigm. Tones were presented monaurally to left and right ears. Subjects were required to make a pedal press after any tone in the left or right ear that followed a right-ear tone. Recovery time was computed for left-ear and right-ear tones not requiring a press because they had been preceded by a left-ear tone. SC recovery was longer for signal (right-ear) than for nonsignal (left-ear) tones with the effects of prior SC activity and amplitude removed. These findings replicate those of a pilot study (Janes, 1982). We conclude that stimulus significance can affect SC recovery time and that in this paradigm differences in prior SC activity cannot account for the recovery time differences observed." [Author abstract]

Address requests for reprints to Cynthia L. Janes, St. Louis University Sleep Disorders Center, 1221 S. Grand Blvd., St. Louis, Missouri 63104.

Effect of Speech Content and Voice Quality

"What You Say and How You Say It: The Contribution of Speech Content and Voice Quality to Judgments of Others." By Maureen O'Sullivan, Paul Ekman, Wallace Friesen, and Klaus Scherer.

The purpose of the study was to determine which speech component, content or voice quality, correlated more with impressions formed on the basis of the total speech. There were three studies in which judgments were based on separated channels were judgments based on combined channels. The former was speech content, voice quality, face along and body alone. The latter, in which combinations were combined, involved speech, face + speech, and face + body + speech. The judges observed spontaneous behavior in two types of interview situations and rated various aspects of the behavior. Correlations between separated and combined channels varied significantly depending on the kind of behavior judged, the attribute rated, and whether other channels of information were available. It was clear that in judging other people, both verbal and nonverbal cues are important.

Address requests for reprints to Maureen O'Sullivan, Human Interaction Laboratory, Department of Psychiatry, University of California, San Francisco, 401 Parnassus Avenue, San Francisco, California 94143.

Post Hypnotic Amnesia

"Volitional Experiences Associated With Breaching Posthypnotic Amnesia." By William C. Coe and Edward Yashinski. Journal of Personality and Social Psychology 48 (3)(1985): 716-722.

Highly responsive hypnotic subjects classified as having control over remembering or not having control over remembering during posthypnotic amnesia were compared during posthypnotic recall. Subjects rerated their voluntariness, their control over remembering, after the experiment. Two contextual conditions were employed (2 x 2 design): a lie detector condition meant to create pressure to breach amnesia and a relaxed control condition. In contrast to earlier findings, the recall data showed that both voluntary persons and those who were classified as not having control over remembering breached under the lie detector condition, compared with their counterparts in the relaxed condition. However, the degree of breaching was not great in any condition. The results are discussed as they relate to studies attempting to breach posthypnotic amnesia and characteristics of the voluntary-involuntary dimension.

Address requests for reprints to William C. Coe, Psychology, California State University, Fresno, California 93740.

* * * * * *