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NTSB Order No. EA-4094

UNITED STATES OF AMERICA
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

Adopted by the NATIONAL TRANSPORTATION SAFETY BOARD
at its office in Washington, D.C.
on the 18th day of February, 1994

DAVID R. HINSON, Administrator, Federal Aviation Administration, Complainant, v. ROBERT ANDERSON HOOVER, Respondent.	)	Docket SE-13417

OPINION AND ORDER

The Administrator has appealed from the oral initial decision issued by Administrative Law Judge William R. Mullins, at the conclusion of an evidentiary hearing held on January 13 through January 16, 1994.[1] In that decision, the law judge reversed the Administrator's emergency order revoking respondent's airman medical certificate. The Administrator's

[1]Attached is an excerpt from the hearing transcript containing the oral initial decision.

emergency order alleges that respondent does not meet the medical standards of paragraphs (d)(2)(ii) and (f)(2) of sections 67.15 and 67.17 of the Federal Aviation Regulations (FAR), 14 CFR Part 67[2], because he has a cognitive deficit.[3]

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[2]FAR §§ 67.15 and 67.17(d)(2)(ii) and (f)(2) provide that to be eligible for a second-class or third-class medical certificate, respectively, an applicant must meet the following requirements:

> (d) Mental and neurologic....
> (2) Neurologic....
> (ii) No other convulsive order, disturbance of consciousness, or neurologic condition that the Federal Air Surgeon finds-
> (a) Makes the applicant unable to safely perform the duties or exercise the privileges of the airman certificate that he holds or for which he is applying; or
> (b) May reasonably be expected, within two years after the finding, to make him unable to perform those duties or exercise those privileges;
>
> and the findings are based on the case history and appropriate, qualified, medical judgment relating to the condition involved.
>
> (f) General medical condition....
> (2) No other organic, functional, or structural disease, defect, or limitation that the Federal Air Surgeon finds-
> (i) Makes the applicant unable to safely perform the duties or exercise the privileges of the airman certificate that he holds or for which he is applying; or
> (ii) May reasonably be expected, within two years after the finding to make him unable to perform those duties or exercise those privileges;
>
> and the findings are based on the case history and appropriate, qualified, medical judgment relating to the condition involved.

[3]A cognitive deficit is a disturbance of the brain which interferes with thinking. (Testimony of Dr. Pincus, TR-472). Stedman's Medical Dictionary, 25th Edition at 325 (1990) defines "cognition" as a "generic term embracing the quality of knowing, which includes perceiving, recognizing, conceiving, judging, sensing, reasoning, and imagining."

The Administrator asserts on appeal that the law judge erred by reversing the emergency order. The Administrator argues that a preponderance of the evidence, some of which, he claims, was erroneously excluded by the law judge, supports the Federal Air Surgeon's determination that respondent is unqualified to hold an unrestricted medical certificate.[4] For the reasons that follow, we agree. We reverse the initial decision.

Respondent is a renowned air show performer. His illustrious aviation career spans over 50 years. During World War II he was a Navy pilot. While flying his last combat mission his aircraft was shot down, and he was taken as a prisoner of war.[5] After leaving the military, he worked as a test pilot for both the military and private industry, where he developed various flight demonstration routines. Since leaving private industry he has performed aerobatic routines at air shows all over the world. After 25 years of performing, respondent, at the age of 72, is known as the "Dean" of air show pilots. (Reply brief at 2).

In June, 1992, respondent performed at an air show in Oklahoma City, Oklahoma. Two FAA Aviation Safety Inspectors witnessed the performance. Both subsequently submitted statements which questioned respondent's physical and mental

[4]Respondent has filed a brief in reply urging the Board to affirm the initial decision.

[5]This fact is relevant in that respondent's experts claim he sustained a head trauma that could explain the abnormal findings of two radiological examinations, infra.

condition, based on their observations during his performance and while on the ground. Respondent was subsequently asked by the Federal Air Surgeon's office to submit to neurological, psychological, and psychiatric evaluations. Respondent submitted to the requested evaluations and was re-tested at his request, when the first results were deemed unfavorable by the office of the Federal Air Surgeon. The Administrator's emergency order was issued as a result of the Federal Air Surgeon's final determination that all of the evaluations establish that respondent has a cognitive deficit.

Garrett O'Connor, M.D., a psychiatrist, carried out a clinical evaluation of respondent to determine the possible presence of neuropsychological facts which might disqualify respondent from holding a medical certificate. (Administrator's Exhibit A-1, Respondent's airman medical file, at 174-181). Dr. O'Connor performed a standard psychiatric interview. He found a few abnormalities on the mental status examination relating to short-term memory deficits and an impairment in respondent's ability to complete backward digit span tasks accurately. Based on these abnormal findings, he referred respondent to Dr. Robert Elliott. According to Dr. O'Connor's report, Dr. Elliott's findings "confirmed rather precisely the deficits noted in my own clinical evaluation." (A-1 at 175). In his opinion, "[t]he most likely explanation for the abnormal findings is some form of nonspecific aging pathology." Id. at 181.

Dr. Robert Elliott is a board-certified neuropsychologist.

He devotes fifty percent of his practice to the evaluation of pilots, consulting with most of the major air carriers and with the FAA. He has performed over 800 evaluations of airmen since 1976. (TR-45). Dr. Elliott performed twelve neuropsychological tests on respondent: the Wechsler Adult Intelligence Scale-Revised (WAIS-R); the Trail Making Test (parts A and B); the Booklet Category Test; the Rey Osterrieth Complex Figure Test; the Rey Auditory-Verbal Learning Test; the Wisconsin Card Sorting Test; the Boston Naming Test; the Wechsler Memory Scale-Revised; the Controlled Oral Word Association test; the Manual Finger Tapping Test, and the FAA Computerized Cognitive Screening Battery (COGSCREEN).[6]

Dr. Elliott explained the purpose of these tests in the order in which he administered them to respondent. (TR-79). Respondent performed in the average or above-average range on the WAIS-R, which measures level of functioning from an intelligence standpoint. However, in the second test which was administered, the Trailmaking Test, which assesses a person's ability to sequence, respondent's performance on Part B was significantly impaired using Reitan's population or pilot norms.[7] Dr. Elliott

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[6]See infra for a discussion of the admissibility of COGSCREEN.

[7]Performance on neuropsychological tests is assessed by measuring an individual's test results to other individual's test results, referred to by the experts as "norms." Using Heaton's norms, test scores are compared to others of the same age and education level. Utilizing Reitan's norms, test scores are compared to the general population. Dr. Elliott also used norms for the pilot population. According to an article authored by Heaton and others, Comprehensive Norms for an Expanded Halstead-

next administered the Booklet Category Test. He explained that this test is a very sensitive measure of cognitive impairment, and respondent's performance was so poor that, in his opinion, there is no question impairment is present. (TR-91). Respondent scored 112 errors on this test. Using Reitan's (general population) norms, 51 errors is indicative of impairment. Using pilot norms, 30 errors is indicative of impairment. On the Rey Auditory-Verbal Learning Test, a memory test and the fifth test administered by Dr. Elliott, respondent was given 15 words and then asked to repeat them. Respondent repeated two words correctly, and made up two that weren't even mentioned. In Dr. Elliott's opinion, this result is very unusual and is indicative of neuropathology. (TR-93).

The sixth test administered to respondent was the Wisconsin Card Sorting Test. This test assesses the ability of a person to use logic and reasoning to solve a novel problem, by measuring the ability to change one's response style in order to be more effective, i.e., if the person continues to use an approach that is inappropriate to solve a problem, his responses are indicative of cognitive deficit. Respondent's results were found to show

(..continued)
Reitan Battery, (Administrator's Exhibit A-17), at extreme age levels, age-corrected scores are not particularly useful in evaluating good conceptual skills in an absolute sense, "i.e., while it is normal to have relatively weak conceptual skills at this age, the average 75-year old high school graduate is not likely to perform well in a conceptually demanding job." (Exhibit A-17, p. 36). Respondent's expert neuropsychologist disagrees. In the Board's view, the record here is persuasive that air show performance is a conceptually demanding job and we find unconvincing respondent's experts' testimony that the use of other than age-corrected norms is inappropriate.

significant impairment using Heaton's norms, Reitan's norms, and pilot norms. When compared to others of the same age, respondent fell into the 5th percentile (out of 100 people he would rank between 1 and 4 from the bottom).[8] On the tenth test administered, the Manual Finger Tapping Test, respondent's performance was found to be indicative of significant impairment, even when compared to persons of respondent's age group.

In addition to respondent's poor performance on selected tests, Dr. Elliott testified that from a clinical perspective, respondent needed a lot of instruction, responded very slowly, and at times did not seem to understand directions. Dr. Elliott recommended that respondent see a neurologist to rule out neuropathology or an identifiable neurodegenerative disease process because respondent's test results were strongly suggestive to him of cognitive deficit. (TR-130). Respondent was referred to Michael E. Gold, M.D., a neurologist.

Dr. Gold reported to Dr. O'Connor that respondent's neurologic exam was normal. (A-1, p. 202-204). Nonetheless, he ordered an MRI [magnetic resonance imaging] brain scan, an electroencephalogram [EEG], and a SPECT scan.[9] Dr. Gold reported

[8]Respondent objected to the consideration of these test results because, according to his experts, the edition used by Dr. Elliott was a research edition and inappropriate for evaluation purposes. Nonetheless, this tool was also administered by Drs. Uchiyama and Johnsen.

[9]SPECT scans show the distribution of blood flow to the brain. (Testimony of Dr. Ziessman, TR-826). SPECT scans are an accepted diagnostic tool. (Deposition of Dr. Simon, p. 19).

that both the MRI and EEG were normal.[10] However, the report of the SPECT scan performed on November 4, 1992 by Albert Salcedo, M.D., found that

> "[t]he superior parietal areas demonstrate a mild tracer deficiency in symmetrical fashion. These appear to extend at least part way up over the cerebral convexities. The remainder of the cortex appears normal. There was symmetrical and normal uptake in the basal ganglia and cerebellar hemispheres."

(A-1, p. 207). Dr. Salcedo concluded:

> "This is a borderline examination suggesting the possibility of biparietal areas of hypoperfusion/hypometabolism. These findings should be correlated with neuroanatomical findings and with the patient's condition. If clinical symptoms persist, one may wish to consider a six month follow up examination."

Id.[11]

In June, 1993, respondent sought a second opinion, with the consent of the Federal Air Surgeon. Respondent was evaluated by Dr. Uchiyama, a neuropsychologist at the University of California at Los Angeles (UCLA) Institute and Hospital. Dr. Uchiyama administered 18 tests, including most of those previously administered by Dr. Elliott. According to Dr. Elliott, who testified concerning the UCLA report, Dr. Uchiyama administered novel tests to compensate for what neuropsychologists term

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[10]The Administrator's expert neurologist testified that the MRI was normal for a 70 year old person, but that he considered the findings of "slight sulcal widening in the occipitoparietal area" and "a rare punctate area of increased signal" (A-1, p. 205) as not normal, and consistent with the findings of the SPECT scan. (Testimony of Dr. Pincus, TR-413).

[11]The Administrator's expert in nuclear medicine described hypoperfusion as when not enough blood goes to a certain part of the brain. (Testimony of Dr. Ziessman TR-829).

"practice effect," i.e., the belief that an individual will improve in performance due to practice after repeated testing, rather than due to improvement in terms of cognitive functioning. (TR-136).

Dr. Uchiyama's report, which is contained in Administrator's Exhibit A-1 at pages 122-138, indicates that respondent's results were age-corrected. (A-1, p. 130.)(Emphasis added). On attention and concentration tests respondent ranged from the Impaired to the High Average range. Id. at 131. "[O]n a measure of visual perceptual tracking and divided attention (Trail Making Test, Part B)...[respondent] evidenced significantly slowed performance that placed him in the Impaired range (less than the 1st percentile)," although Dr. Uchiyama noted there were "no errors, prompts, or near misses." Id. Respondent also showed "discrete areas of deficit" on the CALCAP. Id. Respondent was "functioning more than two standard deviations below the normative sample mean in the areas of sequential reaction time, language discrimination, response reversal-words, and form discrimination. In addition, he exhibited highly variable performance on one of the three simple reaction time measures that were assessed on the dominant hand." Id. Respondent's executive functioning and higher order reasoning were also found to range from Impaired to the Average range. Id. at 132. On the Wisconsin Card Sort Test respondent scored within normal limits. Id. Respondent's performance on various verbal learning and memory tests ranged from Impaired to Superior. On the Rey

Auditory Verbal Learning Test his performance was evaluated as significantly higher than his performance six months earlier when administered by Dr. Elliott. Id. at 133.

Respondent also underwent a SPECT scan at UCLA on June 1, 1993. Dr. Mena reported finding:

> "bilateral temporal hypoperfusion, right dorsal frontal hypoperfusion, [and] left dorsal parietal hypoperfusion."

Dr. Mena initially concluded that the focal right, frontal, bilateral temporal and left parietal hypoperfusion suggest "multiple strokes or degenerative changes in the areas outlined above." In a subsequent report, however, he revised his conclusion by deleting his reference to stroke or degenerative changes and inserting the words "Normal variance ?"

According to Dr. Uchiyama's report, the results of respondent's neuropsychological testing could "reasonably be consistent with his SPECT report of 6/1/93." (A-1, p. 135). However, he noted that respondent's deficits "appear to be above the threshold required for normal flight, as this appears to be a highly overlearned skill in the patient, and he is able to successfully compensate for such weaknesses. However, because of the patient's reduced reaction time and ability to deal with novel stimuli, some question remains as to how quickly he may be able to deal with an emergency situation that was out of his normal range of experience." (TR-136). Dr. Uchiyama concludes his assessment in pertinent part as follows:

> In the present case, Mr. Hoover revealed some selected risk signs on neuropsychological performance that could be viewed as signs of accelerated aging or subclinical (subthreshold)

> disease. His recent SPECT also revealed some perfusion changes that could be viewed in the same light. Although his other basic cognitive abilities were shown to be well intact, these subclinical changes should not be ignored, nor should they by [sic] over-interpreted at this time. Frankly, if they occurred in an individual in another profession, e.g., psychiatry or neuropsychology, they would probably have less significance at this age because of few demands on speeded information processing in clinical practice. However, although tasks measuring speed in information processing decline steadily with age, one might also expect someone of Mr. Hoover's profession to show a slower gradient with age. However, this is not the case.

(A-1, p. 137).

Finally, Dr. Elliott testified concerning an article appearing in the Journal of Aviation, Space, and Environmental Medicine in April, 1989, entitled Neuropsychological Screening of Aviators, A Review, authored by Banich, Stokes, and Elledge. According to Dr. Elliott, the article enumerates those cognitive skills that are critical for piloting performance - perceptual motor abilities, spatial abilities, working memory, attention, processing flexibility, and planning and sequencing skills. (TR-62).[12] Dr. Elliott believes that respondent continues to be a consummate aviator because his routines are very well practiced. He is concerned, however, that when presented with a novel situation the risk that respondent's impairment would not allow him to compensate for his cognitive deficits is too great. (TR-174-176).

Dr. Richard Gaines is a pilot and a board-certified neuropsychologist. He has examined over 1100 pilots in the last

[12]The law judge refused to accept the article, identified as Exhibit A-5, into evidence. See infra.

20 years, including 14 years on active duty performing aviation-related research psychology. Dr. Gaines testified that he agreed with the cognitive skills identified in the Banich article as necessary for pilots. (TR-308). Dr. Gaines reviewed the test results obtained by Drs. Elliott and Uchiyama, as well as the evaluation performed by respondent's expert witness, Dr. Johnsen. According to his review, even Dr. Johnsen obtained impaired results from respondent on the Booklet Test, using pilot norms. In Dr. Gaines' expert opinion, respondent's excellent flight performance cannot compensate fully for his cognitive deficit, in the event something novel should occur.[13]

Jonathan Pincus, M.D., has been the Chief of Neurology at Georgetown University Hospital since 1986. From 1974 to 1986 he was a full professor at Yale Medical School. His particular interest is in behavioral neurology, movement disorders, Parkinson's Disease and Alzheimer's Disease. Dr. Pincus testified that in order to diagnos neurological deficit, a neurologist's most important source of information is the patient's history. A neurologist will also perform an examination and order a variety of tests - CT scan, MRI scan, EEG, SPECT scan, and PET scan. Although the neurologist will also perform a Mini-Mental Status Exam to test cognitive functioning, the best documentation and quantification of cognitive functioning is performed by neuropsychologists, who are

[13]Respondent agreed, on cross-examination, that he has not "experienced every possible emergency that one could be confronted with in aviation." (TR-608).

specially trained to perform these tests.

According to Dr. Pincus, SPECT scans are very helpful in making neurologic diagnoses because there are certain characteristic configurations which appear on the SPECT scan for certain conditions, e.g., Alzheimer's disease, temporal lobe epilepsy, and stroke. Dr. Pincus testified that if a traumatic incident had caused brain dysfunction it would be reflected by abnormality on the SPECT scan. Dr. Pincus is aware that respondent has a history of loss of consciousness which occurred when his aircraft was shot down in World War II, but he finds it hard to believe, in his expert opinion, that respondent sustained serious brain damage at that point in time and then continued to perform as he has for the past 50 years. Dr. Pincus reviewed respondent's entire airman file.[14] He noted what he believed are significant changes in neurological examinations performed on respondent in the past year. First, he pointed out, the June 1993 SPECT scan shows what he thinks are more abnormalities than the October 1992 SPECT scan. Secondly, Dr. Pincus notes that Dr. Hisey[15] found ankle jerks on examination of respondent in 1993, but Dr. Gold had not. (TR-416). In Dr. Pincus' opinion, ankle jerks almost always mean peripheral neuropathy at one of the

[14]Dr. Pincus also placed significance on the fact since 1982, respondent has been involved in 5 incidents and 2 violations, which he believes may be indicative of decreased function. Respondent testified that all of the incidents were as a result of mechanical malfunction or another pilot's act.

[15]Dr. Hisey is a neurosurgeon who examined respondent.

peripheral nerves. (TR-417).[16] Dr. Pincus opined that there is an overwhelming likelihood of neurologic dysfunction. (TR-418).[17]

Respondent testified that he did not perform erratically at the June, 1992 air show. He offered what appear to be reasonable explanations for his behavior (for example, he had to perform a go-around because of a hydraulic pressure problem). He produced evidence which he believes supports his claim that the two FAA inspectors "conspired" to get him grounded.[18] In addition, respondent produced several top air show performers, all of whom testified that they saw nothing in respondent's performance that day, or any other day, to suggest that he has any medical problems which would make him unqualified to fly.[19] Respondent also produced recent video tapes which showed that he is still

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[16]Dr. Pincus also interpreted the 1992 MRI as not normal and consistent with the SPECT scan. (TR-414).

[17]On cross-examination Dr. Pincus acknowledged that the Georgetown Neurology Department has a grant from the FAA to develop COGSCREEN. (TR-427).

[18]Respondent made much of the fact that the two inspectors allegedly prepared their statements together. He also presented testimony that one of them "hates" tall, skinny men. In our view, this purported impeachment testimony lends little support to respondent's case. In any event, the reasonableness of the Administrator's request for evaluations is not before us, nor do we agree with respondent's contention that the medical evaluations are suspect because they were prompted by these statements.

[19]We think it significant that all of the air show performers did agree, on cross-examination, that timing and decision-making skills are critical to air show performers, who, in their opinion, must be even "sharper" than other pilots.

able to perform[20] his air show routine.[21] The law judge actually observed respondent perform during a recess in the hearing.[22]

As to his performance on the neuropsychological testing administered by Dr. Elliott, respondent claims that he was told by Dr. Elliott the day before the testing that it would take four hours. When he arrived at Dr. Elliott's office he learned that it would take the entire day. Respondent claims he was under a lot of stress, and that Dr. Elliott never offered him any rest breaks or lunch breaks. The only break he took was when, at noon, he called his wife to cancel their afternoon plans. Respondent also claims that Dr. Elliott gave him no explanations of the testing, and that he was very unfriendly towards respondent. Finally, respondent claims that Dr. Elliott told him

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[20]We question the relevance of respondent's actual performance skills to the issue of unrestricted medical certification. As the Administrator points out in his appeal brief (p. 110, n. 42), the law judge relies on "Webster's" as his source for his mistaken belief that cognition is defined as "an inability to perform." (TR-540; see also TR- 631). Webster's Ninth New Collegiate Dictionary (Merriam-Webster, Inc. 1984 at 257) defines cognition as "the act or process of knowing including both awareness and judgment; also: a product of this act"). Perhaps the law judge was confused by the use of the word "act" in the definition.

[21]We have grave doubts concerning the propriety of the law judge's permitting a pilot to operate the controls of an aircraft, even under the watchful eye of another pilot who is serving as the pilot in command, when the pilot who is manipulating the controls has had his medical certificate revoked on an emergency basis because the Federal Air Surgeon has deemed him unqualified.

[22]We think that in accordance with the Board's ex parte rules, 49 C.F.R. § 821.61, the law judge should not have had any communications with respondent's witnesses on the air field and outside of the presence of the Administrator's representatives.

that the testing would not affect his medical certification. Dr. Elliott denies telling respondent that the tests would only take four hours, and he denies not giving respondent any breaks during the testing. He did recall respondent calling his wife to change their plans for the afternoon, but he testified that he offered respondent the opportunity to return at a later date and respondent wanted to complete the testing that day. As to the statement that the testing would not affect respondent's medical certification, Dr. Elliott does not deny making this statement, but explained that at the time he was only concerned with determining if respondent had any neuropsychological deficits. Respondent also testified that Dr. O'Connor and Dr. Satz at UCLA both told him that they could find nothing wrong with him, and Drs. Uchiyama and Mena gave him "a clean bill of health."

Brent Hisey, M.D., is a Board-certified neurosurgeon and a Flight Surgeon with the Air Force Reserves. He is also a pilot. Dr. Hisey examines at least 20 pilots a month for the Air Force. He explained that in the Air Force a pilot is either "fit to fly," or he is grounded. In his expert opinion, respondent is "fit to fly." Dr. Hisey performed a neurological examination, a physical examination, and a laboratory examination on respondent, with particular emphasis on the frontal lobes, on October 12, 1993. (A-1, pages 72-78). According to the history obtained from respondent, respondent had "minor bumps" to his head in 1947 and 1954, but no significant closed head injury. (TR-718). Based on his examination, respondent had "an average neurological

examination for a 71-year old male." (TR-713).

Dr. David Johnsen has been a clinical psychologist since 1987. He is not Board-certified as a neuropsychologist, but he is licensed by the State of Oklahoma to perform neuropsychological assessments. Dr. Hisey referred respondent to Dr. Johnsen. Dr. Johnsen's testing was limited to the re-administration of the four neuropsychological tests on which respondent had previously performed poorly. According to his report (A-1, pages 50-55), on the Category Test respondent committed 88 errors. "This test would reflect significant impairment if Mr. Hoover were being compared to 40 year old males, with comparable education. However, when compared to males, ages 70 to 74, his score reflects only mild impairment." (A-1, p. 53). Respondent performed at an average level on the California Verbal Learning Test. Respondent showed "significant improvement" on the Trail Making Test and the Wisconsin Card Sort Test. Id. Dr. Johnsen testified that he was not concerned with "practice effect" on these tests because a year had lapsed since their previous administration. The results of Dr. Johnsen's testing were that respondent "performed at an average level compared to individuals of his own age." (TR-652). Although he agreed with Dr. Uchiyama's finding of selected risk signs on neuropsychological performance, in his opinion respondent could not continue to perform for 25 air show performances, without problems, if he truly suffered from a degenerative brain disease. (TR-671). Dr. Johnsen opined that respondent's performance on

Dr. Elliott's testing would have been significantly impacted if respondent had been offered no breaks.

Dr. Antoinette Appel is a neuropsychologist, and in fact holds the first degree ever awarded in neuropsychology in the United States. She attacked the validity of the tests administered by Dr. Elliott because of respondent's claim that he was not given breaks during the entire day of testing. She noted that there is a marked drop-off in performance after 90 minutes, and without lunch respondent's blood sugar would have been lowered to the point of affecting his performance. Dr. Appel also questioned Dr. Elliott's use of the Wisconsin Card Sort Test, because it is intended for research purposes only. Finally, according to her review of Dr. Elliott's WAIS raw data, there is an error in Dr. Elliott's computations and respondent's score actually fell within normal limits. Dr. Appel testified that in her expert opinion[23] Dr. Elliott's test results are "unreliable" (TR-893) and are "false alarms." (TR-893). Using Dr. Johnsen's data and Halstead-Reitan (age-corrected) norms, she thinks respondent is unimpaired. (TR-894). Moreover, she testified that she observed respondent for the 72 hours preceding this hearing and observed no aberrant behavior. (TR-896).

Dr. Appel testified that respondent's performance while flying is the best indicator of his cognitive abilities, because there is no validated correlation between neuropsychological

[23]Dr. Appel testified as an expert in 12 cases last year, and is involved in about 2 depositions per week.

tests and flying, citing an article written by Dr. Gary Kay who subsequently developed COGSCREEN for the FAA, in support of her assertion. (TR 897-900).[24] As to the findings on the SPECT scans, Dr. Appel testified that she has used them frequently in the last 4 or 5 years, and in her experience with over 12,000 patients with head injuries, there have been symmetrical abnormalities on the scans. On cross-examination, Dr. Appel admitted that using Heaton's norms and Dr. Uchiyama's raw data, respondent does fall within the impaired range on selected tests. (TR-963).

Theodore Simon, M.D., is a professor of radiology at the University of Texas Southwestern Medical Center, and is board-certified in nuclear medicine. He testified by deposition concerning the findings of the two SPECT scans performed on respondent. Dr. Simon explained that hypoperfusion can be caused by strokes, abscess, tumors, schizophrenia, poisoning, chronic fatigue syndrome, drug abuse, seizure, and degenerative brain disease. (Deposition at 38). According to Dr. Simon, if respondent were suffering from degenerative brain disease, he would expect it to show over a series of studies, although he agreed that six months may be too short a period of time to reveal degeneration. (Deposition at 39). Dr. Simon opined that other processes are less probable <u>because</u> respondent has a history of trauma. (Deposition at 43). He noted that while the

[24]We think the law judge erred by excluding evidence which would have shown that Dr. Appel relied on quotations taken out of context from an outdated journal article.

scans of respondent's brain do involve both sides of the brain, they do not suggest to him a great deal of symmetry. (Deposition at 42). Alzheimer's Disease is much more symmetrical than respondent's studies. (Deposition 43-44). It is not uncommon for trauma to also be fairly symmetric. (Deposition-41). Dr. Simon agreed on cross-examination that findings of bilateral temporal and parietal perfusion are highly predictive of Alzheimer's Disease. (Deposition-48). Finally, Dr. Simon agreed on cross-examination that degenerative disease could not be excluded by the findings of respondent's SPECT scans. (Deposition at 53).

Harvey Ziessman, M.D. testified on behalf of the Administrator in rebuttal. Dr. Ziessman is the Director of Nuclear Medicine at Georgetown University. (TR-822). Dr. Ziessman interprets SPECT scans daily in his practice. In addition, he is currently writing a textbook on nuclear medicine in which he devotes one chapter on brain profusion imaging. Dr. Ziessman testified that the pattern of symmetrical underprofusion of the parietal and temporal lobes is approximately 90% specific for a degenerative disease of the brain. (TR-844). Accordingly, Dr. Ziessman disagreed with Dr. Simon's testimony. In his expert opinion, the findings on the SPECT scans performed on respondent are characteristic of degenerative disease of the brain and not trauma. He also notes that on the second SPECT scan there is a right-dorsal frontal profusion defect which was not noted on the first SPECT scan. (TR-851).

The administrative law judge found in favor of respondent. In support of his decision, he cites Dr. O'Connor's, Dr. Uchiyama's, and Dr. Hisey's "recommendations" that respondent should be given an unrestricted medical certificate. The law judge also made "credibility" findings against Drs. Elliott, Gaines, and Pincus because, he found, they have ongoing monetary interests with the FAA. The law judge does not discuss the testimony of Drs. Simon and Ziessman. His only reference to the SPECT scans is a comment that the repeat SPECT scan performed in June, 1993, showed no changes. (TR-1010). This finding is directly controverted by Dr. Ziessman's testimony. In fact, we think all of the law judge's findings are belied by the evidence, and his analysis is clearly deficient.

In order to prevail in this case respondent was required to go forward with evidence which rebutted the results of the neurological, radiological and neuropsychological examinations. In the Board's view, respondent's evidence merely suggests other explanations, and fails to rebut what we consider to be overwhelming evidence of cognitive deficit that makes respondent unqualified to hold an unrestricted airman medical certificate. Administrator v. Doe, 3 NTSB 192 (1977).

As both parties recognize in their briefs before the Board, we do not evaluate medical expert testimony for its truth or falsity, because the matter of the expert medical witness' veracity has already been resolved when the witness is evaluated and accepted as an expert in the field of medicine about which he

or she has been called to testify. Once expertise has been established, the Board evaluates the testimony on the basis of logic, depth, and persuasiveness. Petition of Doe, 4 NTSB 84, 90 (1983). Notwithstanding this precedent, however, the administrative law judge appears to have accepted respondent's overbroad and unsubstantiated suggestions as to the veracity of the expert opinions offered on behalf of the Administrator.[25] He dismisses Dr. Elliott's testimony because he has served as a consultant to the Administrator, even though Dr. Elliott testified on cross-examination that most of his aviation-related work is with the major air carriers. In the Board's view, Dr. Elliott's aviation-related experience renders his evaluation more persuasive than respondent's expert neuropsychologist's evaluation, because he is able to recognize the validity in comparing respondent's test results with pilot norms.[26] Moreover, the law judge appears to have accepted respondent's disputed claim that Dr. Elliott administered the tests under oppressive circumstances as an excuse to exclude consideration of all of his findings, even though significant abnormal findings were obtained during the beginning of his evaluation. Similarly,

[25]We do not intend to say that the truthfulness of an expert may never be questioned, but we fail to understand how the law judge could disregard all of Dr. Elliott's testimony, even if he believed respondent's claim that Dr. Elliott had been less than forthright in discussing the possible impact of the testing on respondent's career.

[26]We also think that part of this analysis requires a weighing of the expert's credentials and experience in the field of expertise about which he or she is testifying.

Dr. Pincus' testimony is disregarded because Georgetown has "some sort of grant" with the FAA, even though there is not a scintilla of evidence which suggests that Dr. Pincus' opinion is based on anything other than his expertise in neurology. The law judge makes no effort to explain away Dr. Ziessman's testimony. He simply ignores it.

The law judge also erred by adopting respondent's counsel's claims that "all three sets of doctors" found that respondent is entitled to a second-class medical certificate. Had the law judge carefully reviewed all of the medical records,[27] he would have noted that both Dr. O'Connor and Dr. Uchiyama recommended certification with restrictions.

Finally, we find that many of the law judge's evidentiary rulings are legally deficient.[28] He precluded the Administrator from presenting evidence concerning COGSCREEN, a computerized neuropsychological evaluation which was developed by the FAA in the late 1980s, based on respondent's counsel's unsupported assertion that this testing has not been validated and is therefore inadmissible "novel scientific evidence." This is an administrative proceeding. The Administrative Procedures Act (APA), 5 U.S.C. § 556(d), controls the admission of evidence, not

[27]We are perplexed by the law judge's apparent belief that the Board does not wish him to review all the medical evidence fully before rendering his decision. To the contrary, we think that is his duty.

[28]Were it not for the fact that our review of the evidence convinces us that the revocation order should be affirmed, we would be inclined to remand the case for a new hearing before a different law judge.

the Federal Rules of Evidence. Under the APA, any evidence which is relevant should have been admitted. The law judge would have then been free to give that evidence any weight he deemed appropriate. Even under the Federal Rules, there is no requirement to exclude an expert opinion based on a scientific technique simply because the technique is not "generally accepted" as reliable in the relevant scientific community. In Daubert v. Merrell Dow Pharmaceuticals, Inc., 113 S. Ct. 2786, 2794 (1993), the Supreme Court rejected such a rigid rule, finding it at odds with the general approach of the Federal Rules, which have relaxed traditional barriers to opinion testimony. We can imagine no reason why the law judge would apply an even more stringent standard in these proceedings. As the Supreme Court notes in Daubert, it is the responsibility of the judge, faced with a proffer of expert scientific testimony, to make an assessment of whether the testimony's underlying methodology is scientifically valid and properly can be applied to the facts at issue. Id. at 2796. Moreover, whether a technique has been subjected to peer review or publication does not necessarily correlate with its reliability. Id. at 2797. As the Court notes, cross-examination and presentation of contrary evidence rather than wholesale exclusion is the appropriate means by which such evidence may be challenged. Id. at 2798. Instead, in this case, the law judge refused to even listen to the proffer, instructing the Administrator's counsel to make it on

the record outside of his presence.[29]

Based on the foregoing, we are compelled to set aside the initial decision. We have reviewed the entire record de novo, and we find that the Administrator's expert witnesses' testimony was far more persuasive than respondent's witnesses' testimony. Dr. Elliott's test results are never refuted. Indeed, his findings are confirmed by subsequent testing. Moreover, by Dr. Appel's own admission, when the test results obtained by Dr. Johnsen are compared with norms which are not age-corrected, there is significant impairment in several cognitive skill areas. We are convinced that the public's interest in aviation safety requires that respondent's cognitive testing results be compared with more than the norms for the average 70 year old person. Respondent is not seeking a license to perform everyday activities. Respondent seeks an unrestricted second-class airman medical certificate so that he may continue to perform aerobatic routines in front of numerous spectators. In any event, we are convinced that the neuropsychological testing which suggests cognitive deficit is confirmed by what all of the neurology experts agree are abnormal findings on the radiological scans. We fail to see how the law judge could find the testimony of Dr. Appel, a neuropsychologist, regarding her interpretation of the

[29]Had the Administrator been permitted to offer evidence of COGSCREEN he would have offered the testimony of Dr. Kay, who, in accordance with the offer of proof, and as explained in his analysis which is contained in the medical records (Exhibit A-1, pp 85-86), would have testified that when respondent's test battery is compared to aviators over the age of 60 his performance on several variables is "significantly abnormal."

SPECT scans, more in depth or persuasive than Dr. Ziessman's testimony, as he is an expert in nuclear medicine. Even Dr. Simon, respondent's expert in nuclear medicine, cannot state that degenerative brain disease is excluded by these scans - he only suggests trauma as another explanation. In any event, we think that Dr. Pincus' and Dr. Ziessman's testimony that there is a change in the June, 1993 SPECT scan, a right-dorsal frontal profusion defect, not apparent in the October, 1992 SPECT scan, refutes the explanation that trauma is the probable explanation for the abnormal SPECT scan findings. We conclude that the Administrator proved by a preponderance of the evidence that respondent has a cognitive deficit which makes him unqualified to hold an unrestricted second-class airman medical certificate.[30]

ACCORDINGLY, IT IS ORDERED THAT:

1. The Administrator's appeal is granted; and

2. The initial decision is reversed and the Administrator's emergency order of revocation is affirmed.

VOGT, Chairman, COUGHLIN, Vice Chairman, LAUBER, HAMMERSCHMIDT, and HALL, Members of the Board, concurred in the above opinion and order.

[30]Whether the respondent is entitled to a restricted certificate under section 67.19 is a matter we are not empowered to review.