SERVED: November 3, 1992

NTSB Order No. EA-3710

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 23rd day of October, 1992

Petition of ALBERT W. RUHMANN for review of the denial by the Administrator of the Federal Aviation Administration of the issuance of an airman medical certificate.	Docket SM-3847

OPINION AND ORDER

The Administrator has appealed from the oral initial decision of Administrative Law Judge William R. Mullins issued on June 11, 1992, following an evidentiary hearing.[1] The law judge concluded that petitioner had met his burden of proving that he was qualified to hold a certificate and, therefore, that the Administrator's action, in denying him a first class medical certificate, "was not based on sufficient medical evidence." Initial decision, Tr. at 493. We grant the appeal and reverse

[1]The initial decision, an excerpt from the hearing transcript, is attached.

the law judge's decision.[2]

The Administrator's amended denial of petitioner's medical certificate cited, as its basis, paragraphs (d)(2)(i)(a), (d)(2)(ii), and (f)(2) of 14 C.F.R. 67.13, .15, and .17.[3]

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[2]Petitioner has filed a motion to expedite Board action on the Administrator's appeal. He states that his seniority as an American Airlines pilot will expire in June 1993 if he does not return to active flight status, and he cannot do so without a medical certificate. The Board processes appeals that raise issues of qualification with a priority second only to emergency proceedings with statutory deadlines. Thus, although the Administrator does not oppose the sought relief, it is moot.

[3]The law judge allowed the amendment over petitioner's objection and petitioner, although discussing the issue in his reply (at 9-10), has not appealed. The propriety of the amendment is, therefore, not before us.

Sections 67.13, .15, and .17 are identical provisions applying to first, second, and third class certificates, respectively. The cited provisions of § 67.13 are as follows:

§ 67.13(d)(2)(i)(a)

> (2) Neurologic. (i) No established medical history or clinical diagnosis of either of the following:
>
> (a) Epilepsy.
>
> * * * * * *

§ 67.13(d)(2)(ii)

> No other convulsive disorder, 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 2 years after the finding, to make him unable to perform those duties or exercise those privileges.

§ 67.13(f)(2)

> (f) General medical condition:

Through the testimony and exhibits offered at the hearing, the following major medical events came to light:

In December 1970, petitioner suffered a "syncopal episode" while on an airplane flight.[4]

In the summer of 1971, petitioner had a seizure during the night. He was taken to the hospital, tested, and diagnosed with seizure disorder.[5] Dilantin was administered and prescribed for out-patient use.[6] Petitioner had no memory of the event.

In November 1986, petitioner had headaches for 36 hours, and then had a seizure. Paramedics were called, who witnessed further attacks, and transported him to the hospital, where he had another seizure in the emergency room. The diagnosis was an arterial venous malformation (AVM)[7] with a "slight area of hemorrhage" (Exhibit A-2 at 364). No further seizures occurred while petitioner was hospitalized and he was discharged, to be treated with Dilantin and possible further action at a later date.

(..continued)

> (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.

[4] I.e., the medical records indicate that petitioner fainted while he was a passenger on an aircraft. He, in contrast, testified that he had eaten a large meal, and had been seated in the aircraft for 5-6 hours. When he stood up, he felt very dizzy and weak. He denies fainting. Tr. at 292.

[5] There is some confusion in the record regarding whether this occurred in July or August. See, e.g., Tr. at 320.

[6] Dilantin apparently prevents seizures by reducing electrical sensitivity.

[7] An AVM is a congenitally abnormal collection of arteries and veins in which high pressure arterial blood flows into veins, dilating both. Lack of oxygen starves surrounding brain tissue, which can cause seizures.

In April 1987, petitioner returned to the hospital and surgery was performed.[8] The first operation, on April 13, 1987, consisted of an awake craniotomy to biopsy the area of concern and attempt to identify the seizure "focus." The biopsy revealed gliosis (scarring) and old blood residue, but a seizure focus could not be found. The diagnosis was astrocytosis of the right frontal brain (i.e., an area of healing that had been damaged by AVM rupture). A second procedure was performed on April 15, 1987, including an excisional biopsy of a right frontal lesion (i.e., the AVM area and some surrounding tissue were removed). Six days after the surgery, petitioner experienced three seizures, which were treated with Dilantin.

Petitioner (who, contrary to the implication of some of the language in the initial decision, has the burden under the regulations of proving his medical qualification) claims that, since the surgery, he has experienced no seizures, has not been taking Dilantin since October 10, 1987 (Tr. at 302), and should be considered completely cured. Petitioner's wife testified, at the law judge's behest, that she was not aware either that petitioner had had further seizures or that he had been taking anti-convulsant medication. The Administrator, on the other hand, believes that an unacceptably high risk of seizure still exists.[9]

Both sides offered expert witnesses qualified in neurosurgery (or neurology) and in the special concerns of aviation safety. Petitioner's witness, Dr. Burns, testified

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[8]The unrebutted evidence indicates that petitioner wanted the problem resolved, and chose surgery as opposed to non-intrusive treatment.

[9]In view of petitioner's failure to report or acknowledge various events (including the 1971 seizure) to the FAA, his insurance carrier, or his employer, the Administrator challenges the veracity of petitioner's testimony that he has been seizure-free since the surgery. This is discussed further infra.

based on his examinations of petitioner since mid-1989 and his review of petitioner's medical records.[10] Dr. Burns believes that the AVM destroyed itself in the 1986 episode (Tr. at 65), and that is why the 1987 procedures could locate no seizure focus. Although scarring of brain tissue can produce seizures, with a delicate procedure such as this he believes that further seizures are "very unlikely" and there is a "poor" relationship between scarring and the potential for having seizures. Tr. at 118 and 171-172.[11] Although he admitted that he cannot state unequivocally that petitioner will not have another seizure, Dr. Burns considers him safe to fly. Tr. at 175.

The Administrator offered two medical witnesses, both of whom disagreed with Dr. Burns' conclusions. Dr. Dagi concluded that petitioner had a certain type of AVM (i.e., a cavernous hemangromia, CH), which tends to produce small bleeds, as opposed to a "traditional" AVM, which produces larger bleeds. He testified that it was not uncommon to remove a CH, but still have remaining abnormal vascular tissue not necessarily visible to the eye or by instruments, and that small AVMs are more likely than not to be CHs. Thus, the risk of seizure continues.

Petitioner's records typically refer simply to a lesion, and

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[10]Dr. Burns testified that he examined petitioner probably two or three times, of approximately 30-45 minutes each. Tr. at 176. None of the doctors testifying in this case was involved in the actual surgery or in treating petitioner for the seizures. All reviewed the extensive medical records.

[11]Dr. Burns believes that the 1987 post-operative seizures were caused by the surgery and/or abrupt withdrawal of Dilantin.

do not use the CH term,[12] although at least one report referred to a "cryptic" AVM. Dr. Dagi testified that this is an archaic reference to a CH.[13] Dr. Dagi further testified that the medical records, especially the operating reports, are not inconsistent with his diagnosis, as they simply did not address this detail. He explained that small CHs do not show up on angiography (as petitioner's failed to do) and, as with petitioner's case, may not be seen when the area is explored. Electroencephalograms (EEGs) can still be normal, as well. His reading of petitioner's 1989 magnetic resonance image (MRI) shows a new lesion almost identical to the prior one, and he noted that this lesion did not appear on the 1987 MRI. Alternatively, he suggests that this new lesion could be a regrowth of the old one, or is scarring (which in his view would also increase the seizure risk).

Dr. Dagi added another concern: the surgeons left a foreign object in petitioner's frontal lobe to identify the location of the lesion. This object allegedly can act as an independent seizure focus, and can stimulate growth of scar tissue, also increasing seizure possibility. Although Dr. Dagi agrees with Dr. Burns that it is likely the earlier lesion blew up, in his view that does not change the fundamental problem -- petitioner's history of vascular malformation creates risks

[12]Dr. Dagi explained that the study and knowledge of CHs is relatively new (1986-1987).

[13]Dr. Burns, in contrast, responded that cryptic only meant hidden, and suggested that the failure of the surgeon or the hospital records to specify a CH meant that Dr. Dagi was wrong.

greater than in the normal population. Dr. Dagi also testified to examples of particular cockpit incidents that could bring on seizures: flashing lights; sharp altitude drops; and reduced oxygen. He concluded that petitioner should be taking anti-convulsants, and could be having seizures without knowing, as in the case of the 1971 incident.

Even had the original lesion been a traditional AVM, Dr. Dagi does not agree with Dr. Burns that the seizure risk is low. In addition to the risk from scar tissue, he states that there are few circumstances where a frontal lobe lesion has been excised and the individual would be safe to fly. He notes that the frontal lobe is particularly sensitive to damage that causes seizures.

Dr. Hastings, a neurologist, also testified for the Administrator. This testimony was particularly important in the area of EEG interpretation. Dr. Hastings disagreed with EEG reports by a Dr. Frank that indicated normal results.[14] He found sharp waves and spikes on various of the post-surgery EEGs, indicating electrical discharge levels that reflected a propensity for seizures.

Dr. Hastings also discussed the post-surgery seizures. He is not convinced they were caused by Dilantin withdrawal alone. He said such seizures were usually not focal (as were petitioner's). He testified that removing the AVM does not

[14]Dr. Burns acknowledged that he could not read EEGs, but relied on the reports of the physicians doing those readings.

remove the seizure focus most of the time. He stated that, if there have been no seizures for 5 years (as petitioner testified):

> the longer he goes the better things look. And I can't argue with that, and I just feel that he remains at an unacceptable risk for recurrent seizures, which is why I can't in good conscience recommend certification . . . .

Id. at 401. Dr. Hastings was unwilling to commit to a particular time when petitioner could be considered seizure-free.

Both Drs. Dagi and Hastings concluded that petitioner suffers from a convulsive disorder and a disqualifying neurological condition and that he could not meet the criteria of the applicable regulations now or within 2 years. They also discussed this seizure disorder as an epileptic condition. See footnote 3, §§ 67.13(d)(2)(i)(a) and (ii).

In addition to these witnesses, the Administrator introduced various letters from the surgeon (Dr. Reichman) and other physicians who had been consulted. Dr. Reichman indicated in a February 18, 1988 letter -- after Dilantin had been discontinued -- that petitioner still had a seizure disorder, thus further contradicting the law judge's reliance on removal from the medication as an indication that Dr. Reichman believed petitioner to be cured. Dr. Reichman continued: "I cannot determine if Mr. Ruhmann would continue to be seizure free in the future. There is no predictability." Exhibit A-2 p. 55. In a later May 6, 1988 letter, Dr. Reichman stated that, if petitioner

stays off the Dilantin for 1 year and remains seizure-free, he "will consider returning him to his previous employment with agreement from the F.A.A." Exhibit A-2 p. 17, emphasis added.

Also in 1988, Dr. Shafey, a neurologist, recommended that petitioner take anti-convulsants and advised him that he was in danger of having seizures. The doctor's report noted that an MRI had shown areas of increased signal intensity. Exhibit A-2 pps. 18-22, 407-408. The records also indicate that, in 1988, petitioner suffered from severe headaches, although petitioner responded that they were sinus headaches.[15]

The law judge found that petitioner has not had a seizure since the 1987 surgery, and has not been taking anti-convulsants since October 1987. Tr. at 477.[16] He was persuaded by Dr. Burns' testimony that: 1) the AVM blew itself out in 1986; 2) the 1987 surgery cleared out the area; 3) the cause of the seizure disorder was "corrected" either by (1) or (2); and 4) the post-operative seizures were caused either by the surgery or by removal or change of the Dilantin dosage. Id. at 481-3, 489,

[15]The foregoing does not review all the medical opinions. For example, there is correspondence from a Dr. Yake (Exhibit A-2 pp. 447-448), a neurosurgeon apparently consulted by petitioner's insurer. This, however, is from before the surgery and its usefulness to us is, therefore, minimal.

[16]He found petitioner's explanation of why he had not reported the 1971 seizure unbelievable and, therefore, had questions about petitioner's credibility generally. The law judge instead relied on Mrs. Ruhmann's testimony and on the lack of contradictory medical evidence in making his findings regarding post-1987 seizures and medication. See Tr. at 484.

492.[17]

The law judge specifically found that neither the pathology reports nor post-operative notes supported Dr. Dagi's diagnosis of CH. Id. at 480 and 486. He further discounted this physician's evidence because he perceived Dr. Dagi as testifying that anyone who had surgery to the frontal lobe would never be qualified to fly. The law judge concluded that Dr. Dagi's reading of the MRIs was consistent with Dr Burns' testimony that it would take approximately 2 years for scar tissue to fill in at the site.

The law judge rejected Dr. Hastings' testimony as well. He discounted his reading of the EEGs in light of Dr. Frank's report, and Dr. Hastings' unwillingness to commit to a time when petitioner would be qualified.[18]

The Administrator attacks the initial decision on two bases. First, he argues that petitioner's testimony that he has taken no anti-convulsives since 1987 and has had no seizures should not have been accepted because it is unreliable. Therefore, the

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[17]As noted, the law judge supported these conclusions with findings that petitioner would not have been taken off Dilantin had the disorder not been corrected, and that petitioner had been off anti-convulsants since 1987 and had had no seizures. Id. at 483.

[18]As to the EEGs, the law judge suggested that "maybe if you had this sort of procedure that Mr. Ruhmann has had, that maybe you're always going to get just a slight peak." Tr. at 491. While we understand that cases such as this are difficult for laymen, we must be careful not to "fill in the blanks" with assumptions of our own, nor minimize whatever uncertainty there may be in a particular diagnostic field. We think the law judge was guilty of some of these errors here.

Administrator argues, there is no basis to believe petitioner has not had seizures, giving greater support to the testimony of the Administrator's expert witnesses. Second, the Administrator argues that the weight of the medical evidence does not support the law judge's decision.

We need not resolve the first issue, as we agree with the Administrator on the second.[19] We cannot agree with the law judge's analysis of the record. To prevail, petitioner must prove his case by a preponderance of the evidence. We simply cannot find that he has done so. The law judge found as he did in great part because he accepted Dr. Burns' explanations and rejected those of Drs. Dagi and Hastings. As we explain in our analysis, we disagree with the law judge's reasons for doing so.

In weighing medical testimony, the Board reviews the expert testimony and draws conclusions based on the quality of the opinions. This quality depends on "the logic, objectivity, persuasiveness, and the depth of the medical opinion." Administrator v. Loomis, 2 NTSB 1293, 1294 (1975), aff'd sub nom. Loomis v. McLucas, 553 F.2d 634 (10th Cir. 1977). The Administrator argues that "Dr. Burns' testimony is insufficient as far as depth, persuasiveness, and logic." Appeal p. 59. For

[19]The first question involves issues of credibility for which our review is limited. We would note, however, our disagreement with the law judge's reliance on a lack of medical evidence of post-1986 seizures (see footnote 16). In this case at least, given the Administrator's difficulty in obtaining the data now in the record and petitioner's acknowledgement that he did not report the 1971 seizure, such an assumption does not appear well-founded.

the reasons discussed elsewhere in this decision, we need not decide this question, but for the purposes of our decision we will treat the testimony of Drs. Burns and Dagi as equally persuasive. We note that neither was actually involved in the pre-1988 events.[20] Petitioner places substantial weight on the law judge's finding that he has had no seizures since 1987. However, as we said in Petition of Vandenberg, 3 NTSB 2880, 2881 (1980):

> The existence of good health . . . whether maintained with or without medicine, medical care, or treatment, is not the standard on which qualification for an unrestricted medical certificate is based under Sections 67.15(f)(2) and 17(f)(2) of the FAR. Rather, those sections require . . . that an applicant for a certificate show that he has no medical or physical condition or circumstance that either presently prevents his safe operation of an aircraft or may reasonably be expected, based on medical judgment, to have that effect at any time within the following 2 years.

Emphasis in original. Thus, even if petitioner has had no seizures since the surgery and is taking no anti-convulsants, this is only one factor to consider. And, its value as proof of qualification is dubious in light of the 15-year span between the 1971 and 1986 seizures.

The question before us is not one that is easily susceptible to clear answers. It is undisputable that our understanding of seizure activity is relatively minimal, although growing. That experts disagree in this case on the cause, nature and risk of future seizures underlines the importance of requiring petitioner

[20] While we, therefore, need not discuss whether we would have preferred Dr. Dagi's testimony over that of Dr. Burns, given the nature of the condition, Dr. Burns' visits with petitioner are not a reason to prefer his testimony over that of Dr. Dagi.

to prove he is qualified by a preponderance of the evidence.

Our review of the record convinces us that petitioner has not done so. Dr. Dagi's unrebutted reading of a 1989 MRI, a reading with which at least one doctor (Dr. Shafey) would appear to agree, indicates the potential for new abnormality, and there is no basis to accept the law judge's conclusion that Dr. Dagi's MRI reading merely reflected the tissue growth Dr. Burns expected. That was only one of the possible explanations.[21] Furthermore, given the inexact medical processes and procedures used here and the ambiguity in the records, the possibility that petitioner has a CH that can recur cannot be ignored.[22] Nor can we disregard or discount the risk of seizure from scarring or placement of the marker in the lobe. In view of the testified shortcomings of EEGs, the fact that Drs. Hastings and Frank both saw abnormalities in a 1989 EEG is further reason to have concern, despite the opposing belief of Dr. Burns (who, as noted earlier, disclaimed any expertise in interpreting EEG tracings).

Dr. Reichman's withdrawal of petitioner from Dilantin -- also relied on by the law judge -- does little to convince us that petitioner is qualified. As noted, other doctors disagreed

[21]Even were it scar tissue, Dr. Dagi's testimony made it clear that he thought it created a seizure risk and the greater the amount of scar tissue, the greater the risk. Tr. at 121.

[22]We reject the law judge's interpretation of Dr. Dagi's testimony. In fact, the doctor distinguished between various types of brain surgery in analyzing flight qualification. Tr. at 273-4. Furthermore, his special concern for (and explanation regarding) the sensitivity of the right frontal lobe (id. at 274-278) is not a basis to reject his testimony.

with this course of treatment. But, in any case, Dr. Reichman did not recommend that petitioner return to flying. The reasons for his decision to take petitioner off this medicine are not on the record and we decline to speculate about them, especially given the potential ramifications for public safety.

In sum, in this case, where the expert testimony is diametrically opposed, where the science and diagnostic procedures are as inexact as they are, and where the record reflects substantial concern by knowledgeable persons that petitioner may be at greater risk for seizures in the future than the population generally, we cannot find petitioner has shown himself by a preponderance of the evidence to be qualified for a medical certificate.

ACCORDINGLY, IT IS ORDERED THAT:

1. The Administrator's appeal is granted; and

2. The petition is dismissed.

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