

SERVED: January 22, 1992

NTSB Order No. EA-3478

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 15th day of January, 1992

Petition of

ANGELA DRENNAN

for review of the denial by  
the Administrator of the  
Federal Aviation Administration  
of the issuance of an airman  
medical certificate.

Docket SM-3852

OPINION AND ORDER

The Administrator has appealed from an initial decision of Administrative Law Judge William R. Mullins, issued orally at the conclusion of an evidentiary hearing held on July 9, 1991.<sup>1</sup> By that decision, the law judge reversed an order of the Administrator denying petitioner airman medical certification.<sup>2</sup>

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<sup>1</sup>An excerpt from the transcript containing the initial decision is attached.

<sup>2</sup>Petitioner had applied for a second-class medical certificate in May 1989. In October 1989, her application was denied by the Aeromedical Certification Division. Thereafter, a final denial was issued by the Acting Federal Air Surgeon in February 1991.

In denying such certification, the Administrator relied upon the provisions of sections 67.13-, 67.15- and 67.17(d)(2)(i)(b) and (d)(2)(ii) of the Federal Aviation Regulations ("FAR," 14 C.F.R.), in which disqualifying neurological conditions are set forth.<sup>3</sup> The Administrator's action stemmed from a disturbance of consciousness experienced by petitioner while she was hiking up a mountain on May 9, 1987.

In his appeal brief, the Administrator has contended that the law judge erred in finding that petitioner established that she is qualified to hold an airman medical certificate. In this

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<sup>3</sup>FAR §§ 67.13, 67.15 and 67.17 are identical, except that they refer to first-class, second-class and third-class medical certificates, respectively. The pertinent provisions of § 67.15 read as follows:

"§ 67.15 Second-class medical certificate.

(a) To be eligible for a second-class medical certificate, an applicant must meet the requirements of paragraphs (b) through (f) of this section.

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(d) Mental and neurologic.

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(2) Neurologic.

(i) No established medical history or clinical diagnosis of either of the following:

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(b) A disturbance of consciousness without satisfactory medical explanation of the cause.

(ii) No other convulsive disorder, disturbance of consciousness, or neurological condition that the Federal Air Surgeon finds--

(a) Makes the applicant unable to safely perform or exercise the privileges of an 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[--] and the findings are based on the case history and appropriate, qualified, medical judgment relating to the condition involved."

regard, he asserts that petitioner neither established a suitable medical explanation for her disturbance of consciousness nor demonstrated that it was unlikely that subsequent disturbances of consciousness would occur.<sup>4</sup>

Petitioner has filed a reply brief in which she urges the Board to affirm the initial decision.

Upon consideration of the briefs of the parties and the entire record, the Board does not believe that the law judge erred in reaching his determination. Accordingly, we will deny the Administrator's appeal and affirm the law judge's initial decision.

The record in this case indicates that petitioner completed a pilot training program shortly before the incident in question occurred, and that she had been under considerable stress and did not get much sleep during that time. Additionally, she did not sleep at all on the night preceding the incident and had nothing to eat for approximately 24 hours prior to commencing her hike.

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<sup>4</sup>The Administrator has also maintained that the law judge improperly failed to accept his witness, John Hastings, M.D., as an expert in neurology. We must note, however, that the law judge indicated that he recognized Dr. Hastings' expertise in that field. Tr. 112. Moreover, while Dr. Hastings did not have any first-hand knowledge of petitioner's medical condition, he was permitted to provide extensive opinion testimony pertaining thereto on the basis of such expertise. See *id.* 113-76. Thus, while the law judge may have refused in advance to pronounce Dr. Hastings "an expert in everything [the Administrator's counsel was] going to ask him" because he thought it possible that there could be questions that "don't necessarily pin themselves into th[e] field" of neurology (*id.* 112), it does not appear that he limited or rejected Dr. Hastings' testimony for any lack of expertise in that field. Consequently, we find this contention to be without merit.

Petitioner also experienced the onset of her menstrual period earlier that day and consumed a wine cooler before the hike began. The hike was up a steep slope, and petitioner was accompanied by her then-boyfriend. It appears that they proceeded at a rapid pace and were arguing when petitioner experienced her disturbance of consciousness about one mile into the hike. After paramedics were called and arrived at the scene, petitioner was taken by ambulance to the emergency room of Providence Hospital in Anchorage.

Petitioner has noted that she experienced hyperventilation and lightheadedness prior to losing consciousness. It has also been related that these symptoms were accompanied by a pounding bitemporal headache. Additionally, the record is clear that petitioner did not experience tongue-biting, self-injury or incontinence in connection with the episode in question. Following the incident, petitioner's then-boyfriend informed those who attended her that she had suffered a seizure. According to petitioner, he also told her that she had a seizure shortly after she regained consciousness.<sup>5</sup>

A paramedics' prehospital medical report<sup>6</sup> relates that petitioner appeared to be sleepy when the paramedics arrived on the scene. In that report, it was noted that she had a history of calcium "problems" and experienced pounding headaches "now and then" when her calcium level was low. The prehospital report

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<sup>5</sup>Tr. 69, 70.

<sup>6</sup>Ex. A-3 at 2.

also indicates that petitioner was given a general physical examination. No disorientation was noted in connection therewith. According to the report, petitioner vomited once while in transit to the hospital. A diagnostic assessment of a possible electrolyte problem was noted.

The emergency room clinical worksheet<sup>7</sup> contains entries made by various hospital staff members. The triage notes appearing therein state that petitioner reported that she was hiking up a mountain and suddenly had a seizure. Such notes also relate that she stated that she had seizures "off and on" for the previous 10 years. A history of calcium deficiency was noted as well. The triage notes further indicate that petitioner complained of nausea and a pounding headache. A separate nurse's entry states that petitioner vomited a large amount of "undigested" food while enroute to the hospital and that she last had a seizure one year earlier.

The clinical worksheet also contains a series of physician's entries. Such entries note a 15-year history of seizures, but relate that petitioner was not on anticonvulsive medication. A history of calcium deficiency (treated with calcium) was also noted. It was reported that petitioner felt a "floating sensation" prior to her disturbance of consciousness and that she had "no recall for 2 hours." Additionally, it was related that petitioner complained of a headache and nausea, and that she had vomited twice before arriving at the hospital. A typical tonic-

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<sup>7</sup>Id. at 1.

clonic description with postictal episode "per boyfriend" was noted. It was reported that the episode had lasted from three to four minutes and that the postictal period was two to three hours long. The physician's entries relate that petitioner was found to be alert and well-oriented on physical examination. It does not appear that any further medical evaluations or tests were performed on her at the time. A diagnostic assessment of a seizure disorder was rendered and phenobarbital was prescribed.

Less than three weeks later, petitioner was evaluated by Charles Oates, M.D., a local neurologist.<sup>8</sup> That evaluation, which included general physical and neurological examinations, as well as an electroencephalogram (EEG) performed in the awake and drowsy states, yielded no remarkable findings. Dr. Oates also reviewed petitioner's recent medical history, including a copy of the May 9, 1987 emergency room records.<sup>9</sup> His assessment was that petitioner had suffered a symptomatic-type seizure "if it did occur,"<sup>10</sup> following sleep and food deprivation, fatigue, onset of menses, alcohol ingestion and hyperventilation. Dr. Oates suggested that such a phenomenon is not uncommon in young adults who push their bodies to the limit and concluded that petitioner neither had epilepsy nor was more prone to seizure than the majority of the population.

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<sup>8</sup>Reports and records relating to that evaluation appear at Ex. A-1 at 71-72, 74, 160.

<sup>9</sup>Tr. 86.

<sup>10</sup>Ex. A-1 at 74.

In October 1987, John Seipel, M.D., another neurologist, undertook a review of petitioner's condition for the FAA's Office of Aviation Medicine. Dr. Seipel did not examine petitioner, and the sole information upon which his review appears to have been based is that contained in Dr. Oates' evaluation. In his report,<sup>11</sup> Dr. Seipel indicated that there was some question as to whether petitioner actually had a seizure, especially in view of her prodromal symptoms of lightheadedness and headache (which, he noted, were not often associated with seizure) and the absence of any indication of self-injury or incontinence. He stated that, in view of the stressors involved, he was inclined to believe petitioner had experienced a syncopal episode accompanied by some seizure-like activity rather than a true grand mal seizure.<sup>12</sup> Dr. Seipel also opined that petitioner had only a slightly enhanced likelihood of recurrence.

After submitting her current application for airman medical certification, petitioner underwent a neurological evaluation by Shirley Fraser, M.D.<sup>13</sup> On physical examination, no abnormal

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<sup>11</sup>Id. at 67-68.

<sup>12</sup>With respect to petitioner's stressors, Dr. Seipel noted among other things that the rapid uphill hike raised a question of reflexive hypoxia and the consumption of the wine cooler (presumably in conjunction with the lack of food intake for 24 hours) raised a question of rebound hypoglycemia.

<sup>13</sup>Dr. Fraser's evaluation of petitioner consisted of a physical examination that was accomplished in July 1989 and an EEG which was performed in August 1989. Clinical records relating thereto are found at Ex. A-1 at 46-49 and a copy of the EEG tracing is also of record as Ex. A-4. It appears that Dr. Fraser had access to Dr. Oates' earlier evaluation of petitioner, but not to the emergency room treatment records. See Tr. 90.

findings were made by Dr. Fraser, and her initial impression was that petitioner had a history of syncope with no recurrence. Dr. Fraser subsequently performed an EEG with petitioner in the awake, hyperventilating, sleeping and photic stimulation states, which was interpreted as showing several episodes of spike and wave discharge. It was also noted that such activity was seen mostly during drowsiness. Dr. Fraser concluded that the EEG recording was abnormal. However, the record contains no post-EEG diagnosis by Dr. Fraser.

An EEG with hyperventilation and photic stimulation was also performed by Cathleen Farris, M.D. in August 1989. The report of that study<sup>14</sup> reveals that Dr. Farris noted two episodes of spike and wave activity, but concluded that the EEG was essentially normal. Thereafter, in September 1989, petitioner was evaluated by another neurologist, Janice Kastella, M.D.<sup>15</sup> That evaluation included a physical examination, which disclosed no remarkable findings, as well as an EEG with hyperventilation and photic stimulation, which Dr. Kastella reported yielded "very normal" results. Dr. Kastella opined that if petitioner had suffered a seizure, "it would simply be on the basis of exhaustion and perhaps even hypoglycemia."<sup>16</sup>

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<sup>14</sup>Ex. A-1 at 80.

<sup>15</sup>Reports relating to Dr. Kastella's evaluation appear at Ex. A-1 at 30-32.

<sup>16</sup>Ex. A-1 at 31.

In December 1989, petitioner underwent an evaluation by Werner Autenreith, M.D., a German neurologist,<sup>17</sup> which included an EEG in the awake and hyperventilating states. That EEG was found to be "thoroughly normal." Additionally, Dr. Autenreith indicated that he had reviewed Dr. Fraser's EEG tracings and did not note any paroxysmal features or pathological qualities therein. Dr. Autenreith related that he did not elicit any potentials specific for epilepsy in those EEG tracings. He opined that petitioner's disturbance of consciousness was the result of vasovagal syncope.

Also of record is a May 1991 neurological evaluation by Laird Patterson, M.D.<sup>18</sup> In a report of that evaluation, Dr. Patterson noted that petitioner had indicated that she was aware of an emergency team picking her up and taking her to the hospital approximately one hour after her disturbance of consciousness occurred. He also related that she "apparently" had some postictal confusion. In Dr. Patterson's report, it was indicated that petitioner had suffered no subsequent episodes of disturbance of consciousness and that she never experienced any visual, motor, sensory, speech, language or cognitive dysfunction. Dr. Patterson also related that he administered a physical examination, a sleep-deprived EEG with hyperventilation

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<sup>17</sup>Dr. Autenreith is a member of the German EEG Association. His office is located in Munich. A report of his evaluation of petitioner is found at Ex. A-1 at 97-98.

<sup>18</sup>Clinical records and reports of that evaluation appear at Ex. A-1 at 93-96.

and photic stimulation, and a magnetic resonance imaging (MRI) scan, all of which yielded normal results. He stated that he believed that petitioner's history, examination and test results rendered it unlikely that she had suffered a seizure and that he was of the opinion that her May 1987 episode of disturbance of consciousness was probably a syncopal event.

Among the witnesses appearing at the hearing on petitioner's behalf were Marjorie Smith, M.D., a board certified neurologist, and Peter Hackett, M.D., a physician who practices emergency medicine and is board certified both in that field and in family practice. Dr. Smith had previously evaluated petitioner in August and September 1989.<sup>19</sup> At that time, no neurological abnormalities were observed on physical examination. An EEG in the awake, hyperventilating, photic stimulation and sleeping states was interpreted by Dr. Smith as yielding normal results, and she specifically indicated that no focal, diffuse or paroxysmal abnormalities had been ascertained. Dr. Smith also undertook a review of petitioner's medical records in June 1991, at which time she found no substantiated evidence of either a seizure or an EEG abnormality.<sup>20</sup> At the hearing, Dr. Smith reiterated this and stated that she was of the opinion that

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<sup>19</sup>Reports and records relating to that evaluation are found at Ex. A-1 at 34-37.

<sup>20</sup>See Ex. A-1 at 84. It appears that Dr. Smith reviewed a complete set of petitioner's records at that time, including the emergency room report and the report of Dr. Fraser's EEG. See *id.* and Tr. 26-27, 54.

petitioner had experienced a syncopal episode.<sup>21</sup> In this regard, she hypothesized that the lengthy period of petitioner's disturbance of consciousness (believed to have been at least one-half hour) could be explained by the fact that she was physically drained and therefore fell asleep after passing out. Dr. Smith also related that she believed that the various stressors which petitioner encountered at the time provided a satisfactory medical explanation for her disturbance of consciousness, and that petitioner could discourage a recurrence by avoiding a repetition of that combination of stressors.

Dr. Hackett, in a June 1991 letter to the FAA,<sup>22</sup> reported that he had reviewed petitioner's records and did not find any true seizure activity to have been documented therein. He also stated that he believed that petitioner's disturbance of consciousness resulted from "syncope or near syncope," and that the combination of dehydration, overexertion and alcohol ingestion provided a plausible medical explanation for that episode. In this regard, Dr. Hackett indicated that he had performed physiologic studies of fluid and electrolyte changes occurring during exercise (especially mountaineering), which confirmed that dehydration, particularly when aggravated by

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<sup>21</sup>In her testimony, Dr. Smith cited a 1982 study published in the New England Journal of Medicine for the proposition that "almost all" disturbance of consciousness cases which are brought into emergency rooms are the result of vasovagal syncope, and that laymen often mistake such episodes as seizures. Tr. 51.

<sup>22</sup>Ex. A-1 at 88-89.

alcohol intake, can "easily lead to syncope." He also noted, both in that letter and in his testimony, that a syncopal episode may be accompanied by seizure-like activity such as muscular twitching and jerking, and that such activity does not necessarily signify a primary seizure disorder. At the hearing, Dr. Hackett observed that lightheadedness was an "extremely common" sensation prior to syncope.<sup>23</sup> He also indicated that he was not confident in the diagnosis of seizure appearing in the emergency room report. Among Dr. Hackett's reasons for this was that the tonic-clonic activity noted therein had been reported by a layman and had not been observed by medical personnel. In addition, Dr. Hackett related that any misunderstanding of the term seizure on petitioner's part "would [have] confuse[d] things quite a bit."<sup>24</sup> He further indicated that the possibility of a recurrence of loss of consciousness was remote, especially if petitioner avoided the set of circumstances that preceded her May 1987 incident.

The only witness presented by the Administrator at the hearing was John Hastings, M.D., a board certified neurologist who is also a senior aviation medical examiner for the FAA. Dr. Hastings had previously evaluated petitioner's medical condition based upon a review of her records in February 1990.<sup>25</sup> In connection with that evaluation, Dr. Hastings opined that the

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<sup>23</sup>Tr. 63.

<sup>24</sup>Id. 59.

<sup>25</sup>A report of that evaluation appears at Ex. A-1 at 9-12.

records suggested a history of prior seizure episodes and treatment. He concluded that petitioner had an underlying seizure disposition and that the physiologic stressors she encountered prior to her May 1987 disturbance of consciousness merely lowered her seizure threshold sufficiently to trigger a seizure. Dr. Hastings reiterated this at the hearing. He also related in his testimony that epileptic seizures can be precipitated by sleep deprivation.

Additionally, Dr. Hastings set forth what he considered to be the characteristics of a typical seizure, including generalized shaking of the extremities; a "postictal sleep," in which a patient may be unarousable for "up to 30 minutes or more;"<sup>26</sup> and confusion upon regaining consciousness, commonly accompanied by amnesia. He also indicated that self-injury and incontinence, and post-episode symptoms of fatigue, severe headache, nausea and vomiting, might accompany a seizure. Dr. Hastings further testified that the period of unconsciousness associated with syncope tended to be significantly shorter than that arising from a seizure, and that syncope is typically accompanied by little or no confusion. In addition, he related that syncope may be followed by nausea, vomiting and perhaps a mild headache. In determining that factors tending to indicate a seizure--rather than syncope--were present with respect to petitioner's disturbance of consciousness, Dr. Hastings appeared to place a significant degree of reliance upon the information

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<sup>26</sup>Tr. 119.

appearing in the emergency room report.<sup>27</sup> Dr. Hastings also testified that he had reviewed the EEG performed by Dr. Fraser in 1989, and noted his agreement with Dr. Fraser that abnormal spike and wave activity was evident on the EEG tracings. However, he indicated that the major factor in his arrival at a diagnosis of seizure was the historical information of record.<sup>28</sup>

Petitioner has, both in correspondence and in her testimony, explained that any reference to past seizures which she may have made in connection with her emergency room treatment should be attributed to her unfamiliarity with that term. In this vein, she has noted that she is a German national for whom English is a second language, and has indicated that she equated the term "seizure" with dizziness.<sup>29</sup> Additionally, petitioner has related that she had previously felt weak and tired at the onset of her menstrual period, especially if she was also travelling and eating improperly, and that she had taken calcium and vitamins to alleviate such symptoms.<sup>30</sup> With respect to the incident in question, she testified that her thought processes were clear when she regained consciousness. In her testimony, petitioner also stated that she has not experienced a disturbance

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<sup>27</sup>See id. 114-18, 134-35, 141-45, 160, 163-65.

<sup>28</sup>In this regard, Dr. Hastings related that his opinion that petitioner had suffered a seizure in May 1987 would be unchanged if Dr. Fraser's EEG had not existed (Tr. 151) and indicated that he did not believe that that EEG standing alone would support a diagnosis of a seizure disorder (id. 175-76).

<sup>29</sup>See Tr. 71.

<sup>30</sup>See Ex. A-1 at 51.

of consciousness since May 9, 1987, and that she has since taken care to avoid the combination of stressors which existed at that time.

Also of record is a letter from petitioner's parents, in which they relate that she lived with them until 1980, and that they are unaware of any seizure, neurological disorder or previous disturbance of consciousness in her past. In addition, letters have been submitted by individuals who have known and observed petitioner in recent years, in which those individuals collectively state that they have observed her to be in good health and have witnessed her participating in a variety of demanding physical activities such as mountaineering, skiing, jogging and aerobics, without signs of disturbance of consciousness.

In this case, there is clearly a difference of medical opinion as to whether petitioner experienced a seizure or syncope on May 9, 1987. Dr. Hastings believed that she suffered a seizure on that date, basing his opinion primarily upon the historical information relating to petitioner's disturbance of consciousness which appears in the record. The chief source of such information is the Providence Hospital emergency room report. We have observed, however, that that report appears to contain some internal discrepancies, to be inconsistent with other portions of the record, and to be incomplete in some vital respects.

To begin with, the length of petitioner's seizure history noted in the emergency room report differs by five years in the accounts set forth in the triage notes and the physician's entries. Moreover, the notation that petitioner was not on a regimen of anticonvulsive medication seems to be incompatible with the reported 10 to 15-year history of seizures, especially if she had an episode as recently as one year earlier, as the nurse's entry indicates. The Board also notes that the record contains no other references to seizures in petitioner's past. With respect to the clinical entries appearing in the emergency room report, the notation that petitioner vomited twice prior to arriving at the hospital is inconsistent with the paramedics' prehospital report, which relates that she vomited only once en route, and the statement that she regurgitated a large amount of "undigested" food does not jibe with her having fasted for approximately 24 hours prior to the incident. We have also observed that, while "no recall for 2 hours" was noted in the emergency room report, the record contains evidence that petitioner was aware of being picked up by an emergency team at the site of the incident. Moreover, she has testified that her thought processes were clear when she regained consciousness. Clinical confirmation of any lack of recall following petitioner's loss of consciousness is also absent, as no disorientation was found in connection with the examinations described in both the emergency room report and the paramedics' report. Finally, we attach significance to the fact that the

notation of a tonic-clonic description with postictal episode "per boyfriend" appearing in the emergency room report is unaccompanied by any specific clinical data which would tend to confirm such an event.<sup>31</sup> Thus, serious doubts exist as to the probative value of a vital component of the record cited to support the position that petitioner suffered a seizure on May 9, 1987.

On the other hand, there appears to be sufficient evidence in the record to support a diagnosis of syncope. In this regard, we note the testimony of Dr. Hackett, in which he relates that a syncopal episode may be accompanied by muscular twitching and jerking, and that such symptoms, when observed by a layman (as was the case here), might be mistaken for signs of a seizure. Such a potential for lay misdiagnosis of disturbances of consciousness appears to be well-recognized in the medical community.<sup>32</sup> Dr. Hackett has also conducted scientific studies which suggest that individuals subjected to physiologic stressors similar to those experienced by petitioner are susceptible to syncope. Additionally, the record indicates that the symptoms of lightheadedness and headache, which petitioner experienced prior to losing consciousness, are common precursors of syncope. Such factors lend support to a diagnosis of syncope in this case. The

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<sup>31</sup>In this regard, while we note Dr. Hastings' belief that the emergency room physician must have received a sufficient description of relevant symptoms to support that entry (Tr. 144), we cannot share his conviction in the absence of a more certain substantiation that such symptoms were observed.

<sup>32</sup>See n.21, supra.

Board also notes that, in addition to Dr. Hackett, Drs. Smith, Patterson and Autenreith (all three of whom have evaluated petitioner on a first-hand basis and performed EEG studies on her) independently arrived at the determination that petitioner had experienced syncope--and not a seizure--on May 9, 1987. In addition, Dr. Kastella (who also had an opportunity to examine and conduct EEG studies on petitioner) concluded that her disturbance of consciousness resulted from exhaustion and possibly hypoglycemia, rather than any neurological pathology. Such medical explanations for petitioner's disturbance of consciousness were previously suggested by Dr. Seipel, as well.

Given the weight of the medical evidence supporting the conclusion that petitioner experienced a syncopal episode arising from the set of physiologic stressors she encountered at the time, the Board believes that the law judge did not err in finding that there is a suitable medical explanation for her May 9, 1987 disturbance of consciousness. Thus, she is not disqualified for medical certification under FAR sections 67.13-, 67.15- and 67.17(d)(2)(i)(b). We also fail to find error in the law judge's determination that the likelihood of a recurrence is insufficient to support disqualification under FAR sections 67.13-, 67.15- and 67.17(d)(2)(ii). In this regard, we have noted that Drs. Smith and Hackett are in agreement that petitioner can prevent future disturbances of consciousness by avoiding the set of physiologic stressors which she encountered

on May 9, 1987.<sup>33</sup> Indeed, petitioner has indicated that she has since taken care to avoid that combination of stressors and the Board notes that the record fails to disclose any episodes of disturbance of consciousness in the intervening period of more than four years.

**ACCORDINGLY, IT IS ORDERED THAT:**

1. The Administrator's appeal is denied;
2. The initial decision reversing the Administrator's denial of medical certification of petitioner is affirmed; and
3. Airman medical certification shall be issued to petitioner upon her application provided she is otherwise qualified.

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

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<sup>33</sup>We also note that Drs. Oates and Seipel have suggested that they did not consider petitioner to be at substantial risk of a future disturbance of consciousness.