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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Before the Atomic Safety and Licensing Board

In the Matter of)	
)	
Philadelphia Electric Company)	Docket Nos. 50-352
)	50-353
(Limerick Generating Station,)	
Units 1 and 2))	

APPLICANT'S REPLY FINDINGS OF FACT AND
CONCLUSIONS OF LAW IN THE FORM OF AN INITIAL DECISION

The Philadelphia Electric Company, et al., Applicants in the captioned proceeding, in accordance with 10 C.F.R. §2.754, hereby submit the attached reply findings with respect to those contentions for which the hearing has been completed in response to "Intervenor Del-Aware's Proposed Findings of Fact, Conclusions of Law and Opinion" ("Del-Aware's Proposed Findings") dated November 16, 1982. The reply findings are in the form of insertions to "Applicant's Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision," dated November 9, 1982 ("Applicant's Proposed Findings").

Applicant has reviewed the Proposed Findings and Conclusions of Law of the Nuclear Regulatory Commission Staff dated November 23, 1982, and notes that the Staff has suggested that a condition be imposed to require Neshaminy Water Resources Authority ("NWRA") to take measurements of

octave sound levels within one month of the installation of transformers at the site boundary at a point on a straight line between the transformers and Residence Number 4. Applicant must report the results of these measurements to the Staff. Further, the condition would have the effect of requiring NWRA to install sound barriers around the transformers if transformer tones are audible at the site boundary. Inasmuch as NWRA has agreed to this condition, Applicant has no objection. However, Applicant notes that the transformers may be physically installed several months before they become operational. In order to test the transformers accurately for noise, they must be under load, i.e., the transformers must be operating the pumps which, in turn, effectively requires the completion of the pumping station. Therefore, accurate noise measurements cannot be taken until the entire pumping station is operational. The proposed condition should be amended to require that noise measurements be taken within one month after the pumping station is fully operational.

Many of Del-Aware's proposed findings of fact have been anticipated in Applicant's Proposed Findings and no further reply is necessary. It is noted that many of Del-Aware's proposed findings are not material to the issues before this Board and many are not based upon the record in this proceeding. Thus, this Board should adopt Applicant's proposed findings of fact, as amended herein, and its conclusions of law and reject those of Del-Aware as

unsupported by the evidence of record or irrelevant to its decision.

PARTIAL INITIAL DECISION
(Operating License Proceeding)

OPINION

II. CONTENTIONS

Legal Background

[On page 8 of Applicant's Proposed Findings, insert before first full paragraph:]

After reviewing the proposed findings of fact submitted by the parties, the Board notes that much of Del-Aware's argument misinterprets the nature of the procedures by which the application is processed and the role of the Licensing Board in hearing contentions raised by intervenors. For example, Del-Aware asserts that Applicant did not give "notice" to the Board regarding the final determination as to the location of the intake structure in the river. ^{1/} Moreover, despite the Licensing Board's determination that it would not await preparation of the Staff's Draft Environmental Impact Statement ("DES"), but would instead rely upon evidence adduced at the evidentiary hearing, Del-Aware challenges the Applicant's Environmental Report --

^{1/} Del-Aware's Proposed Findings at 4.

Operating Licensing Stage ("EROL") as insufficient. ^{2/}
Although the Licensing Board has considered Applicant's answers to Staff questions relating to Point Pleasant, it is not the function of this Licensing Board to review Applicant's EROL or portions thereof to prejudge the adequacy of the Staff's FES. ^{3/} In numerous instances Del-Aware also asserts that the intake location was not supported by sufficient data. ^{4/}

Thus, Del-Aware asserts that a lack of information has handicapped the Board in deciding the matters before it. ^{5/}
In deciding other than sua sponte matters, however, it is the function of a licensing board to limit itself to the evidence proffered by the parties. Although the Licensing Board is satisfied in this instance that the quantum of proof is clearly sufficient to decide relevant issues, Del-Aware is mistaken that some absolute evidentiary quota

^{2/} While an applicant's EROL provides the Staff with relevant information, it is the Staff's Final Environmental Impact Statement ("FEIS") by which compliance with NEPA is determined.

^{3/} In this respect, Del-Aware incorrectly asserts that a partial initial decision may be rendered only after issuance of the Staff's DES. The Board has previously ruled that it may decide Del-Aware's contentions relating to Point Pleasant so that construction there may proceed. This final disposition of less than all of the contentions indeed constitutes a partial initial decision. See, for example, Duke Power Company (Perkins Nuclear Station, Units 1, 2 and 3), LBP-78-25, 8 NRC 87 (1978).

^{4/} Del-Aware's Proposed Findings at 5.

^{5/} Del-Aware's Proposed Findings at 7, 9.

must be met. While an applicant at all times bears the burden of persuasion for each contention, the intervenor bears the burden of coming forward with evidence sufficient to make out a prima facie case. 6/

As applied here, this principle means that Applicant was not obliged to produce additional studies and analyses simply because Del-Aware asserted that other information was needed or would be helpful. The Supreme Court expressly rejected such a philosophy in the Vermont Yankee case holding that an intervenor asserting environmental claims is obliged to allege specific defects in the agency's conclusions. The Court stated:

In the first place, while it is true that NEPA places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action, it is still incumbent upon intervenors who wish to participate to structure their participation so that it is meaningful, so that it alerts the agency to the intervenor's position and contentions Indeed, administrative proceedings should not be a game or a forum to engage in unjustified obstructionism by making cryptic and obscure reference to matters that "ought to be" considered and then, after failing to do more to bring the matter to the agency's attention, seeking to have that agency determination vacated on the ground that the agency failed to consider matters "forcefully presented." 7/

6/ Consolidated Edison Company of New York, Inc. (Indian Point Station, Unit No. 2), ALAB-188, 7 AEC 323, 356 n.142 (1974).

7/ Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 553-54 (1978) (emphasis added).

It is not for the Board in an adjudicatory proceeding to speculate upon what further analysis or studies would have shown. If Del-Aware believed that other information would have strengthened its case, it should have adduced it.

Del-Aware is also somewhat confused as to the requirements of NEPA as regards the disposition of its contentions in this proceeding. Citing cases dealing with an agency's decision not to prepare an environmental impact statement, Del-Aware asserts that (1) no negative declaration has been made in this case, ^{8/} and (2) that Applicant therefore must establish by a preponderance of the evidence that no substantial environmental impact will arise. Contrary to Del-Aware's analysis, an environmental impact statement is being prepared for Limerick, as provided by NRC regulations. ^{9/} The decision of the Licensing Board to conduct an evidentiary hearing on the two environmental contentions related to the Point Pleasant Diversion prior to construction is by no means equivalent to a negative declaration finding that no EIS is necessary. Indeed, the Board did so in order to insure that such a hearing would be most meaningful. See Philadelphia Electric Company (Limerick Generating Station, Units 1 and 2), Docket Nos.

^{8/} See 10 C.F.R. §§51.5(c), 51.7.

^{9/} 10 C.F.R. §51.5. This regulation recognizes that the licensing of a nuclear power reactor is a major federal action significantly affecting the quality of the human environment. See 42 U.S.C. §4332(2)(C).

50-352 OL, 50-353 OL, Memorandum and Order (Concerning Objections to June 1, 1982 Special Prehearing Conference Order), July 14, 1982 at 3-4; Tr. 756-59.

Further, Del-Aware's contention that Applicant must disprove the existence of any substantial impact is also incorrect. The Board is perfectly satisfied, for the reasons discussed in its analysis below and specific findings, that environmental impacts attributable to the diversion have been minimized to the extent reasonably possible and will indeed be negligible. Even so, it should be pointed out that NEPA does not, as Del-Aware suggests, impose any substantive obligations. The Supreme Court has made it clear that NEPA imposes only procedural obligations requiring an agency to consider, but not to give any particular weight, to predicted environmental consequences of the agency's action. See Strycker's Bay Neighborhood Council v Karlen, 444 U.S. 223, 228-29 (1980); Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 548 (1978). This rule clearly applies to NRC licensing. See, e.g., Township of Lower Alloways Creek v. Public Service Electric & Gas Company, No. 81-2335 (3rd Cir. August 30, 1982), slip op. at 12.

The Board further notes that in many instances Del-Aware has proposed findings which are not based upon the record and has not offered accurate citations to any portion of the record which could support these findings. The Board has noted below certain of the instances where this has

occurred. Clearly, the Board will not adopt a finding which is not based upon the record in this case.

[On page 10 of Applicant's Proposed Findings, insert after first full paragraph:]

Further, Del-Aware alleged that Applicant's velocity measurements were inaccurate because they did not measure the vector of the current. The record indicates that when the measurements were taken, the flow in the main channel was moving in a predominantly downstream direction. Moreover, as discussed below, the record establishes that exact vector measurements are unnecessary because even an angle of up to 30° would have no biological impact. (Board Findings 36A, 65-66)

At the time these velocity measurements were taken, there existed some minor turbulence, which is a normal river condition. Del-Aware alleges that such turbulence and the double row of screens will direct organisms into the screen. The record is devoid of any factual basis for this assertion. Minor turbulence occurs as a natural condition in rivers and Del-Aware has not shown any biological significance to such turbulence. (Board Findings 23-23A)

Further, the record shows that the two rows of screens will be over 7 feet apart. Given the small zone of influence of the screens, there will be no overlapping or interacting effects of the screens. The layout of the screens is in accordance with the recommendations of the

screen manufacturer who has made numerous studies and run a number of model tests of the screens. Contrary to Del-Aware's allegation, there is no basis for any speculation that any problems can be expected because of the orientation of the two rows of screens. There is no credible evidence from any witness on hydraulics that the orientation of the intake screen slots will create a turbulence or edge effect. In any event, it has not been shown that any such effect would be other than negligible with regard to aquatic impacts. (Board Findings 23-23A)

[On page 12 of Applicant's Proposed Findings, insert before the first full paragraph:]

Del-Aware has alleged that changes in storage will not reduce the frequency or extent of low flows. The weight of the evidence is to the contrary. The Executive Director of the DRBC, subpoenaed by Del-Aware, has testified that with new storage, flows will not be below 2,500 cfs even in the severest drought. (Board Findings 47-48)

[On page 12 of Applicant's Proposed Findings, add after second full paragraph:]

All witnesses with an expertise in the use of wedge wire screens agreed that a ratio of 2:1 is not required to afford adequate protection against impingement. Del-Aware's witnesses who testified that a higher ratio would be advantageous also testified that they had no experience with wedge wire screens, had no background in hydrology, and did not know where the intake would be located with respect to

the main channel. As noted below, the evidence establishes that the intake is in the main channel and not in the eddy. (Board Findings 52-58, 62)

[Revise the last paragraph beginning on page 12 on page 13 to read as follows:]

Del-Aware also asserted that cross currents created by a bar upstream from the intake which might affect the efficiency of the wedge wire screens had not been considered by Applicant. The record shows that the Tohickon bar blocks a portion of the main river channel and diverts the river flow towards the New Jersey shore. However, at the point at which the main river flow passes the intake, it has returned to a flow which is essentially parallel to the intake screens. Del-Aware's witness could not support a proposition that a cross current would pass the screens at a 30° vector, nor did Del-Aware demonstrate that such a cross current would have any biological significance. The Del-Aware witness merely speculated that a current created by the bar could meet the intake at an angle of 5° to 25°. The Board is persuaded by the Applicant and Staff answers to cross-examination and Board questions that even a cross current at an angle of 30° would not adversely affect the effectiveness of the wedge wire screens in minimizing impingement and entrainment. (Board Findings 36A, 65-66)

[On page 14 of Applicant's Proposed Findings, insert before first full paragraph:]

Del-Aware has asserted that "the hydraulic determinant of the loss of shad and shortnose sturgeon eggs is the portion of the water in the pool passing into the intake and the velocity (speed and vector) at which the water is exposed to the intake." No factual basis is given for this allegation and there is nothing in the record that supports this as the determinant of the degree of impingement or entrainment of shad and shortnose sturgeon eggs. Moreover, this completely ignores such factors as bypass velocity, characteristics of eggs of these species, slot size and orientation and screen location. (Board Findings 29-36, 42-45, 52-58, 67-71, 75-76, 83-90, 99-102, 104-109)

[On page 15 of Applicant's Proposed Findings, insert before first full paragraph:]

Del-Aware has alleged that no "systematic field studies" of the efficiency of wedge wire screens are available. The record shows that there have in fact been numerous studies of the efficiency of the wedge wire screen and there has been detailed testimony as to the advantage of such screens. The studies and the analyses of the experts show that these screens are highly effective in preventing impingement and entrainment. Del-Aware further states that field data from the Campbell plant indicates that in one year the screen entrained 3 million alewives. This figure is not relevant to an analysis of potential

impacts at Point Pleasant because conditions at the two locations are dissimilar. Conditions at Point Pleasant will enhance the protective features of the screens. Further, the reference to 3 million fish is meaningless. Del-Aware apparently intends to suggest that this is a high rate of entrainment. Contrary to this suggestion, the record shows that this number represents .53% of the field population of alewives, not a significant portion. (Board Findings 12, 17-35, 56-57, 71-76, 87A)

[On page 17 of Applicant's Proposed Findings, insert before first full paragraph:]

Del-Aware has contended that the shad population in the Delaware River is "fragile" and "stressed." Del-Aware has not defined these terms nor explained their significance with regard to shad. These terms are certainly not related to the classification of "threatened" or "endangered" under the Endangered Species Act, as amended, 16 U.S.C. §§1531-1543. Moreover, Del-Aware's information with regard to losses of shad population relates to earlier periods during which modern ecological standards were not in force and ignores present efforts to eliminate pollution in the river. In fact, the record shows there have been substantial increases in the shad population in recent years. The testimony of Del-Aware witnesses that the area is used as a shad sport fishery also indicates that the shad population is not "stressed." (Board Finding 77A)

Del-Aware contends that larval shad will be "entirely susceptible" to entrainment during the early life stages. This ignores such factors as bypass velocity, behavioral mechanisms, screen location in the water column, slot size and orientation, and intake velocity, which provide protection from impingement and entrainment. Further, this statement overlooks the fact that only larvae within the zone of influence may be affected and that larval fish have a burst swimming capability from the beginning (Board Findings 29-36, 42-45, 52-58, 67-71, 75-76, 83-90, 99-102, 104-109)

While Del-Aware speculated as to possible extrusion or entrainment by the intake of shad eggs before or after water hardening, in fact, most shad eggs will sink to the bottom and will not be present in the water column so as to render them susceptible to such impacts. Given the fact that there is no evidence whatsoever that Point Pleasant is or is likely to become a shad spawning area of particular importance, any possible impact upon shad eggs is predictably negligible given the fact that only roughly 5% of the water flow will be withdrawn under "worst case" conditions and the relatively small area of the zone of influence for the intake. (Board Findings 35, 69, 81A, 83)

[On page 17 of Applicant's Proposed Findings, insert after the last sentence of Paragraph 2:]

Contrary to Del-Aware's assertion, the Board is not required to make the assumption that shortnose sturgeon

spawn and nurse in the Point Pleasant area when there is no empirical evidence to support such an assumption. (Board Findings 94-97)

[On page 19 of Applicant's Proposed Findings, insert as a new first paragraph of "Conclusion":]

The Licensing Board finds no merit in Del-Aware's attacks upon the credibility of Applicant and Staff witnesses. The Board believes that Applicant and its consultants used sound engineering judgment in attempting to determine the most environmentally preferable location for the intake structure and that the Staff performed a competent and objective review of Applicant's proposal.

[On page 22 of Applicant's Proposed Findings, add before first full paragraph:]

There is no basis in the record to support Del-Aware's allegation that walls around the transformer would be 25' high or that installation of sound walls would require review by any federal or state agency.

[On page 23 of Applicant's Proposed Findings, add after first paragraph:]

Del-Aware has alleged that frequent truck access to the gatewell to operate the air backwash system will generate noise which will extend beyond the property boundary. There is nothing in the record that indicates that trucks will be used in connection with operation of the air backwash, let alone any support for a finding with respect to the noise level of any such trucks. Del-Aware has further alleged

that adverse impacts will result from the operation of a barge or crane system to replace damaged screens. Contrary to Del-Aware's assertion, the record shows that repairs to the screens will be infrequent and the activity involved in making these repairs will be minor and of short duration. There is no basis for finding that any significant noise impacts will result from repairs to the intake screens. (Board Findings 162-176)

(On page 24 of Applicant's Proposed Findings add before "Findings of Fact":)

Impacts on Historic District

As noted above, the Licensing Board has concluded that no dredging maintenance will be required at the intake site. As discussed above, any measures necessary to repair the screens will be infrequent. Impacts attributable to the operation of the pumphouse will be minimal. Nonetheless, the Board considered whether any such impacts would adversely affect the Delaware Canal, a National Historic Landmark, or the Point Pleasant community with respect to its status as eligible for listing on the National Register of Historic Places. Inasmuch as the NRC is not itself a permitting agency for the Point Pleasant Diversion, but is merely assessing environmental impacts as part of its overall environmental analysis for Limerick, the NRC does not have responsibility for compliance with Section 110(f) of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. §470h-2(f). The Board takes official

notice of the fact, however, that DRBC expressly provided for the protection of the Delaware Canal in granting final approval to the project. Further, subsequent arrangements have been made by the Corps of Engineers for the protection of the Delaware Canal during construction, which includes input from the Pennsylvania Historic Preservation Officer and the Advisory Council on Historic Preservation. As regards the Point Pleasant community, the Board finds that the aesthetic impacts from operation of the pump station alleged by Del-Aware will not occur or will be negligible. (Board Findings 131-177)

III. CONTENTIONS

Findings of Fact

[On page 28 of Applicant's Proposed Findings, add following Paragraph 14:]

14A. Del-Aware has attempted to describe the "pool" largely in terms of the eddy. Del-Aware has not cited any portions of the record at which its proposed description was used by aquatic witnesses and the Board finds that the Applicant has described the pool accurately as it has been discussed throughout this proceeding. (Applicant's Testimony at 6; Boyer, Tr. 2412-13; Harmon, Tr. 2412)

[On page 30 of Applicant's Proposed Findings, add following Paragraph 23:]

23A. The layout of the screens is in accordance with the recommendations of the screen manufacturer (Dickinson, Tr. 2804). There is no credible evidence in the record to

support Del-Aware's allegation that the slot and screen orientation will produce an "edge effect" or turbulence in the vicinity of the screens. The witness whose testimony is cited as support for this finding stated that he has had no experience with Johnson wedge wire screens (Miller, Tr. 3133-34), and that he has no personal knowledge as to whether the information he was given in a discussion regarding this "edge effect" is correct. (Miller, Tr. 3134)

[On page 32 of Applicant's Proposed Findings, add after Paragraph 36:]

36A. At the time velocity measurements were taken, the meter was oriented directly into the current to obtain a maximum velocity reading. The current was measured in the downstream direction where most of the current was prevailing. The orientation of the current was determined to be downstream, and this determination is sufficiently precise to meet biological needs. Exact vector readings were unnecessary because the angles of up to 30° are inconsequential in determining impacts on aquatic life. (Harmon, Tr. 2247-50, 2807; Masnik, Tr. 4005)

[On page 33 of Applicant's Proposed Findings, add after Paragraph 40:]

40A. Del-Aware has asserted that Applicant has not calculated flows at Point Pleasant correctly. The 97% value corrects for drainage area between Point Pleasant and Trenton and is the accepted method for adjusting flow

calculations. Even Del-Aware's witness agreed that the 97% figure was fairly accurate. (Phillippe, Tr. 3663)

[On page 33 of Applicant's Proposed Findings, add following Paragraph 42:]

42A. Del-Aware noted that one extrapolation from flow data indicated a velocity of .3 fps at the lower end of the water column facing the intake. This extrapolation provides a velocity for a point 10 feet below the water surface, practically at the bottom of the channel, and almost 2 feet below the bottom of the screens. This velocity is of no significance because the screens would not withdraw water from a point this low in the water column. (Wescott, Tr. 3958; Applicant Testimony at 4)

42B. Del-Aware notes that velocities are lower at lower levels in the water column and states that these velocities may be as low as .25 fps. There is nothing in the record to support a finding that velocities may be as low as .25 anywhere near the intake location. The evidence shows that the velocity will be over 1 fps at a depth of 7 feet when flows are 3,000 cfs. (Applicant's Exh. 1-A, Question 240.27)

[On page 35 of Applicant's Proposed Findings, add after Paragraph 54:]

54A. The Del-Aware witnesses who testified that a higher bypass velocity would be significant had no knowledge of wedge wire screens, no background in hydrology, and were not familiar with the location of the intake. (McCoy, Tr.

3135-36, 3139; Miller, Tr. 3059-60, 3133-36, 3138; Emery, Tr. 1742-43; 1890, 2058, 2117-18; Kaufman, Tr. 1742, 2058, 2117-18)

[On page 37 of Applicant's Proposed Findings, add after Paragraph 62:]

62A. Del-Aware has alleged that the boundary of the eddy is controlled by the channel of the outlet of Hickory Creek. The evidence does not support such a finding. The Del-Aware witness merely "postulated" that the eddy could follow this channel. (Phillippe Testimony, p. 4)

[On page 37 of Applicant's Proposed Findings, add after Paragraph 63:]

63A. The recirculation of eddy water at such low velocities as are present will be deflected downstream by the main channel and will not reach the intake. (Boyer, Tr. 1432, 2766-67; Harmon, Tr. 2361, 2573)

[On page 39 of Applicant's Proposed Findings, add after Paragraph 75:]

75A. It is not likely that, once a fish has contacted the screen and used its burst speed to get away, there will be an additional contact with the screen during his passage down the river due to the existence of a bypass flow under all conditions, and diminishing intake velocity (.071 fps at 1 foot from the intake) as a fish move away from the screen. (Applicant's Testimony at 5; Boyer, Tr. 1363; Harmon, Tr. 2854-86, 2899; Dickinson, Tr. 2854-55; Kaufman, Tr. 1882)

[On page 39 of Applicant's Proposed Findings, add after Paragraph 77:]

77A. The shad population in the Delaware has increased significantly in recent years. (Miller, Testimony at 4)

[On page 40 of Applicant's Proposed Findings, add after Finding 81:]

81A. Del-Aware has alleged that the Point Pleasant area will become a "significant" and "prime" spawning area for shad. The record indicates that there is nothing unique or significant about the Point Pleasant area. It is one of many similar pools in the non-tidal Delaware River. (Applicant's Testimony at 6-7)

[On page 40 of Applicant's Proposed Findings, add after Finding 82:]

82A. Applicant made this conservative assumption even though results of sampling are inconclusive and only a very few of the eggs collected in the 1982 sampling were within the range of size for shad eggs. (Harmon Tr. 2365, 2512)

[On page 41 of Applicant's Proposed Findings, add after Paragraph 87:]

87A. An intake structure at the Campbell Plant in Lake Michigan where ambient conditions which afford protection against entrainment and impingement are not as advantageous at Point Pleasant, entrained only .53% of the field population of alewives in the Lake. (Masnik, Tr. 3528)

[On page 41 of Applicant's Proposed Findings, add after Paragraph 88:]

88A. Contrary to Del-Aware's assertion, shad are not susceptible to impingement for their entire larval stage. The evidence shows that larvae are not completely at the mercy of the current and even at this stage can resist the screens. Larvae have the ability of locomotion and a burst speed from the beginning. (Miller, Tr. 3331)

[On page 42 of Applicant's Proposed Findings, add after Paragraph 94:]

94A. Even assuming that shortnose sturgeon may at some point inhabit the Point Pleasant vicinity, the main spawning grounds for this species is downriver in the freshwater portion of the estuary. Accordingly, Point Pleasant would therefore not be a potentially vital or "critical" habitat for shortnose sturgeon. (Brundage, Tr. 2983-4)

[On page 50 of Applicant's Proposed Findings add after Paragraph 132:]

132A. The Board takes official notice of the matters in the Corps of Engineers' Environmental Assessment of Point Pleasant and its Memorandum of Agreement regarding historic impacts. (Board Exh. 2, Tr. 3955)

Respectfully submitted,

CONNER & WETTERHAHN, P.C.

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Counsel for Applicant

November 30, 1982