A.22

PROTEST

Minneapolis, Minnesota
May 19, 1979

District Director of Internal Revenue Service
316 North Robert Street, Room 446
St. Paul, Minnesota 55101

Attention: Examination Division, Review Staff

Dear Sirs:

Protest is hereby made to certain adjustments contained in your examination report for the years 1972 and 1973 and the related carryback changes to the years 1970 and 1971, in the amounts of $3,112,510, $9,834,349, $1,663,017 and $4,055,498, respectively.

(1) Request for hearing:

Taxpayer requests a hearing in the Office of Regional Director of Appeals.

(2) Taxpayer's name and address:

Northern States Power Company (Minnesota) 41-0448030
and Affiliated Corporations
414 Nicollet Mall
Minneapolis, Minnesota 55401

(3) Date and symbols from the letter transmitting the proposed adjustments:

March 21, 1979. E:R Room 446

(4) Tax years involved:

Year ended December 31, 1970	Carryback year
Year ended December 31, 1971	" "
Year ended December 31, 1972	Examination year
Year ended December 31, 1973	" "

(5) Adjustments with which the taxpayer does not agree:

The adjustments t which NSP objects have been grouped into five categories and will be discussed in the order of the following summary.

8001160601

Group No.	Report Item Number	Description	1972	1973
I		The date the Prairie Island Nuclear Plant Unit 1 was placed in service.		
	h. 10.	Depreciation of Plant and Fuel		$17,466,133
	j. 11.	Expenses Between 12-16-73 and 12-31-73		100,385
	ITC 7.	Section 38 Qualified Investment Tax Credit Property		206,637,882
II		The useful life for depreciation purposes of the Inver Hills and Wheaton Gas Turbine Peaking Plants.		
	h. 5.	Depreciation - Inver Hills	$ 85,679.	186,716
	h. 5.	Depreciation - Wheaton		935,056
	ITC 4.	Wheaton Deferred Debit		(22,390)
III		Power plant repairs.		
	c. 3.	Replacement of High Pressure Spindle Due to a Kink in the Shaft - Black Dog #2	440,705	209,351
	c. 3.	Replacement of High Pressure Spindle Due to Cracking of the Shaft - Black Dog #3	349,367	43,741
	ITC 4.	Section 38 Property From Capitalizing the Items Above	(790,072)	(253,092)
IV		Value of St. Croix land contribution.		
	f. 1.	An Appraisal Made After the 1972 Return Was Filed Increased the Land Value by $403,800. During audit, an increase of $176,976 was determined by the Engineer,		

STATEMENT OF FACTS AND CONTENTIONS

I. The date the Prairie Island Nuclear Plant Unit 1 was placed in service.

A. Background

This question was submitted to the National Office on July 20, 1977 for technical advice. The National Office decided on May 8, 1978, that the plant was not placed in service within the meaning of sections 1.46-3(d) and 1.167(a)-11(e)(1)(i) of the Regulations. Northern States Power Company does not agree with this interpretation of the facts and the application of the Regulations thereto.

B. The Rationale of the National Office Memorandum (Memo)

The Memo concluded that the plant did not "achieve the conditions of readiness and operational status called for under the Regulations."[1] The Memo lists six facts and circumstances on which this conclusion is based.

1. The plant did not demonstrate adequate daily operation before the turbine breakdown. (Memo page 4.)

2. Corporate correspondence dated December 18 claimed the plant "operational" as of December 16, 1973. in spite of and in contradiction to the obvious plant inoperability caused by the December 17, 1973 blade failure. (Memo page 4.)

3. The Memo describes the 243 hours of electrical generation and the 223,000 kilowatt production level as "negligible". (Memo page 5.)

4. The plant did not complete the "operational test cycle". (Memo page 5 under Conclusion .)

5. The Regulations require operations "following (after) acceptable power tests before operational requirements are met". (Memo under Conclusion.)

6. ". . . (A) thirty hour demand . . . (at) nowhere near its capacity, caused a major failure that was not corrected until the following year."

C. The Northern States Power Company Position

1. General

The plant in question was constructed by NSP. The

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1. National Office Technical Advice Memorandum, page 4 under "Rationale:".

construction was complete in every material aspect on or about November 30, 1973. The initial start-up of the plant began November 30, 1973. The plant began producing electricity on December 4, 1973. It produced electricity which was sold to NSP customers during and between various tests for about 200 hours between December 4 and December 17. On December 17, the low pressure turbine threw a blade causing a shutdown of the turbine generator.

The appropriate circumstances that determine the beginning of the depreciation deduction are defined in sections 1.46-3(d) and 1.167(a)-11(e)(1)(i) of the Regulations. Supplementing the regulatory definition are a number of court cases that have preceeded and influenced the wording and the meaning of the Regulations.

It is the position of NSP that the Regulations and court cases place the start date of the depreciation deduction at the point at which the machine or plant is ready to begin operating and in no event later than the date it is first used in operations.

2. The Question

The question then is; at what point in time did Congress and the writers of the Regulations place the start of the depreciation deduction? Does depreciation begin, as NSP would urge, at the end point of the construction process and at the point at which initial operations begin? Or does the depreciation deduction begin, as the National Office Memorandum writer would urge, upon the successful completion of "the operational test cycle" or "following acceptable power tests"?

3. The Regulations

a. Regulations section 1.167(a)-11(e)(1)(i), states in pertinent part that "(p)roperty is first placed in service when first placed in a condition or state of readiness and availability for a specifically assigned function."

b. Regulations section 1.46-3(d)(1) states in pertinent part that ". . . property shall be considered placed in service in . . .

(ii) The taxable year in which the property is placed in a condition or state of readiness and avilability for a specifically assigned function . . . "

(NSP Comment) - The general rules listed in the regulations above state that the "placed in service" requirement is to be considered fulfilled when the property reaches the state (condition or position) of being ready to operate, to produce the product it was built to produce. The general rule is stated without reservation and without indication that actual operation must begin or that actual operations must reach any level of success during the year the state of readiness is reached. Repeating the question: does the depreciation deduction begin at the point at which operations are about to begin or does the depreciation deduction begin upon the successful completion of the "operational test cycle"; the answer to be found in the general rules must be that there is no indication at all that the latter is intended.

c. Regulations section 1.46-3(d)(2) provides three examples to illustrate the meaning of when property "shall be considered in a condition or state of readiness and availability for a specifically assigned function." The first two are examples which relate to property that is ready to be used but has not actually been used:

(i) Parts are acquired and set aside during the taxable year for use as replacements for a particular machine (or machines) in order to avoid operational time loss.

(ii) Operational farm equipment is acquired during the taxable year and it is not practical to use such equipment for its specifically assigned function in the taxpayer's business of farming until the following year.

In the third example notice the word "operational". The complete example is:

. . .(P)roperty shall be considered in a condition or state of readiness and availability for a specifically assigned function (where)

(iii) Equipment is acquired for a specifically assigned function and is operational but is undergoing testing to eliminate any defects.

The National Office Memo relies on the word "operational" in example (iii) as its sole

authority to restrict the depreciation deduction to plants that have successfully demonstrated daily operation, the operational test cycle, and acceptable power tests. The use of the word "operational" does not, in NSP's opinion, move the point in time that depreciation begins from the point at which operations are about to begin to the point at which successful daily operations are established or operational testing is complete.

d. The Meaning of the Word Operational in Example (iii).

The dictionary definition of operational is "able to function or be used; functional:" as in "How soon will the trucks be operational? . . . ".

Substituting this definition into the wording in example (iii): "Equipment is acquired for a specifically assigned function and is (able to function or be used) but is undergoing testing to eliminate any defects . . ." (is considered in a condition or state of readiness).

To put the same complete thought into different words, a plant that has reached the point of being able to function is considered in service during the testing process. It is NSP's contention that, based on example (iii), a plant must be considered in service despite the fact that the testing process and the potential or real defects can be expected to interfere with or prevent either normal operations or optimum production. This view of the meaning of example (iii) does not impose an additional requirement for successful operations not contained in the general rules or examples one and two discussed above, but is instead entirely in harmony with the literal meaning of the words "condition or state of readiness", in that the event that triggers the beginning of depreciation in example (iii) also occurs before or right at the point of the commencement of operations.

e. Summary

The Law and Regulations place the key event triggering the Investment Tax Credit and the commencement of the depreciation deduction at the point the plant is ready to begin producing its product. Example (iii), read in its entirety, clearly places this point at the beginning of the operational testing period rather than the end of the operational testing period by stating that a plant in the process of being tested is considered in service.

4. The Starting Point Determined by the Courts

The courts have consistently determined that the ready for service requirement is met before actual or normal operations are achieved.

a. In Sears Oil Co., Inc. v. Commissioner, 359 F 2d 191 (1966), the court found that the useful life of barges began when they were ready for service in the sense that construction was complete instead of when they were first put into use. The barges were delivered by a builder in Louisiana to the Sears Oil Co. headquarters in Rome, New York for final outfitting, where they were completed and made available for service by December 1, 1957. They were not put into actual use until the ice in the canal where the barges were held had melted in May, 1958. The court held that the barges were available for service when the final construction was completed even though actual use was prevented by the ice blockage.

b. In National By-Products, Inc. v. U. S., 39 AFTR 2d 77-1406, the court found that a rendering system was deemed to have been acquired for investment tax credit purposes when it was fully installed. The court held that the system was operational in the sense that it was capable of processing material, although not fully tested and not capable of operating at the guaranteed performance standards.

c. In Fort Howard Paper Company, 1977 P-H TC Memo 77,422, a building designed and constructed for two electric turbine generators was found to be in service in its entirety even though only one generator had been installed during 1970, the year at issue. The court said "(t)he fact that the second turbine itself was not installed until 1976 is not determinative; rather, we must determine when the structure housing the turbines was placed in service. As of 1970, the turbine room was ready and available for the second turbine. Accordingly, we hold that the turbine room was placed in service during such year."

d. For the last 40 years it has been a well established point of law that neither actual use nor successful use is required for a valid depreciation deduction. Kittredge v. Commissioner, 88 F 2d 632, 19 AFTR 177 (2nd Cir 1937); Otis Beall Kent 54,011 P-H Memo TC (1953); and George S. Jephson, 37 BTA 1117 (1938).

e. Summary

The courts support the NSP position. The point at which depreciation begins is at the end of the construction period, no later than the start of actual operations. A system is considered operational within the meaning of section 1.46-3(d)(2)(iii) of the Regulations when it is capable of producing the appropriate product, even though the system has not reached optimum performance.

D. Rebuttal to the National Office Technical Advice Memorandum

The six statements or reasons given in the Memo, listed on page 4 of this protest, can be grouped into four categories:

1. Operations - the lack of adequate operations;

2. Testing - the lack of completion of the operational test cycle;

3. Breakdown - the blade failure;

4. Corporate Correspondence - the "operational plant" with broken turbine blades.

NSP offers the following rebuttal to these statements:

1. Operations - the Lack of Adequate Operations

The Memo's conclusions about the magnitude of operations in December of 1973 are not supported by the facts. The plant operated extensively and successfully from December 4 to December 17, until the blade failure. The plant produced 26.9 million kilowatt hours of electricity, using about 6 million kilowatt hours in the plant during the process. The 21 million net kilowatt hours sold to NSP's customers has a retail value today of about $700,000 or a wholesale value of $380,000. During the 24 hour period before the turbine blades failed, the plant generated about 5.3 million kilowatt hours of electricity. The electric power consumed by the 3 million people in NSP's service area during this 24 hour period was about 44 million kilowatt hours. The Prairie Island Plant, therefore, provided about 12% of the NSP system's energy during this 24 hour period. The City of Buffalo's municipal system purchased 22.7 million kilowatt hours of electricity from NSP in 1973. The 21 million net kilowatt hours of electricity produced by the plant in December would, therefore, supply the approximate annual consumption of a city with a population of 3,000.

The operations of the plant in December were substantial, not "negligible". The plant proved it was ready to operate, to perform its specifically assigned function by operating and performing successfully for in excess of 200 hours. It operated "daily" for eight days, and steadily above the 20% power level from December 13 through December 16.

2. Testing - the Lack of Completion of the Operational Test Cycle

While NSP submits that applying an additional test that requires operations to the literal meaning of the phrase "ready for service" is an erroneous interpretation of the Regulations, NSP will now assume for the purpose of this argument only, that a certain degree of operational success is implicit in the ready for service requirement.

Because the general rule places the point at which the depreciation deduction begins at the point a plant is ready to operate, any implied requirement that the immediate operations be successful can only be based on an obligation the taxpayer has to prove through demonstration that a plant was indeed ready to operate. In this context, failure to demonstrate operational success could indicate that the plant was, in fact, not ready. If the best the plant could produce was "negligible", it could cast doubt on the readiness.

An appropriate test then, would impose an operational test level that relates to and is in harmony with the question of whether or not the plant had reached the point of construction completion and the commencement of real operations rather than negligible production (production too inconsequential to signal the end of the construction phase and the beginning of the operations phase).

The burdens placed on a taxpayer by the objections to the NSP plant's readiness outlined in the Memo, however, go far beyond the obligation to demonstrate that the plant was ready to operate. The phrases "failure of the system following each attempt to complete the operational test cycle" and the requiring of operations "following acceptable power tests", go beyond using the subsequent operations to provide evidence of proof or disproof that the plant was ready to operate at the time the operations in question began. These phrases would, if allowed to stand as valid requirements, move the beginning of all depreciation deductions to the end of the operational test period.

The additional requirements described in the Memo are not only out of harmony with the Regulations, they are also unrealistic. The Memo appears to require testing at 100% for 100 hours as the test the plant failed. This test level would be an impossible requirement for the government to administer. What would happen to plants that have an uncorrectible design error? If the warranty says 100 megawatts and the actual maximum is 90, would the plant be forever non-depreciable?

The testing requirements of the Memo are also vague and subjective. For example, the Memo writer concludes that 200 hours of successful operations and the 21 million kilowatt hours of electric power produced are "negligible". The Memo writer describes "attempts to complete the operational test cycle" without telling what an operational test cycle is. Nuclear plants are constantly tested throughout their useful lives. There is no such thing as a complete operational test cycle as the Memo is applying the phrase to NSP's "negligible" operations. The same problem is contained in the phrase "acceptable power tests". The tests performed before the blades failed were acceptable to NSP engineers and the Atomic Energy Commission.

It must be remembered that the failure which occurred on December 17 was not of the nuclear powered generating plant, to which the writer of the Memo seems to be directing his attention, but rather was of the low pressure turbine, for which there were no power tests prescribed.

Summary

It is the position of NSP that, contrary to the Memo's conclusion as to the plant failing in 1973 to pass a test or tests implied by the term ready for service, the immediate successful operation of the plant reinforces the conclusion that the plant was ready for service on or about November 30, 1973.

3. Breakdown-the Blade Failure

From discussions NSP has had with local and national office IRS personnel, it is obvious that if the blades had not broken, there would be no in-service problem.[2]

2. Also see Revenue Rulings 76-428 and 76-256, generating plants declared in service with less testing and actual operations than Prairie Island I and Revenue Ruling 76-238 where March 26, 1973, the date the plant was capable of producing a saleable product was the in-service date rather than June 30, 1973 the apparent end of a series of test runs designed to increase production levels and improve the quality of the product.

There is also no question that if this identical blade failure had occurred at a seasoned plant, and it has,[3] that the blade failure would not have prevented depreciation or even have raised any question about the depreciation deduction.[4]

The blade failure and particularly the timing of the blade failure is the key, the crux of the matter. The question is very simple. Hypothetically, should a blade failure occurring after only four days of operations give a different result than a blade failure after four years of operations?

It is the position of NSP that a blade failure of the type that occurred on December 17, 1973, after 200+ hours of successful operations, has the same impact upon the depreciation deduction as the exact same type of blade failure that occurred December 16, 1975, at our second Prairie Island unit after 200+ days of successful operations, which is clearly no impact at all.

The technical advice memorandum mentions in its conclusion ". . . a thirty hour demand . . . (at) nowhere near its capacity caused a major failure that was not corrected until the following year". The inference that there is a cause and effect relationship between the "thirty-hour demand", or more accurately, the 200 hours of operations and the failure, is contrary to the facts.

The fact the blades failed after only 200 hours is not a reflection on the status of the construction of the plant. The plant was complete in all respects; the blade failure was the result of vibrations from an unexpected source. The turbine was properly designed to dampen vibrations from all known sources. This new and unusual source caused vibrations to travel along the longitudinal axis from the generator to the turbine. The conditions that caused the damaging vibrations were the result of unique circumstances, the occurrence of which could not be reasonably predicted.

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3. There are three other Westinghouse "power block 80" turbogenerators that have had blade failures traceable to the same origin. The three other units had failures after operating 1, 2-1/2 and 3 years and had produced 3, 9, and 11 billion kilowatt-hours of electricity, respectively, at the time of the failures.

4. Coincidentally, another Westinghouse "power block 80" plant was out of service from October 21, 1973, to January 22, 1974, for repair of a blading failure. This plant, however, was 4 years old and had produced 15.6 billion kilowatt hours.

The conditions that created the particular vibrations that unfortunately matched the resonance of certain turbine blades and allowed these vibrations to travel undampened through the turbine generator are the result of the chance coming together of a number of factors. It is thought that if the conditions of either NSP's transmission system or the generator had been only slightly different on December 17, 1973 at 6:15 a.m., the blade failure would not have occurred.

Summary The timing of the blade failure is related to the chance coming together of a number of factors. The timing is unrelated to the running time of the plant. This being the case, the blade failure is unrelated to the construction completion question and irrelevant to the in-service question.

4. Corporate correspondence-the "operational plant" with broken turbine blades

The corporate correspondence mentioned in the Rationale portion of the memo is the document that transferred for accounting and regulatory purposes the Prairie Island Plant from the construction department of Northern States Power to its operating department. This was done in recognition of the fact that the construction phase was over and the operational phase had begun.

This internal correspondence is entirely irrelevant to the question of whether the plant is or is not in service for tax purposes. The tax in-service date is defined in the tax law, and the determination thereof is totally independent of the decision to transfer responsibility for the plant, including the blading problem, from one internal department to another.

The decision to transfer the plant from the construction to the operating department was made on December 16. The decision was simply not recorded until December 18. In any event, foreknowledge of the blade failure would not have caused a different decision because the blade failure was an operating, not a construction, problem.

The Company has not asked IRS to consider the plant in service on the grounds of this internal responsibility transfer.

The inclusion of this bit of information in the "Rationale" section of the Memo, including the apparent contradiction in "operational" status existing at the time the correspondence was signed, adds nothing to the information necessary to decide the pertinent tax question.

E. Conclusion

The plant operated for a long enough period and with enough operational success to demonstrate conclusively that the plant did reach the point of being in a condition or state of readiness and availability for electrical energy production on or about November 30, 1973.

Section 1.46-3(d)(2)(iii) makes it clear that the existence of a defect is compatible with the depreciation deduction even in the early operational stage of a plant.

The occurrence of an event that made a complete and otherwise operational electric plant temporarily shut down for repairs does not make the plant inoperative for the purpose of the ready for service determination. The subsequent blade failure cannot be distinguished from other blade failures or mechanical defects that appear at various times in the life of all power plants and all mechanical devices.

II. The Useful Life for Depreciation Purposes of the Inver Hills and Wheaton Gas Turbine Peaking Plants.

A. Background

Northern States Power Company (Minnesota) and its wholly-owned subsidiary, Northern States Power Company (Wisconsin), are operating public utilities engaged in the generation, transmission, and distribution of electricity throughout a 40,000 square mile service area in Minnesota, North Dakota, South Dakota, and Wisconsin.

NSP uses a system-wide power grid to furnish electricity to its customers, rather than utilizing specific plants to furnish electricity to specific customers. In deciding which plants should be in operation at any given time, NSP considers total system demand and the production costs of the various plants. NSP's various types of plants listed in order of production costs (from lowest to highest) are as follows: hydro plants; nuclear plants; large coal-fired steam plants; smaller coal-fired steam plants; and oil-fired plants. The decisions as to which plants operate at any particular time are made in the Systems Operation Department which is located on the eighth floor of NSP's general office building in Minneapolis. The hydro and nuclear plants are operated as much as possible because they are the cheapest to operate.

The Inver Hills Generating Plant and the Wheaton Plant are each peaking plants employing six gas-turbine powered electric generators. These plants were built in order to provide energy to meet peak summer energy demand on a system-wide basis. Because the NSP

INTERNAL REVENUE SERVICE
NATIONAL OFFICE TECHNICAL ADVICE MEMORANDUM

Index Number: 0167.18-00

District Director
St. Paul, Minn.

08 MAY 1978

Taxpayer's Name:	Northern States Power Company
Taxpayer's Address:	414 Nicollet Mall Minneapolis, Minn. 55401
Identification No.:	41-0448030
Years Involved:	1973

Legend:

Taxpayer	Northern States Power Company
Nuclear Generating Plant	Prairie Island No.1
State - A	Minnesota
City - B	Minneapolis

Issue:

Whether the taxpayer's nuclear power plant was "placed in service" during 1973 within the meaning of sections 1.167 (a)-11(e)(1)(i) and 1.46-3(d)(1) and (2) of the Income Tax Regulations.

Facts:

The taxpayer was incorporated in 1909 under the laws of state A. Its executive offices are located in city B. Taxpayer and its subsidiaries are operating public utilities engaged in the generation, transmission, and distribution of electricity throughout a 40,000 square mile service area in several states, and the distribution of gas in 78 communities within this area.

The work relating to the nuclear power facility began with site preparation in October 1967, followed by foundation concrete work on June 20, 1968. The nuclear power plant was constructed for the taxpayer pursuant to a contract.

A vendor was to furnish the hardware and to provide adequate demonstration of performance such as 100-hour test and all other appurtenent equipment performing suitably within design rating without over-load, excess velocity,

or encroachments on margins such as cleanliness factors. This in effect, is part of an agreement set forth in a letter between the parties when planning for the nuclear power system began in 1967.

An interim operating license for preoperational testing purposes not to exceed 1835 megawatts thermal (90 percent of rated power) and for steady state operation not to exceed 330 megawatts thermal (20 percent of rated power) was issued by the Atomic Energy Commission in August 1973, setting forth terms and operating conditions relating to the nuclear plant. Several amendments were made to the initial operating license and on April 5, 1974 a full term operating license was issued. With the issuance of the August license, the following sequence of significant events is summarized, the details of which were a part of taxpayer's progress report on the generating plant from the 1973 interim license through August 1974 for submission to the AEC, Director of Regulation.

Criticality of the nuclear reactor for the generating plant was achieved on December 1, 1973, and synchronized with the distribution system on December 4, 1973. Following synchronization, generation of power escalation up to 200 MW (for a designed 1650 MW system) was achieved by the power plant until failure occurred on December 17, 1973. The day after the power escalation failure, the taxpayer, in a letter dated December 18, 1973 from the Manager of Power Production to the General Manager, Plant Engineering and Construction declared the nuclear plant was operational as of December 16, 1973. Details of power level generation from December 1, 1973, leading up to the turbine failure of December 17, 1973 are:

1) the nuclear power system produced on an intermittent basis, 26,900,000 gross KWH of energy reaching a maximum generation of 223,000 KW;

2) the time period on an intermittent basis, for the power level of 19,460,000 gross KWH corresponded to the test of December 1, 1973 through December 15, 1973 or for 213 hours of operation;

3) on December 15, 1973, power output was raised from approximately 500 MW to 800 MW for a total of approximately 30 hours of operation at approximately 50% of capacity, and on December 17, 1973 a turbine failure occurred. Power generation was

resumed at a low level in February 1974, following generator modifications. Malfunctioning of the turbine continued to occur forcing generator shutdown in March 1974 with repairs continuing into April 1974. Later in April, generation was resumed with power increased to 90% followed again by a turbine failure. In July 1974, the generating plant was again synchronized into the power grid and tested at 100% power generation in mid July 1974, ending up a 100 hour warranty test in August 1974.

Applicable Law:

Section 38 of the Internal Revenue Code of 1954 allows a credit against Federal income tax for qualified investment in section 38 property, and the determination of what property qualifies is made in accordance with the rules provided in section 48.

Section 1.167(a)-11(e)(1)(i) of the regulations provides that property is first placed in service when first placed in a condition or state of readiness and availability for a specifically assigned function whether in a trade or business, in the production of income, in a tax exempt activity, or in a personal activity. In general, the provisions of (d)(1)(ii) and (d)(2) of section 1.46-3 shall apply for the purpose of determining the date on which property is placed in service.

Section 1.46-3(d)(1) of the regulations provides that for purpose of the credit allowed by section 38, property shall be considered placed in service in the earlier of the following taxable years: (i) the taxable year in which, under the taxpayer's depreciation practice, the period for depreciation with respect to such property begins; or (ii) the taxable year in which property is placed in a condition or state of readiness and availability for a specifically assigned function.

Section 1.46-3(d)(2) of the regulations provides that equipment acquired by a taxpayer for a specifically assigned function in his trade or business that is operational but is undergoing testing to eliminate any defects is considered placed in a condition or state of readiness and available for a specifically assigned function.

Northern States Power Company

Rev. Rul. 76-428, 1976-2 C.B. 47 states that a nuclear electrical generating unit was fully operational on December 23, 1975, even though it would still undergo further testing to eliminate any defects and it would be considered placed in service. Criticality of the reactor had been achieved. All critical tests necessary for power operation and synchronization were performed prior to date unit was placed in service. The nuclear electrical generating plant was partially shutdown on December 24, 1975, due to an abundance of hydro-generated electricity rather than to any problems concerning the unit.

Rev. Rul. 76-256, 1976-2 C.B. 46 states that where a coal-fired electric generator unit was first placed in service, the necessary permits and licenses had been approved, the critical tests for the various components were completed on the components systems and the facility was in daily operation to assure that the generating unit could operate in its intended manner.

Rationale:

The sequence of events summarized earlier from the taxpayer's report to the AEC clearly illustrates the status of the generating plant in view of the several attempts made to achieve the conditions of readiness and operational status as called for under the regulations.

Of particular importance is the lack of adequate demonstration of daily operation. Electrical power generation for approximately 30 hours occurred after the taxpayer considered the plant placed in service, December 16, 1973, but the generating plant was forced to shutdown on December 17, 1973 due to a turbine break down.

Corporate correspondence dated two days after the taxpayer considered the plant placed in service, December 18, 1973, acknowledged the turbine failure and claimed the electrical generating plant "operational" as of December 16, 1973, with only 30 hours of operation in which the power escalation was abruptly halted, an obvious condition belying operational status.

Northern States Power Company

In the 243 hours of generation in early December 1973, caution should be exercised here in interpreting the maximum of 223,000 KW of electricity produced. This only means that at some interval of time, and indeed a small interval of time the system produced a maximum 223,000 KW. In affect, the nuclear power facility operated for 243 hours at a negligible power output level.

Conclusion:

The nuclear generating system was not "placed in service" due to a major malfunction causing failure of the system following each attempt to complete the operational test cycle. This malfunction was not corrected until the following year.

"Placed in service" for tax purposes is a factual determination which covers criticality achievement for the reactor core and synchronization of all systems complete with the unit's power distributed to the grid system in effect following acceptable power tests before operational requirements are met. In the instant case, a thirty hour demand, after taxpayer considered the plant placed in service for power generation nowhere near its capacity, caused a major failure that was not corrected until the following year. Hence the several beginnings of testing or power escalation resulted each time in failure in the time frame under consideration.

In view of the above, synchronization of an electrical power generating plant alone does not make the plant operational. Also, during the period following the power escalation, the testing of the nuclear power generating facility for demonstrating its specifically designed function, was abruptly ended by a major component failure.

Consequently, the nuclear power facility was "not" placed in service on or before December 31, 1973.

END

Dick, Request for ruling absent exhibits. The exhibits relate to licensing which as it turned out the IRS national office considered unnecessary. a

NSP

NORTHERN STATES POWER COMPANY
414 NICOLLET MALL
MINNEAPOLIS, MINNESOTA 55401

July 20, 1977

Mr C Dudley Switzer
District Director of Internal Revenue
316 North Robert
St Paul, MN 55101

Subject: Request for Technical Advice
From the National Office

Re: Northern States Power Company
I D Number 41-0448030
Taxable Year 1973

Dear Sir:

Pursuant to Section 601.105(b)(5) of the Code of Federal Regulations, Northern States Power Company respectfully requests that you refer to the National Office (Assistant Commissioner, Technical), the question of whether, based on the facts set forth below, the Prairie Island Nuclear Generating Plant, Unit I, was "placed in service" during 1973 within the meaning of Sections 1.46-3(d) and 1.167(a)11(e)(1)(i) of the Regulations.

The question developed during the examination of our 1973 Income Tax Return, which is currently being examined by St Paul District agents.

Technical advice from the National Office is warranted because the issue is complex and also to maintain uniformity.

The statement of facts and points at issue that follows is a joint statement agreed to by both the District examining officer(s) and Northern States Power Company.

STATEMENT OF FACTS

General Matters

Northern States Power Company (NSP) was incorporated in 1909 under the laws of Minnesota. Its executive offices are located at 414 Nicollet Mall, Minneapolis, Minnesota 55401. NSP and its subsidiaries are predominantly operating public utilities engaged in the generation, transmission, and distribution of electricity throughout a 40,000 square mile service area in Minnesota, North Dakota, South Dakota and Wisconsin, and the distribution of gas in 78 communities within this area. Northern

General Matters (Contd)

States Power Company files its Federal income tax returns with the Ogden Service Center on a calendar year basis and computes income under the accrual method of accounting. For the year 1973, NSP elected the class life and asset depreciation range systems and the "half-year convention" under the provisions of Treasury Regulation Section 1.167(a)-11.

Generating Plant in Question

Prairie Island I is the first of two nuclear generating units located on the Mississippi River near Red Wing, Minnesota. Each unit consists of a Westinghouse pressurized water steam supply system designed to operate at 1,650 megawatts of thermal power and a Westinghouse "power block 80" turbogenerator, designed to produce 530 megawatts of net electrical output. Unit I first produced electricity in December of 1973. The second unit was added at a later date. The question to be resolved relates only to Unit I. The book cost of Unit I is approximately $234 million.

Construction of the Plant

Certain site work began under a limited work authorization in October, 1967. The foundation concrete work started June 20, 1968. The construction process took about five years. On August 9, 1973, The Atomic Energy Commission issued the facility operating license. The license stated in part:

"1. The Atomic Energy Commission (the Commission) having found that:

A. The application for license filed by Northern States Power Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I and that all required notifications to other agencies or bodies have been duly made;

B. Construction of the Prairie Island Nuclear Generating Plant, Unit I (the facility), has been substantially completed in conformity with Provisional Construction Permit No. CPPR-45, as amended, the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;

C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;...

2. Facility Operating License No. DPR-42 is hereby issued pursuant to an Order of the Atomic Safety and Licensing Board dated June 15, 1973, and Memorandum and Order dated July 11, 1973, in accordance with the provisions of the Commission regulations in 10 CFR 50, Section 50.57(c), and Appendix D to Part 50, to Northern States Power Company to read as follows:...

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Sections

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Construction of the Plant (Contd)

The preoperating test program simulated operating conditions by operating every system, except the generation of heat through nuclear power, at the designed temperature and pressure. With the November 21, 1973 letter, the AEC concludes that there has been a satisfactory completion of construction and a satisfactory completion of the preoperational tests necessary to begin operations in compliance with the standards and requirements of the Atomic Energy Act of 1954. The letter is also an illustration of the extent of the AEC evaluation and verification process. This letter is attached as Exhibit B.

Operations

The initial start-up of the reactor commenced at 6:30 PM on November 30, 1973. The first sustained nuclear reaction (criticality) was achieved at 12:17 AM on December 1, 1973. Initial synchronization into the power grid occured at 7:35 PM on December 4, 1973. The plant produced electrical energy intermittently for the next 12 days. It was connected to the NSP power grid and producing electrical energy at a rate exceeding 17 percent of the design capability for 159 hours during December of 1973. The plant reached the 17 percent, 25 percent and 46 percent production rates on December 7, December 10 and December 16, respectively. The plant produced 26,900,000 gross kilowatt-hours of electric energy in 1973.

NSP declared this facility in service for book purposes as of Sunday, December 16, 1973 at 12:01 AM.

The income for book and tax purposes was handled in the following manner:

Before the book in service declaration, the gross kilowatt-hours of energy generated, multiplied by a costing factor, was subtracted from the cost of the facility and likewise the kilowatt-hours of energy used in the plant, times a costing factor, was added to the cost of the plant. The energy generated of 19,460,000 KWH between December 1 and December 16 was priced at $114,230.20 and the energy used during the same period of 11,492,000 KWH was priced at $67,458.04 leaving a net decrease in the cost of the plant from energy generated and energy used of $46,772.16.

After the plant was declared in service for book purposes, the plant generated 7,440,000 gross kilowatt-hours of energy on December 16 and 17. The energy was sold to customers and no book entry was made to associate the value of the energy with the cost of the plant. Likewise the value of the energy used by the plant from December 16 to December 31 of 7,946,000 kilowatt-hours was not added to the cost of the Prairie Island I plant. This power was generated by other plants and the expense of generating the electricity used in plant from December 16 to December 31, 1973 was expensed. Between December 16 and December 31, the plant use exceeded the generation by 506,000 kilowatt-hours.

The Defect

On December 17, 1973, the low pressure turbine threw a blade which damaged other blades and forced the plant to shut down. The turbine is part of the Westinghouse "power block 80" turbogenerator. In addition to Prairie Island Unit I, there are six other such turbine units in operation at various utilities. Of the six, three have had precisely the same type of blade failure as Prairie Island I. These other three failures occurred after the units had been operating for 1, 2½, and 3 years and had produced 3,000,000,000, 9,000,000,000, and 11,000,000,000 kilowatt-hours of electrical energy.

In the opinion of the Westinghouse and NSP engineers that worked on the problem, the reason the blades failed is a design flaw involving the harmonic frequency of the turbine generator. Apparently, certain conditions such as perturbations in the power grid (the interconnected transmission system) must exist for the problem to arise. The problem apparently occurs when various factors affecting the power grid, the generator, and the vibrations of the turbine, come together by chance circumstances.

NSP engineers conclude that the December 17 blade failure was not related to the power level at which the plant was being operated, any particular test that was being performed nor the degree of construction-completion as of December 17, 1973.

NSP believes it had a valid damage claim against Westinghouse related to the blading problem. NSP also believes the proper measure of the damages should be the additional cost of power incurred during the forced outages caused by the blading problem. Under the construction contract NSP could not reject the plant, compel Westinghouse to return the purchase price nor compel Westinghouse to replace the turbine. NSP could only require that the performance standards be met, which Westinghouse has accomplished through turbine modifications.

License Restriction

As described above, the Atomic Energy Commission issued the facility generating license on August 9, 1973. In addition to requiring certain evaluations, modifications, and tests before actual operations could begin, the license restricted the reactor core power to 1,485 megawatts of thermal power (90 percent of the rated capacity) for testing purposes and 330 megawatts thermal (20 percent of the rated capacity) for steady operations. The license was effective for one year, scheduled to expire August 9, 1974.

On December 14, 1973, the AEC issued License Amendment No. 1 which relaxed the operating restriction so that the plant could operate for power generation purposes at steady state reactor core power levels of 1,485 megawatts thermal (90 percent). The license was to expire on August 9, 1974, unless extended for good cause shown, or upon the earlier issuance of a subsequent licensing action.

On April 5, 1974, License Amendment No. 2 raised the authorized power level to 1,650 megawatts of thermal power (100 percent) and increased the term of the license to June 25, 2008.

In the opinion of the NSP engineers, the license restrictions that were in force during December, 1973, were not due to any lack of construction-completion, or physical problem with the plant.

License Restriction (Contd)

License Amendments No. 1 and 2 are attached as Exhibits C and D.

Ownership

Northern States Power Company was both the owner and construction manager of Prairie Island Nuclear Plant. Therefore, legal ownership of the plant belonged to NSP throughout the construction period.

Control

NSP was in complete control of the plant facility on November 30, 1973.

POINTS AT ISSUE

Northern States Power Company hereby requests technical advice in response to the following questions:

1. Was the plant "placed in service" during 1973 within the meaning of Sections 1.167(a)-11(e)(1)(i) and 1.46-3(d)(1)(ii) of the Treasury Regulations?

2. Is the plant "considered in a condition or state of readiness and availability for a specifically assigned function" during 1973, consistent with the examples given in Section 1.46-3(d)(2) of the Treasury Regulations?

THE REGULATIONS AND INTERPRETATIONS THEREOF

The pertinent parts of the Regulations:

The ADR depreciation Regulations incorporate the Regulations of Investment Credit to define the placed in service date. The pertinent points are identified and quoted as follows:

§1.46-3(d)(1) "...property shall be considered placed in service in..."

(ii)"The taxable year in which the property is placed in a condition or state of readiness and availability for a specifically assigned function..."

§1.46-3(d)(2) "...the following are examples of cases where property shall be considered in a condition or state of readiness..."

(ii)"Operational farm equipment is acquired during the taxable year and it is not practicable to use such equipment for its specifically assigned function in the taxpayers business of farming until the following year."

(iii)"Equipment is acquired for a specifically assigned function and is operational but is undergoing testing to eliminate any defects."

The requirements of the Regulations have been applied to the following situations as follows:

1. In Revenue Ruling 76-428, 1976-2, CB 47, a nuclear power plant was ruled to have met the requirements as of 12-23-75, the synchronization and power operation date.

2. In Revenue Ruling 76-256, 1976-2, CB 46, a coal burning power plant was deemed placed in service even though a waste disposal system was not complete. The rationale was that the waste system was complete enough to "not interfere with the generating units intended purpose on" (the date placed in service). The key date was also the date of initial synchronization and power operation in this case.

3. In National By-Products, Inc vs U S, 39 AFTR 2d 77-1406, a rendering system was deemed to have been acquired for investment tax credit purposes when it was fully installed and operational in the sense that it was capable of processing material, even though complete satisfaction in its performance had not been achieved and the contract standards not fully met.

4. In Revenue Ruling 69-201, 1969-1, CB 60, spare parts were deemed placed in service before actual use under the rationale that the standby parts are "necessary and essential to the operation of the taxpayer's business".

5. In Sears Oil Co, Inc, 17 AFTR 2d 833, depreciation was allowed on an oil barge from the time it was ready for service even though it was frozen into a canal and not put to actual use until May of the next year#.

THE POSITION OF NORTHERN STATES POWER COMPANY

It is the position of NSP that Prairie Island I met the "placed in service" requirements of the CLADR regulations in the year 1973.

Comparisons

The key events in the construction-completion and start-up process of electric generating plants and the dates the events occurred at the three plants being compared are as follows:

	Prairie Island I Nuclear	Rev Rul 76-428 Nuclear	Rev Rul 76-256 Coal
1. Issuance of Operating License	8- 9-73	11-21-75	Unknown
2. Completion of Fuel Loading	8-30-73	11-25-75	Not Applicable
3. Criticality	12- 1-73	12-15-75	Not Applicable
4. Initial Synchronization	12- 4-73	12-22-75	12-11-75
5. Reached at Least 16% Power	12- 7-73	12-23-75	12-13-75
6. Reached at Least 46% Power	12-16-73	Not in 1975	Unknown
7. Kilowatts Generated Gross	26,900,000	2,651,000	Unknown

Comparisons (Contd)

The comparison makes it obvious that the Prairie Island I plant was ahead of either of the plants described in the Revenue Rulings above. Therefore, absent any other relevant facts, Prairie Island I would be considered "placed in service" in 1973.

The examining agent has raised two additional facts where the Prairie Island I situation differs from the plants described in the rulings. The examining agent asserts that taken together, these two items prevent the plant from being considered in service until 1974.

Fact 1 - As of 12-31-73 the plant performance had not been accepted and a possible damage claim existed against the turbogenerator manufacturer relating to the blade failure.

Fact 2 - As of 12-31-73, the operating license was restricted to 90% of the rated power capacity and scheduled to expire on September 9, 1974.

It is the position of the Company that neither fact above is relevant to the question and that these facts taken together or separately should not prevent the plant from being considered in service within the meaning of the Regulations.

RATIONALE

1. Lack of Acceptance and Possible Claim

The lack of acceptance in the case of Prairie Island I is no different than the lack of acceptance at the initial synchronization date of other generating plants. It is the industry practice for the utility (owner) to defer equipment acceptance until the end of a rather extensive test period. The possible damage claim relating to the turbine blade failure is not relevant to the in service question because obviously rescission of the contract was impossible. In the nuclear plant situation, the size of the plant, the manufacturing lead time, the large investment by the owner and the large cost incurred by the manufacturer make it impossible for the manufacturer to take back the turbine generator and return the owner's payments. Under the contract, Westinghouse was only obligated to repair, replace, adjust or modify the faulty turbine. The decision whether to repair or replace belonged to Westinghouse.

The District Court faced a similar situation in National By-Products, Inc, supra. It decided that neither full customer satisfaction nor completion of the testing process is essential before the system can be considered "acquired" for inv. tax credit purposes. Under this rationale NSP "acquired" the turbine generator, with no right of rescission, in 1973.

2. License Restrictions

The Regulations require property to be placed in a condition or state of readiness and availability for a specifically assigned function in order to be considered placed in service. Possession of the necessary licenses is therefore required by the Regulations. The pertinent question is, however, do the Regulations require the license to be free from restrictions of the type imposed in this case? NSP believes the answer is negative for two reasons. First, the restrictions were minor. Second, substantial restrictions have been permitted in other circumstances.

The restrictions are minor in that the 10% restriction did not interfere with the actual plant operations nor would it have interfered with the planned plant operations for the balance of 1973 had the turbine blade failure not occurred.

Depreciation is permitted notwithstanding the substantial restrictions to availability or operability described in the following cases:

1. The Regulations call farm machinery available for a specifically assigned function even though the assigned function is out of season until the next year. Section 1.46-3(d)(2)(ii), supra.

2. Revenue Ruling 69-201, supra, permits depreciation of spare parts before installation.

3. In Sears Oil Co, Inc, supra, an oil barge was considered in a condition or state of readiness and availability for a specifically assigned function even though frozen into a canal for the balance of the winter.

4. Automobiles are considered in service even though the governmental agencies that control automobile operations impose restrictions on speed and will grant only a one year license.

SUMMARY

The Prairie Island Plant did operate during 1973 and in so doing it produced 10 times the electricity in the year in question as the nuclear plant described in Revenue Ruling 76-428. A plant that did operate must be considered to have met the requirements of the Regulations that only require the plant to be ready to operate. The license restrictions did not prevent nor interfere with operations. Acceptance of the plant is not essential before the plant can be considered "acquired" by the owner.

CONCLUSION

Based on the facts as stated above, the Prairie Island Nuclear Generating Plant, Unit I, was first "placed in service" in 1973 within the meaning of Sections 1.46-3(d) and 1.167(a)11(e)(1)(i) of the Regulations. Therefore, based on these conclusions, we respectfully request that you issue technical advice that the depreciation deduction and the investment tax credit related to this plant are allowable for the year 1973.

REQUEST FOR CONFERENCE AND COPY OF MEMORANDUM

Pursuant to the provisions of the Code of Federal Regulations, Northern States Power Company requests a conference in the National Office and an opportunity to submit additional information for consideration before the issuance of a technical advice memorandum in the event that a decision adverse to NSP is contemplated. Northern States Power also requests, pursuant to the provisions of the Code of Federal Regulation, that a copy of the technical advice memorandum be furnished to it.

Questions or comments concerning this request should be directed to the undersigned at (612) 330-5907.

A power of attorney is attached authorizing two persons from the Washington office and two persons from the Minneapolis office of Haskins & Sells, Certified Public Accountants, to act on this matter on behalf of Northern States Power Company.

Sincerely,

NORTHERN STATES POWER COMPANY

By_____
G S Pettersen, Controller

Attachments

Copy of letter giving additional information after the conference.

NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

February 27, 1978

Mr Albert L Woodman
Chief, Appraisal Section
Engineering and Valuation Branch
Internal Revenue Service (T:C:E:A)
Washington, D C 20224

Re: Northern States Power Company Request for Technical Advice; Depreciation on Prairie Island Nuclear Generating Plant

Dear Mr Woodman:

At the conclusion of the conference in Washington on February 7, 1978, it was our understanding that we, Northern States Power Company, would submit additional information relating to the pending request for technical advice and, in addition, restate the essence of our argument that we are entitled to commence depreciation on the subject facility in 1973. In compliance with this understanding, we enclose herewith a copy of:

1. Description of the Preoperational Test Program (Exhibit A).

2. List of Preoperational Tests With Completion Dates (Exhibit B).

3. List of Start-Up Test Sequence Through Low Power Tests With Completion Dates (Exhibit C).

The question whether depreciation on the subject facility is to commence in 1973 turns, in our view, on whether such facility was "first placed in service" in 1973. Pursuant to Treasury Regulations Section 1.167(a)-11(e)(1), "(p)roperty is first placed in service when first placed in a condition or state of readiness and availability for a specifically assigned function ....." It is our contention that the subject facility was first placed in a condition of readiness to generate electrical power for sale to customers, its specifically assigned function, on December 4, 1973, for it was on that date that the facility, in fact then generating electrical power, was synchronized into the Company's power grid.

We cannot, we feel, overemphasize the significance of synchronization. A newly constructed nuclear-powered electrical generating facility, costing some 234 million dollars, is to be integrated into an electrical supply system costing in the billions of dollars. It would seem inconceivable, as we would expect you to fully appreciate, that the responsible engineers would attempt such integration, considering the costs of the equipment involved and the enormous damage which could result from an equipment failure, if they did not feel certain that the new facility was in fact in a condition of readiness to perform within the grid. The preoperational and the cold and hot shut-down tests, as well as the significant zero power tests, indicate in our view a sufficient engineering basis for predicting at the time of synchronization not only the capacity of the new facility to generate electrical power, but the capacity to do so without risk of damage.

The fact that the subject facility generated saleable electrical power for some 12 days subsequent to synchronization is in our view of no legal consequence. This would seem to be the teaching of Sears Oil Co., Inc. v. Commissioner, 359 F.2d 191 (2d Cir.1966), where depreciation was allowed for the taxpayer's barge on the basis that it was ready for use in the taxpayer's business even though not yet actually used. Similarly, depreciation was allowed in the situation described in Revenue Ruling 76-428, 1976-2 C.B.47, although there was a partial shutdown of the generating plant one day following synchronization. If we are correct in asserting that use is not a prerequisite to depreciation, then the fact that a component of the subject system failed subsequent to readiness can likewise be of no legal significance. Certainly this conclusion comports with the express regulatory language, where "placed in service" is equated to a "condition of readiness" to perform a function, and not to the actual performance of a function.

If you should not, however, agree as to the manner in which we have stated this issue or the determining law, we would ask that you provide us with what you believe to be a correct statement of the issue or of the law. If you do agree as to the statement of the issue and the law, an inclination on your part to rule adverse to our position would seem to be a consequence solely of our failure to transmit to you a sufficient amount of the data that was available to our engineers in 1973 and which led them to conclude that the subject facility was on December 4, 1973, in a condition of readiness to generate electrical power for resale to customers. If you should feel that this latter case does in fact exist, we would be eager to make one of our engineers having a complete knowledge of the pertinent circumstances available to you at your convenience. Whether or not you wish to avail yourself of this opportunity, we would, in the event you contemplate issuing an adverse ruling, ask that we be afforded another opportunity to discuss this matter with you in Washington before any such ruling is issued.

Sincerely,

NORTHERN STATES POWER COMPANY

By G S Pettersen
G S Pettersen, Controller

enclosures

bcc: C K Larson
A R Renquist
D A Lawrence
A C Sather
J N Reif (H&S)
J W Littlefield (Briggs & Morgan)

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND UNIT 1

Description of the Preoperational Test Program

The preoperational test program was designed to assure that all structures, systems, and components will satisfactorily perform their safety-related functions. It was required by the U S Atomic Energy Commission as a part of our final safety analysis report (FSAR). The ultimate object of the test program is to prove the safety of the nuclear steam supply system. The AEC regulatory guide broadens the scope of the test program with the words "(t)he test programs should provide additional assurance that the plant has been properly designed and constructed and is ready to operate in a manner that will not endanger the health and safety of the public, that the procedures for operating the plant safely have been evaluated and demonstrated, and that the operating organization is knowledgeable about the plant and procedures and fully prepared to operate the facility in a safe manner."/1.

Because the AEC testing requirements were broadly stated in terms of proper design and construction, the Prairie Island preoperational test program was designed to test all of the plant systems,/2. not just the systems directly related to reactor safety.

/1. U S Atomic Energy Commission Regulatory Guide, 1.68 Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors, November, 1973.

/2. The preoperational test program tested plant systems as opposed to individual items. The construction testing program tested each individual component, such as, each pump, piping segment, valve and electrical wiring harness. These individual tests were designed to demonstrate proper assembly, welding, installation and connection. The preoperational test program for a system did not begin until all individual items in the system had been tested under the construction test program.

List of Preoperational Tests With Completion Dates

Test No	Code	Description	Date Complete
27.2	SI	SI Low Head & Low Head Recirc	2- 3-73
45	SF	Spent Fuel Pit Cooling & Purif	2-23-73
43.1	PS	RCS Pressurizer Relief Tank	3- 2-73
43.5	RC	RCS Flow Measurement	3-15-73
43.4	RC	RCS Leak Rate Test	3-18-73
4	CC	Component Cooling (Cold)	3-22-73
9	SU	Hot Functional Outline	3-22-73
42.1	PS	RCS Pressurizer Level Inst	4-10-73
31.10	WL	Chemical Drain Tank & Pump	4-13-73
50	CS	Containment Spray (Nozzle Flow Verif)	4-15-73
35.4	GS	Generacor Seal Oil System	4-15-73
22	NG	Misc Gas N_2 System	4-19-73
3	RM	Reactor Makeup Water	4-23-73
13.2	VC	VC Charging & Letdown	4-26-73
69.1	IP	Battery Inverter Pwr Sources	5- 6-73
69.2	CO	Instrument AC & Computer AC Dist	5- 6-73
31.5	WL	Waste Condensate Tanks & Pumps	5- 6-73
35.2	TP	Auto Stop & Lube Oil	5- 6-73
13.6.1	VC	Concentrates Holdup Tanks & Pumps	5- 9-73
67	EA	Plant 4 KV Station Aux	5-11-73
64.2	ZC	Dome Recirc	5-13-73
5	SA	Station Air	5-17-73
35.8	TB	Turning Gear System	5-22-73
31.3	WL	Reactor Bldg Sumps & Drains Piping	6- 1-73
68	EB	Plant 480 V Station Aux	6- 3-73
31.9	WL	Aux Bldg Sumps & Drains	6- 8-73
27.1	SI	SI Accumulator	6-15-73
4	CC	Component Cooling (Hot)	6-17-73
13.6.3	VC	Laundry & Hot Shower	6-17-73
72	EAC	Cooling Tower Area 4 KV	6-17-73
31.12.5	WL	Aerated Drain System	6-19-73
22	NG	Misc Gas System	6-20-73
6	CD	Condensate	6-24-73
71	EL	Lighting & Misc Small Power Supply	6-27-73
11	CF	Chemical Feed (Hot)	7-10-73
70	DC	Battery & DC Dist System	7-10-73
32.1	FH	Reactor Service Tools	7-12-73
49	RTB	Reactor Trip Breakers	7-15-73
27.4.1	SI	Slave Relay Actuation Test	7-17-73
73	EBC	Cooling Tower Area 480 V	7-19-73
32	FH	Fuel Handling	7-19-73
27.5	SI	Safeguards Logic	7-20-73
48.1	WS	Baler System	7-22-73
64.5	ZC	Ring Girder Cooling	7-22-73
31.2	WL	RC Drain Tank, Pumps & Filter	7-23-73
74 I	AC	Station Annunciators Part I	7-23-73
64.7	ZC	Neutron Detector Cooling	7-27-73
64.6	ZC	Reactor Cap Cooling	7-29-73
27.4.2	SI	Integrated SI Test Without Blackout	7-29-73
27.4.3	SI	Integrated SI Test With Blackout	8- 5-73
27.3	SI	SI High Head	8- 8-73

List of Preoperational Tests With Completion Dates (Contd)

Test No	Code	Description	Date Complete
31.4.3	WL	S/G Blowdown	8- 9-73
28	RP	Residual Heat (Cold)	8-12-73
10	SS	Turbine Cold Sampling	8-13-73
64.1	ZC	Fan Coil	8-16-73
80	ZU	Fan Coil Condensate Meas	8-17-73
77	CA	Contain Spray Caustic Addtn	8-19-73
46	NI	Nuclear Instrumentation	8-19-73
25.3	RP	Logic Time Response	8-20-73
25.2	RP	Logic Function	8-20-73
56	ZH	Chilled Water Safeguards	8-22-73
13.5	VC	Boric Acid Transfer & Batch	8-23-73
25.4	RP	Logic At Power Test	8-24-73
26	RD	Radiation Monitoring	8-26-73
12	CU	Communications	8-26-73
64.4	ZC	Crom Cooling	9- 9-73
78	LH	Post Loca H2 Control	9- 9-73
51.1	WG	Gas Analyzer	9-12-73
30	FP	Fire Protection & Screen Wash	9-16-73
35.10	TB	Steam Seal & Cylinder Heat System	9-19-73
16	CL	Cooling Water	9-20-73
53	ZG	Diesel Generator Cooling	9-20-73
46.1	NI	Movable Incore Instrumentation	9-23-73
31.6	TD	Turbine Bldg Sumps & Drains	9-23-73
31.11	WL	Non-Aerated Drain Monitor Tk & Pump	9-23-73
74 II	AC	Station Annunciators Part II	9-26-73
31.4.2	WL	S/G Blowdown	9-28-73
29	VC	Boron Analyzer	9-30-73
54	ZK	Battery Room Special Vent	9-30-73
35.1	EH	E-H Control System	10- 2-73
2	DE	Deepwell H_2O Treatment & Cond Makeup	10- 7-73
61	ZF	SFP Normal Vent	10- 7-73
64.3	ZC	Internal Cleanup	10- 7-73
76	ZE	Safeguards Eq Ht Rem	10- 7-73
15	FX	Fire Detection	10- 8-73
31.12.1	WL	ADT Coll Tanks Pumps & Filters	10- 9-73
31.12.4	WL	ADT Monitor Tank & Pump	10- 9-73
41	SM	Reactor Hot Sampling	10-10-73
1	DE	Domestic Water	10-12-73
13.1	VC	Makeup & Blending Control	10-12-73
31.12.3	WL	ADT Conden Receivers Pumps & Ion Exc	10-12-73
33.1	CW	Circ Water Internal	10-12-73
33.2	CW	Circ Water External	10-12-73
31.14	WL	800 Gal Evap HU Tank & Conc Tank	10-13-73
35.11	TB	Supervisory Instruments	10-14-73
24	RE	Reactor Control	10-15-73
20	EG	Emergency Diesel Gen	10-16-73
31.15	WL	Spent Resin Tank	10-16-73
59	ZA	Aux Bldg Special Vent	10-16-73
60	ZS	Shield Building Vent	10-16-73
31.8	WL	Waste Holdup Tank & Pump	10-17-73

List of Preoperational Tests With Completion Dates (Contd)

Test No	Code	Description	Date Complete
57	SN	Control Rm & Computer Rm Vent (Eng)	10-17-73
58	ZD	Aux Bldg Normal Ventilation	10-17-73
31.1	WL	Laundry & Hot Shower	10-19-73
63	ZP	Containment Purge & Refueling Pool	10-21-73
65	HE	Steam Exclusion	10-21-73
14	TO	Turb Oil Trans & Purification	10-23-73
31.12.2	WL	Misc Drains Coll Tanks & Pumps	10-25-73
62	ZV	SFP Special & OB In Service Purge	10-28-73
31.4.1	SB	S/G Blowdown	10-30-73
47	WG	Waste Disposal Gas	11- 2-73
33	MS	Main & Aux Steam	11- 7-73
55	ZR	Screenhouse Ventilation	11- 9-73
31.7	WL	Waste Evap (2 GPM) Leak Test	11-12-73
42.2	PS	RCS Pressurizer Pressure Control	11-13-73
13.6.2	VC	Monitor Tanks & Pumps	11-13-73
75	ZZ	Rad Waste Bldg HVAC	11-18-73
25.1	RP	Analog Protection	11-21-73
40	RF	Aux Feedwater	11-22-73
47.1	H2	Hydrogen	11-25-73
51.2	GA	Gas Analyzer (Hot)	11-25-73
52	HT	Heat Tracing	11-25-73
7	FO	Fuel & Diesel Oil	11-28-73
18	AR	Air Removal	12- 1-73

TOTAL TESTS = 124

List of Start-Up Test Sequence Through Low Power Tests With Completion Dates

Step No	Procedure No	Test Title	Reactor Status	Date Complete
1	CS 1.1	Initial nuclear instrumentation system alignment.	CSD	8-23-73
2	Pre-Op 46	Nuclear instrumentation system checkout.		
3		Checkout temporary core loading instrumentation (with neutron source).		Between
4	CS 3	Reactor systems sampling - prior to core loading.		8-23-73 &
5	CS 4	Core loading prerequisites and periodic checkoff.		8-28-73
6	CS 5	Initial core loading.		
7		Insert incore instrumentation thimbles into core.		8-30-73
8		Install upper internals.		
9		Latch full length rods (control).		Between
10		Install reactor vessel head and tension studs.		8-30-73 &
11		Latch part length control rods.		9-23-73
12		Make final connections to head (RV).		
13		Install missile shield.		
14		Fill, vent RCS.		
15	Pre-Op 46.1	Incore movable detector (system checkout).		
16		Incore thermocouples (system checkout).		9-23-73
17		Excore power range detector position verification.		Between
18	Pre-Op 31.1.2	Control System test for turbine runback operation (NSSS only).		9-23-73 &
19		Rod control system checkout.		11-9-73
20	CS 8.1	Rod drive mechanism timing. (Cold)		
21		Rod position indication system.		
22	CS 9.1	Rod drop time measurement. (Cold)		11-9-73
23		Verify installation of SG feedwater D/P meters and feedwater temperature sensors for calorimetrics.		
24		Install hydraulic snubbers for RCS flow measurement.		
		Control rod configuration adjustment. (Withdraw shutdown banks)		
			CSD	

Cold Shut-Down

List of Start-Up Test Sequence Through Low Power Tests With Completion Dates (Contd)

Step No	Procedure No	Test Title	Reactor Status	Date Complete
25	HS 1	Incore thermocouple and RTD cross calibration. (Repeat hot function as required.)	HSD	11-26-73
26		Repeat hot functional tests as required.	Hot Shut-Down	
27		RCS leak test.		
28	HS 2	Pressurizer spray capability and continuous spray flow setting. (An adjustment.)		11-10-73 to 3-7-74
29		Auxiliary feedwater system preliminary checkout.		
30	HS 3	Reactor coolant system flow measurement.		11-14-73
31		Remove hydraulic snubbers.		
32		Align RCS flow instruments.		
33	HS 4	RTD bypass loop flow verification.		11-7-73
34	CS 8.2	Rod drive mechanism timing. (Hot)		By 12-1-73
35	HS 5	Rod position indication system.		11-20-73
36	CS 9.2	Rod drop time measurement. (Hot)		11-20-73
37	HS 6	Rod control system.		11-21-73
38	HS 7	Part length rod mechanism brake test.		11-14-73
39	Pre-Op 46.1	Incore movable detectors.		
40	HS 8	Reactor plant systems setpoints verification.		
41		Deleted. Sampling system tested during HFT.		
42	Operations Checklist C1.1.9	Nuclear instrumentation system (as required).		Various
43	HS 10	Reactor coolant flow coastdown (required prior to 75% power level).		11-19-73
44		Deleted. System tested during HFT.		
45	PO 17 PO 18 PO 19	NIS setpoint adjustments. Operational alignment of temperature instrumentation and reactor control systems.		
46		Connect one power range channel to the reactivity computer.	HSD	

List of Start-Up Test Sequence Through Low Power Tests With Completion Dates (Contd)

Step No	Procedure No	Test Title	Reactor Status	Date Complete
47	ZP 1	Initial criticality.	HZP	12-1-73
48	ZP 2.1	C_B, p/ T_T and M/D maps with ARO.	Hot Zero Power	12-1-73
	ZP 3.1	p/ h, p/ B for Bank D during Dilution.		12-1-73
	ZP 2.2	C_B with Bank D at 0 steps.		12-1-73
49		Evaluate and realign NIS, if necessary.		
50	ZP 7	Calibration of steam and feedwater flow instrumentation.		
51	ZP 8	Dynamic automatic steam dump control.		12-3-73
52		Change signal to reactivity computer (from 1 to 4).	HZP	
53		Secondary system warmup.	10%	
54		Steam system, turbine generator startup and tests.		
		Turbine generator roll.		12-4-73
		Initial synchronization.		12-4-73
55		Turbine overspeed trip tests.		12-9-73
56		Post synchronization trubine-generator tests.		12-9-73
57	PO 22	Radiation measurements.		12-4-73
58		Incore M/D system alignment at power.	10%	By 12-11-73
		Begin power escalation.		