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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
PRIVATE FUEL STORAGE L.L.C.	)	Docket No. 72-22
	)	
(Private Fuel Storage Facility)	)	ASLBP No. 97-732-02-ISFSI

APPLICANT'S RESPONSE TO STATE OF UTAH'S REQUEST FOR ADMISSION OF LATE-FILED CONTENTION UTAH PP

Applicant Private Fuel Storage L.L.C. ("Applicant" or "PFS") hereby responds to the "State of Utah's Request for Admission of Late-Filed Contention Utah PP," filed October 25, 2000 ("State Req."). Contention Utah PP alleges that the NRC Staff's Draft Environmental Impact Statement ("DEIS") for the Private Fuel Storage Facility ("PFSF")[1] is deficient for failing to address the impacts of transporting spent fuel transportation casks on rail cars whose allowable weight allegedly exceeds U.S. railroads' guidelines. The State's request should be denied because Utah PP is lacking in good cause for late filing and fails to meet the Commission's substantive standards for the admission of contentions.

[1] Draft Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Tooele County, Utah, U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, NUREG-1714 (June 2000).

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I. BACKGROUND

In June 1997, PFS filed its license application. Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 157 (1998). The license application included an Environmental Report ("ER"). The NRC staff subsequently developed and issued the DEIS for the PFSF.

On June 23, 2000, the NRC Staff made the DEIS available to the public.[2] The Licensing Board directed that any contentions based on the DEIS "should be submitted no later than thirty days" after the DEIS is "made available to the public."[3] Because the State received advance notice of the DEIS's public availability a few days late, the thirty day period established by the Board began on June 27, 2000 and expired on July 27, 2000. LBP-00-27, supra note 3, slip op. at 7.

On September 21, 2000, PFS filed comments on the DEIS with the NRC.[4] One comment questioned a statement in the DEIS that spent fuel transportation cask rail cars would be "widely separated from each other on the train (usually by a buffer car between each cask-carrying railcar)," on the grounds that such separation was not required by Federal regulations and PFS did not plan to provide buffer cars between cask cars. PFS Comments at 12.[5] On October 25, 2000, three months after the expiration of the thirty

[2] See 65 Fed. Reg. 39,206 (June 23, 2000) "Notice of Availability of Draft Environmental Impact Statement and Notice of Public Meetings for the Proposed Private Fuel Storage, L.L.C.; Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Tooele County, UT."

[3] Memorandum and Order (General Schedule for Proceeding and Associated Guidance) (June 29, 1998) at 5; Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-00-7, 51 NRC 139, 143 n.1 (2000); Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-00-27, 52 NRC __, slip op. at 6-7 (2000).

[4] Private Fuel Storage, L.L.C. Comments on the Draft Environmental Impact Statement for the Private Fuel Storage Facility, ("PFS Comments") transmitted under letter from John L. Donnell, Project Director, PFS, to NRC Document Control Desk (Sept. 21, 2000), State Req. Exhibit 2.

[5] As discussed further below, PFS does plan to use buffer cars before the first, and after the last, spent fuel cars.

day period established by the Board, the State filed its request to admit Utah PP, which seeks to challenge the NRC Staff's DEIS for failing to assess certain impacts of transporting allegedly overweight spent fuel rail cars.

II. THE STATE'S REQUEST IS UNJUSTIFIABLY LATE

Utah PP must be rejected as unjustifiably late. Contrary to the Board's express order that any new contentions based on the DEIS be filed within 30 days of its public availability, the contention was filed 124 days after the DEIS was made publicly available. While the State claims that the PFS comments on the DEIS constituted new information that provides good cause for the State's lateness, State Req. at 8-9, the information clearly is not new: it has been available to the State since at least the time of the June, 2000 evidentiary hearing. Since the State provides no valid explanation for its lateness and makes no compelling showing with regard to the remaining four factors, Utah PP should be rejected.

A. The State is Late Without Good Cause

As shown above, the Licensing Board explicitly directed that any contentions based on the DEIS should be submitted no later than thirty days after the DEIS was made available to the public. Because the State received advance notice of the availability of the DEIS a few days late, the Board's deadline expired on July 27, 2000. LBP-00-27, slip op. at 7. On October 25, 2000, three months later, the State filed Utah PP. The State's explanations do not establish good cause for its late-filing.

The State tries to explain its tardiness by arguing that until PFS submitted its DEIS comments, the State had assumed (and the State claims the NRC Staff had assumed) that PFS "would use buffer cars between the loaded fuel cars on rail

shipments." State Req. at 8. According to the State, only when it read PFS's DEIS comments did it have "reason to assume that PFS would eliminate the use of buffer cars in proposed rail shipments to the PFS facility." Id. Thus, the State claims, PFS's comments constitute a "significant change" that provide good cause for the State's late contention, in that the State filed the contention within 30 days of receiving PFS's comments on September 25, 2000. Id. at 8-9.

The State's claim is simply wrong. PFS has made very clear, since at least the time of the June hearing, that it does not plan to use buffer cars between the spent fuel cars in its spent fuel trains; rather, it plans to use a buffer car on each end of the spent fuel cars in the trains. Thus, PFS's comment that "PFS does not plan to provide buffer cars between cask cars," PFS Comments at 12, does not constitute a change in PFS's position and was not new information that provides the State with good cause for lateness. PFS's pre-filed testimony stated in May 2000 that it would procure only two buffer cars per train but up to six spent fuel cars. Testimony of John Parkyn on PFSF Construction Costs Contention Utah E/Confederated Tribes F (May 15, 2000) at 7; see also Tr. at 1882. The location of PFS's buffer cars is made perfectly clear by the very same transcript reference from the June 20, 2000 evidentiary hearing that the State erroneously cites as support for its argument that PFS's position has changed. On cross-examination by the State, PFS Chairman John Parkyn clearly described the location of the cars in the PFS spent fuel trains:

> Q. Mr. Parkyn, maybe you can explain what constitutes what I sort of think of as a unit train for PFS in terms of the locomotive, the equipment. What is it that would be sort of a shipment that constitutes a full train?
>
> A. Well, comparing the fixed components that wouldn't vary would be two locomotives, the security car, and two buffer cars, one between the

> locomotive and the first fuel loaded car and one between the last loaded fuel car and the security car which carries staff. And then there would be one or more loaded fuel cars in the middle.

Tr. 1881, lines 12-23, cited in State Req. at 2 n.2 and 8 n.12. Thus, while the State, after twice citing this same transparent page of Mr. Parkyn's cross-examination, claims that it "had no reason to assume that PFS would eliminate the use of buffer cars," State Req. at 9, it in fact only had to read the very paragraph that it cited to realize its error. Mr. Parkyn's testimony was given three days before the DEIS was released to the public. Thus, the State has (or at least should have) known for more than four months that PFS planned to use buffer cars before the first spent fuel car and after the last spent fuel car, but not between spent fuel cars. If the State had thought that PFS's position conflicted with the DEIS, it should have filed its contention within 30 days of the time when the DEIS became available to the public. Since it waited until three months later, without a valid explanation, it has no good cause for lateness.[6]

B. The Lack of a Compelling Showing on the Other Factors Fails to Justify Consideration of Utah PP

"In the absence of good cause, the State must make a compelling showing that the remaining four section 2.714(a)(1) factors outweigh factor one so as to favor admission." Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-43, 50 NRC 306, 315 (1999), review declined, CLI-00-2, 51 NRC 77 (2000) (emphasis added). The four remaining factors are: (ii) the availability of other means to protect the petitioner's interest, (iii) the extent to which petitioner will assist in the development of a

[6] The State's other excuses for lateness, that it was involved in reviewing the Staff's Safety Evaluation Report and PFS's Model Service Agreement and in taking depositions on other contentions, State Req. at 8-9, are meritless. Parties participating in NRC litigation must accept the burdens attendant upon such participation, including meeting filing deadlines. See Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 338-39 (1999); Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-00-28, 52 NRC __, slip op. at 10-13 (2000).

sound record, (iv) the extent to which the petitioner's interest will be represented by other parties, and (v) the extent to which admitting the contention will broaden the issues or delay the proceeding. 10 C.F.R. § 2.714(a)(1). Of those factors, the third and fifth are to be accorded more weight than the second and fourth. LBP-98-7, 47 NRC at 207-209.

Factor three clearly weighs against the State. The State's witnesses, Dr. Resnikoff and Mr. Lamb, have little if any apparent expertise in assessing the effects of using heavy rail cars to transport spent fuel. Dr. Resnikoff states only that he has "extensive professional experience in the areas of nuclear waste storage, transportation, and disposal," Resnikoff Dec. at 1, with no details whatsoever to show that he knows anything specific about railroads and the use of heavy railroad cars. Nor does Dr. Resnikoff show that he has expertise in disciplines relevant to the transportation of spent fuel using heavy rail cars such as railroading or civil or mechanical engineering.

Mr. Lamb has less apparent expertise than Dr. Resnikoff. His curriculum vitae shows that he has no education or experience in disciplines relevant to spent fuel transportation via heavy rail cars.[7] Furthermore, Mr. Lamb asserts that he will testify regarding weight requirements for rail shipments based on a document entitled "Railway Line Clearances," Lamb Dec. at 1-2, but in Utah PP the State unashamedly cites a 42-year old version of "Railway Line Clearances" as the basis for its claims regarding railroad car gross weight limits because it "was the latest copy of the document that was available at the New York Public Library." State Req. at 5-6 n.9. Moreover, as PFS

[7] Prefiled Testimony of Dr. Marvin Resnikoff and Matthew R. Lamb on Behalf of the State of Utah Regarding Utah Contention H (May 15, 2000), Exhibit B (Curriculum vitae of Matthew Raymond Lamb), cited in Lamb Dec. at 1. Mr. Lamb received a master's degree in environmental engineering only last year, having taken some courses in physics, heat transfer, and fluid mechanics. Id.

shows below, the State misconstrues the data in that document to create an apparent issue where in fact none exists. Such hardly shows that the State's witnesses will seriously contribute to the development of a sound record. Finally, the declarations of the State's witnesses merely indicate that they believe that the information in the contention is true "without providing any real clue about what they would say to support the contention beyond the minimal information they provide for admitting the contention." LBP-98-7, 47 NRC at 208-09; accord LBP-00-27, slip op. at 9.[8]

Factor five also weighs against admitting the new contention, in that admitting it would undeniably broaden and likely delay the proceeding. As a new contention concerning the use of heavy rail cars and accident and incident-free radiation dose calculations, see State Req. at 7-8, Utah PP represents a clear broadening of the issues. Furthermore, it poses a risk of delaying the proceeding in that it comes after the completion of most document production and most formal written discovery. See South Carolina Electric and Gas Co. (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 888-89 (1981). The current trial schedule allows for only a limited window of additional discovery on environmental contentions prior to the second phase of the evidentiary hearing.[9] Should Utah PP be admitted, with the inevitable discovery requests and depositions, that discovery window may well have to be expanded with potential delay to the hearing schedule.

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[8] The State's witnesses also assert that they will "be able to expand upon and refine [their] testimony, after having an opportunity to review materials produced by the Applicant and the NRC Staff in discovery." Resnikoff Dec. at 2. It is well-established under NRC case law that it is inappropriate to premise a request to admit a contention on information an intervenor assumes it will obtain in discovery. Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 192, reconsid. den., ALAB-110, 6 AEC 247, aff'd, CLI-73-12, 6 AEC 241 (1973).

[9] Memorandum and Order (General Schedule Revision, Withdrawal of Contentions Utah H and Utah U, and Status of Contention Utah GG) (Sept. 5, 2000) Attachment A.

Factor two provides weak support to the State at best. The State is participating in the NRC's PFSF EIS process independently of this litigation, which, while not the same as litigation, is "not a trivial opportunity for involvement in the licensing process." LBP-00-28, supra note 6, slip op. at 13.

While the State's position may not be represented by another party (factor four), that factor carries less weight than the others. Thus, the four factors taken together militate against consideration of Utah PP, and clearly fail to make the compelling showing required to overcome the State's patent lack of good cause.

III. UTAH PP FAILS TO SATISFY THE COMMISSION'S PLEADING REQUIREMENTS

The State's Request should also be denied because Utah PP does not satisfy the Commission's pleading requirements for a litigable contention. While Utah PP is entitled "Exceedance of Rail Loading Capacities," it conflates three issues: 1) bridge failure and increased accident probabilities resulting from the absence of buffer rail cars between spent fuel cars; 2) radiation exposure resulting from a transportation accident involving a train without buffer cars between spent fuel cars; and 3) radiation exposure resulting from incident-free transportation without the use of buffer cars between spent fuel cars. PFS addresses each issue in turn below.

A. Bridge Failure and Increased Accident Probabilities

The State claims that the DEIS is deficient for failing to consider the fact that eliminating buffer cars between the spent fuel cars in trains will concentrate the weight of the spent fuel cars and increase the probability of bridge failure and the probability of rail accidents generally. State Req. at 2, 6-7. This issue should be dismissed for lack of

factual basis, 10 C.F.R. § 2.714(b)(2)(ii), and for failure to show a genuine dispute on a material issue of law or fact, 10 C.F.R. § 2.714(b)(2)(iii).

The State provides no basis for its assertion that using PFS's spent fuel rail cars in a train without buffer cars between each spent fuel car will increase the likelihood of a bridge failure or the likelihood of a rail accident generally. It cites a "general weight limit" for railroad tracks in the United States of 263,000 lbs.,[10] compares it to the weight of a PFS spent fuel rail car of 422,000 lbs., and concludes that the spent fuel cars will be overweight. State Req. at 3-4. The State then asserts, without any support, that without buffer cars between spent fuel cars, the PFS trains will be more prone to accidents. Id. at 2, 6-7. Such unsupported allegations cannot possibly meet the Commission's basis requirements.

The State's claim also lacks support because it misconstrues the meaning of the cited weight limits.[11] According to the American Association of Railroads' ("AAR") Interchange Rules, which specify the weight guidelines observed in the United States and

[10] The State cites a conversation with Mr. Gordon Davids at the Federal Railroad Administration for the 263,000 lb. general weight "limit." State Req. at 4 n.5. It then attempts to provide specific support for the "limit" by citing a 1958 version of "Maximum Gross Weight of Car and Lading" from "Railway Line Clearances, No. 168." State Req. at 6 n.9 (the State also misquotes the general limit as 268,000 lbs.). As shown infra, the State misconstrued both the general weight limit and the limits in the 1958 document and hence the 1958 document provides no support for the State's claim. Wholly aside, the 1958 document cannot provide a factual basis for the State's claims since it does not reflect the intervening 42 years of technological change and railroad construction. The State has not suggested (let alone established) that this 1958 document is not out of date.

[11] The entire contents of a document submitted by an intervenor as supporting the basis for a contention is subject to scrutiny as to how it does and does not support the intervenor's assertion. Yankee Atomic Electric Co. (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 90, rev'd in part on other grounds, CLI-96-7, 43 NRC 235 (1996); see Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 48 (1989), vacated in part on other grounds and remanded, CLI-90-4, 31 NRC 333 (1990) (a board should review information in a cited document to ensure that it provides basis for the contention).

which serve as the basis for the information in Railway Line Clearances,[12] the weight limit depends on the number of axles possessed by the car and the size of the axle journal. RLC, supra note 12, at 105. The 263,000 lb. limit (which the State attributes to Mr. Davids and which appears in Railway Line Clearances) applies to unrestricted operations for four-axle cars. Id.[13] PFS will not use four-axle cars; PFS's spent fuel rail cars will have either six or eight axles. PFSF Safety Analysis Report § 4.5.5.2.[14] According to the AAR Interchange Rules, a six-axle car weighing up to 472,500 lbs. can be operated under controlled conditions, agreed to by participating railroads. RLC at 105. So, contrary to the State's assertion, PFS's spent fuel cars simply would not be overweight. Thus the State's claim should be dismissed for lack of basis.

In addition to misconstruing the meaning of the track weigh limit, the State also admits that the "limit" is not in fact a legal limit but a "capacity guideline." State Req. at 4. It then continues that if this "limit" is exceeded by a given shipment, it does not mean that the shipment will be prohibited, but rather that the shipment will be subject to a safety review before being allowed to proceed. Id. at 4-5. The fact that a spent fuel shipment might be subject to a safety review before traversing a given segment of a railroad hardly supports the State's assertion that such a shipment would be more prone to accidents. If anything, such a shipment would be less prone to an accident arising from the weight capacity of the track or a bridge, in that the weight of the rail car(s) relative to the capacity of the track or bridge would be the specific subject of the safety

[12] See Railway Line Clearances, Vol. 208, 1998/1999 Annual Issue, at 4, 105, 113, 119 ("RLC"), attached as Exhibit 1.

[13] The four-axle specification appeared in the 1958 version of Railway Line Clearances as well. See Railway Line Clearances, Vol. 168, Annual Issue Year 1958, attached as Exhibit 2.

[14] See also PFSF SAR Fig. 4.5-5.

review.[15] The only basis the State provides for its assertion is the ipse dixit of its witnesses, which, because of their lack of expertise, is not sufficient to admit a contention.

The State's claim regarding an increase in the probability of rail accidents should also be dismissed for failure to show a genuine dispute on a material issue, in that the State provides absolutely no indication of the magnitude of the asserted increase in probability and thus the State does not show that accounting for the alleged increase would have any material effect on the accident assessment in the DEIS. The DEIS used national average rail accident rate data from a 1994 Argonne National Laboratory study by Saricks and Kvitek, which was based on accident data from the years 1985 to 1988.[16] DEIS at 5-35. The DEIS notes, however, that the use of dedicated trains, such as PFS will use, will result in accident rates well below the national average. Id. Thus, the PFS accident rate is expected to be well below the rate used in the DEIS. The State's claim regarding a higher accident rate resulting from the use of heavy rail cars does not indicate in any way that the increased rate (assuming the rate would increase) would cause the expected accident rate for PFS trains to be higher than the rate used in the DEIS assessment. Therefore, the State does not show that its assertion, even if true, would require the DEIS to be changed and thus it does not give rise to a genuine dispute on a material issue.

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[15] If, as the State also suggests, State Req. at 9, PFS's fuel shipments were prohibited because of excess weight, then no rail accidents would occur and this contention would be moot.

[16] Saricks, C. and T. Kvitek (Argonne National Laboratory), Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight, ANL/ESD/TM-68, 1994.

B. Effects on Transportation Accident Consequences

The State claims that the DEIS is deficient for failing to account for the effect of the absence of buffer cars between spent fuel cars on the consequences of rail accidents. State Req. at 3. The State claims that the PFS rail car arrangement "vitiates the Staff's conclusion in the DEIS that 'in an accident, all four [spent fuel] rail cars would not be damaged to the extent that each one would release material and provide a source of radiation exposure to the public'" because the Staff's assessment relied on an assumption that the spent fuel cars would be separated by buffer cars. Id. This claim should be rejected for failing to raise a genuine dispute on a material issue.

The State ignores the fact that the calculation that it asserts should be done has, in fact, already been done. It is correct that the DEIS performed an accident consequence radiation dose calculation in which it assumed that only one spent fuel cask, on one spent fuel rail car out of four in the train, would be breached. DEIS at 5-45 to –46. However, that calculation was only a lower bound calculation of accident consequences. The DEIS's upper bound to that calculation assumed that "each of the four casks was damaged and released material to the same extent; this should provide an upper bound to the results of the accident scenario." DEIS at 5-45 (emphasis added). Thus the State is wrong when it asserts that the DEIS's assessment was based on the assumption that only one cask would be breached. Because the DEIS already includes the case in which all four casks are breached, the State's claim does not raise a genuine dispute and should be rejected.

C. Effects on Incident-Free Transportation Radiation Exposure

The State claims that the DEIS is deficient for failing to address "the effect on 'incident-free' [radiation] exposure to operators and the general public which will be

caused by potential changes in operating requirements (such as reduction in speeds over bridges) necessary to allow transport of these heavy trains over rail bridges." State Req. at 7. This claim must be rejected for lack of basis and for failure to show a genuine dispute on a material issue.

First, the State provides no basis for its assertions that operating requirements will have to be changed to allow the transportation of PFS's spent fuel rail cars and that any changes necessary would cause an increase in radiation exposure to operators or the public. As discussed above, the State misconstrues the applicable railroad weight guidelines; in fact, the PFS spent fuel cars will not be overweight. Moreover, the State's witnesses, Dr. Resnikoff and Mr. Lamb, show no particular expertise in railroading that would suggest that they know whether such operational changes would be necessary, even if PFS's cars were above the applicable guideline values. Furthermore, their allegation is vague and unexplained. The only specific change they suggest would be necessary is reducing speed over bridges, but they do not say why this would be required or how it would increase radiation exposure.[17] Such a bald assertion, even from experts (which Dr. Resnikoff and Mr. Lamb at least on this topic are not), is not sufficient for the admission of a contention. LBP-98-7, 47 NRC at 181; see Georgia Institute of Technology (Georgia Tech Research Reactor, Atlanta, Georgia), LBP-95-6, 41 NRC 281, vacated in part and remanded on other grounds, CLI-95-10, 42 NRC 1, aff'd in part, CLI-95-12, 42 NRC 111 (1995).

[17] The State apparently assumes that a reduction in train speed would increase radiation exposures because of the extra time of exposure, but as discussed below, the State does not even identify the train speed that the Staff used in the DEIS's calculations and hence the State provides no reason to believe that its reduced speed assumption is correct.

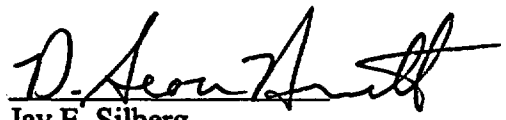
The State's claim should also be rejected for failure to show a genuine dispute on a material issue. The State does not show that the DEIS's incident-free dose calculations exclude the effects of the operation of heavy rail cars. While the State asserts that the trains would have to go slower over bridges, it does not say how slow. When calculating the dose to the maximum exposed individual, the Staff assumed that the trains would pass by at a speed of 15 miles per hour. DEIS at 5-44 to –45.[18] The State does not say whether 15 miles per hour would be too fast for traversing bridges or how much slower the trains would have to go. The State simply does not indicate in any respect how much the radiation dose to members of the public or the train crews would increase as a result of the operational changes (slowing down at bridges or others) that the State asserts will be necessary. Because the State does not show how the assertedly necessary operational changes would cause the DEIS's calculations to be materially deficient, the State's claim should be dismissed.

[18] The DEIS states that radiation dose received by the maximum exposed individual of 2.2×10^{-3} rem was calculated based on an assumed speed of 15 miles per hour at a distance of 30 m from the train and the individual is assumed to be present for the entire shipping campaign of 200 shipments over 20 years. DEIS at 5-44 to-45. The DEIS also calculated a cumulative dose to the train crews of 24.4 person-rem and a cumulative dose to the public of 184 person-rem. Id. at 5-45.

IV. CONCLUSION

For the foregoing reasons, the Applicant requests that the Board deny Utah's request to admit late-filed Contention Utah PP.

Respectfully submitted,



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Dated: November 9, 2000

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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CERTIFICATE OF SERVICE

I hereby certify that copies of Applicant's Response to State of Utah's Request for Admission of Late-Filed Contention Utah PP were served on the persons listed below (unless otherwise noted) by e-mail with conforming copies by U.S. mail, first class, postage prepaid, this 9th day of November 2000.

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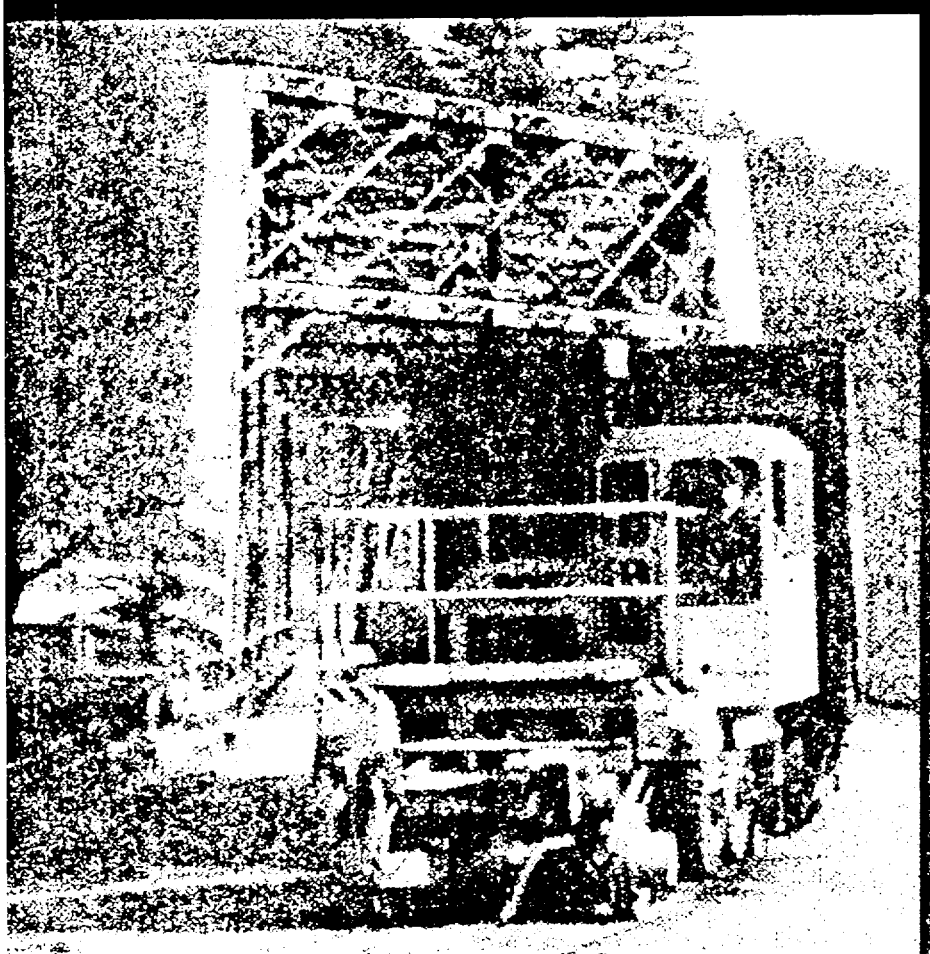

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  Identifies individual or department to contact for advance authority, dimensions exceeding published clearances and other specific questions.

- **CLEARANCES BASED ON —**
  Provides description of type of car on which carrier's clearances and weight limitations are based. American Railway Engineering Association Committee 28 — Clearances recommends for determination of clearance limitations a standard car having maximum truck centers of 50 ft. 0 in., with 10 ft. 2 in. overhang from truck center to striker. (Maximum 70 ft. 4 in. load length, loaded within strikers.) Coupled length of car not exceeding 73 ft. 0 in. This car produces equal midordinate offset and endswing offset of 0.65 inch per degree of track curvature. (Not shown for all listings.)

- **NOTICE —**
  Provides both specific and general information concerning clearances and other important information not shown elsewhere.
  (See Editorial Section for Rule 91 of *Field Manual of the A.A.R. Interchange Rules.*)

- **LIST OF ROUTES —**
  Shows maximum gross weight between specific cities or areas and includes cross reference to clearance columns. (In some instances maximum gross weight is shown at bottom of clearance columns.)

- **NOTES —**
  Include additional data, exceptions, further information related to weight or clearances.

- **MAPS —**
  Identify routes and in some instances matching data shown in clearance columns. Legends on individual maps indicate other information shown.
  See *The Official Railway Guide® — North American Freight Service Edition* for additional general railroad maps.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY

6-95

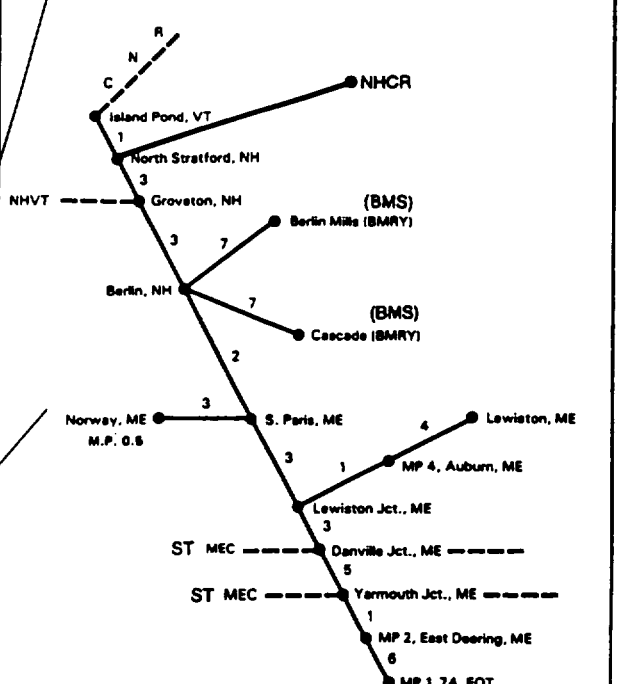
CONTACT: C.D. Hunter, Manager—Transportation, 416 Lewiston Jct., Rd., P.O. Box 1025, Auburn, ME 04211—1025 *(207) 752—5680; FAX: (207) 752-5857*

CLEARANCES BASED ON:

NOTICE: Shipments loaded in accordance with A.A.R. Rules, which conform to all the following requirements (except as noted), will be accepted for movement without clearance authorization: - ADVANCE NOTICE IS REQUIRED ON ALL SHIPMENTS WHICH EXCEED PLATE "C" DIMENSIONS.
1. Shipments is loaded within car length.
2. Truck centres not less than 28 feet and not exceeding 50 feet.
3. Loaded dimensions do not exceed those published in the columns applicable to the route of movement.
4. Gross weight of car and lading does not exceed weights published herein for route of movement, nor weight above marked capacity per AAR Rule 81.
5. The combined centre of gravity of car and lading does not exceed 98 inches above top of rail (unballasted).
Shipments exceeding any of the above requirements must obtain clearance authorization from: Office of Manager—Transportation.

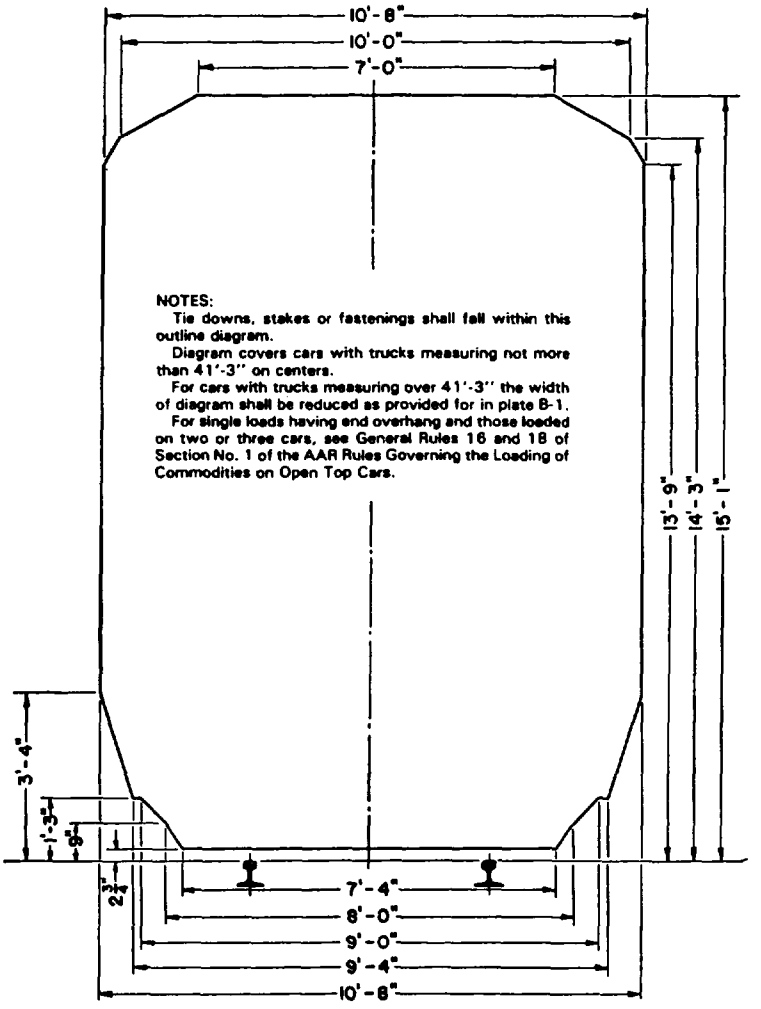
Max. Gr. Wt. Car & Lading	LIST OF ROUTES		See Col. No.
263000	Norton, VT	& North Stratford, NH	1
263000	North Stratford, NH	& Berlin, NH	3
263000	Berlin, NH	& South Paris, ME	2
263000	South Paris, ME	& Norway, ME (M.P.1)	3
263000	South Paris, ME	& Lewiston Jct., ME	3
263000	Lewiston Jct., ME	& Danville Jct., ME	3
263000	Danville Jct., ME	& Yarmouth Jct., ME	5
263000	Yarmouth Jct., ME	& E. Deering, ME (M.P.2)	1
263000	E. Deering, ME (M.P.2)	& End of Tracks Note 2	6
263000	Lewiston Br.-Lewiston Jct.	& M.P. 4	1
263000	Lewiston Br.-M.P. 4	& Lewiston, ME Note 1	4
220000	Cascade Branch	& Berlin, NH	70
250000	Berlin Mills Branch	& Berlin, NH	7

Note 1 — Currently out of service.
Note 2 — Cars loaded in excess of AAR Plate F cannot be handled.



OUTLINE DIAGRAM FOR SINGLE LOADS, WITHOUT END OVERHANG, ON OPEN TOP CARS

Unrestricted on all roads except those shown below. For specific restricted areas on such roads see "Railway Line Clearances". Shipments with measurements exceeding those shown in this diagram should be cleared for route in "Railway Line Clearances" or with the originating road haul carrier.



NOTES:
Tie downs, stakes or fastenings shall fall within this outline diagram.
Diagram covers cars with trucks measuring not more than 41'-3" on centers.
For cars with trucks measuring over 41'-3" the width of diagram shall be reduced as provided for in plate B-1.
For single loads having end overhang and those loaded on two or three cars, see General Rules 16 and 18 of Section No. 1 of the AAR Rules Governing the Loading of Commodities on Open Top Cars.

ROADS, OR CERTAIN ROUTES OF ROADS THAT WILL NOT CLEAR "OUTLINE DIAGRAM FOR SINGLE LOADS, WITHOUT END OVERHANG, ON OPEN TOP CARS"

Baltimore and Ohio Railroad
Canadian National Railways
Central of Georgia Railroad
Chesapeake and Ohio Railway
Chicago and North Western Transportation Co.
Consolidated Rail Corporation
Detroit, Toledo and Ironton Railroad
Long Island Rail Road
Maryland & Pennsylvania Railroad
Norfolk and Western Railway
Southern Railway System
Staten Island Railroad Corporation
Union Railroad Company

RULE 91 OF *FIELD MANUAL OF THE A.A.R. INTERCHANGE RULES*—WEIGHT LIMITATIONS

1. Cars must not be loaded in excess of total weight on rail limits, for applicable axle size, as shown below:

Journal Size	Total Weight On Rail—4 Axle Cars	Total Weight On Rail—6 Axle Cars	Remarks
4¼ x 8	103,000	154,500	Cars can be operated in unrestricted interchange
5 x 9	142,000	213,500	
5½ x 10	177,000	265,500	
6 x 11	220,000	330,500	
6½ x 12	263,000	394,500	
7 x 12	315,000	472,500	Cars can be operated under controlled conditions, agreed to by participating railroads.

2. The total allowable weight on rail, is the weight of car and lading, including temporary fixtures, dunnage, brine, ice, fuel, etc.
3. Weight of lading on or in car must not exceed stenciled load limit, or a reduced load limit indicated by a star (*) symbol stenciled on car.
4. Special loads in excess of load limit will be permitted under controlled conditions, agreed to between participating roads.
5. Load limit will not apply when weight must be restricted to comply with the General Rules of the AAR Covering Loading of Commodities in Closed or Open Top Cars.
6. The maximum quantities of regulatory commodities loaded into tank cars must be governed by limitations provided by the Department of Transportation Regulations.

Glossary of Technical Terms Used in Railroad High and Wide Clearances

A.A.R. Interchange Rule 91:
Statement of maximum allowable gross weights for both four axle and six axle railroad cars, based on axle journal size (diameter x length, in inches), as prescribed by the Association of American Railroads, Mechanical Division.

A.A.R. Open Top Loading Rules:
Standard procedures and specifications for loading and securing various types of loads to railroad freight cars, including excess dimension loads in both single or multiple car situations, as stated in *General Rules Governing the Loading of Commodities On Open Top Cars*, published by the Association of American Railroads, Mechanical Division.

"A" Dimension:
(1) In a bolstered load, the distance from the center of the fixed (non-sliding) bolster to the longitudinal center of the slot of the sliding bolster (nominal position of pin of sliding bolster when consist of bolster cars and center idler car(s) are on tangent track).
(2) In a schnabel car load, the distance between the two halves of the car, horizontal pin to horizontal pin, not necessarily maximum length of suspended load.
(3) See Midordinate Offset.

"A" End of Car:
The opposite end to that on which the brake wheel is located. In the event there are two brake wheels, the ends are designated by stenciling the letters "A" and "B", respectively, on both sides, near the ends.

Above Top of Rail (ATR):
Distance from Top of Rail Line measured perpendicular to Top of Rail Line and parallel to Track Centerline (as viewed in an upright plane).

Axle Loading:
Total weight on each axle expressed in Pounds per Axle (or Thousands of Pounds, or "Kips", K per Axle). When load is not longitudinally centered on car, the axles of the truck closest to longitudinal center of gravity of load will be carrying a greater total load than the axles of the truck farthest from the center of gravity of the load and their loading is *Maximum Axle Loading*, and is of more significance in most cases than *Average Axle Loading*.

Axle Spacing:
Distance between centers of adjacent axles of a single truck measured parallel to longitudinal centerline of car.

"B" Dimension: See Endswing Offset.

"B" End of Car:
The end on which the brake wheel is located. In the event there are two brake wheels, the ends are designated by stenciling the letters "A" and "B", respectively, on both sides, near the ends.

Ballast:
Supplementary material of prescribed weight, not part of load proper but considered as dunnage, that is used to keep position of combined center of gravity within reasonable limits. Also referred to as Counter Balance.

Glossary of Technical Terms Used in Railroad High and Wide Clearances

Joint Track:
Track that is owned, operated, or maintained by more than one operating railroad company.

Journal:
One of two parts of a railroad car axle (generally at each end of the axle) on which a bearing rests or is mounted.

Kip (K): Unit of 1,000 pounds of weight.

Lading:
Net load or commodity being transported on a railroad freight car.

Lateral shift:
(1) Displacement of load on car deck to left or right as a result of inadequate securing of load. Also referred to as Transverse Shift.
(2) In a schnabel car, the capability of horizontally offsetting load and supporting arms perpendicular to Track Centerline in order to clear fixed obstructions or equipment on an adjacent track.

Level: A horizontal line or surface.

Lift:
In a schnabel car, the capability of vertically raising (perpendicular to Top of Rail Line in superelevated track) or lowering load and supporting arms in order to clear fixed obstructions or equipment on an adjacent track.

Light Weight (LT WT):
Weight of empty rail car expressed in pounds. This figure is stenciled on the car. Also referred to as Tare Weight.

Load Carrying Platform:
Deck of car body that can be used to carry a load.

Load Distribution:
Spreading of total weight of load over a specified number of feet of deck of car body parallel to longitudinal axis of car.

Load Limit (LD LMT):
Absolute maximum allowable weight of load, including both net weight and dunnage, that a freight car is authorized to carry. This figure is stenciled on the car.

Local Service:
Train service that makes pickups and setouts of cars at all intermediate points.

Longitudinal: Parallel to length of car.

Manway:
Structure that protrudes out from external surface of vessel, through which workman can enter. Normally a manway has a cover plate over it.

Maximums:
The largest load dimensions permitted within a given clearance envelope.

PRINTED MAY 1958.

RAILWAY LINE CLEARANCES

AND CAR DIMENSIONS

(Registered in U. S. Patent Office.)

INCLUDING

WEIGHT LIMITATIONS

OF

RAILROADS

IN THE

UNITED STATES, CANADA, MEXICO AND CUBA

Stamp here date received.

168

CONTAINING DATA CONCERNING LOCAL CLEARANCES, ALSO DATA CONCERNING THROUGH ROUTES AND INTERLINE ROUTES, ARRANGED UNDER APPROPRIATE HEADINGS OF THE RESPECTIVE RAILROADS.

ANNUAL ISSUE, YEAR 1958.

THE RAILWAY EQUIPMENT AND PUBLICATION CO., PUBLISHERS AND PROPRIETORS,
424 WEST 33rd St., NEW YORK 1, N. Y.

Extract from Association of American Railroads (M. C. B.) Rule No. 86

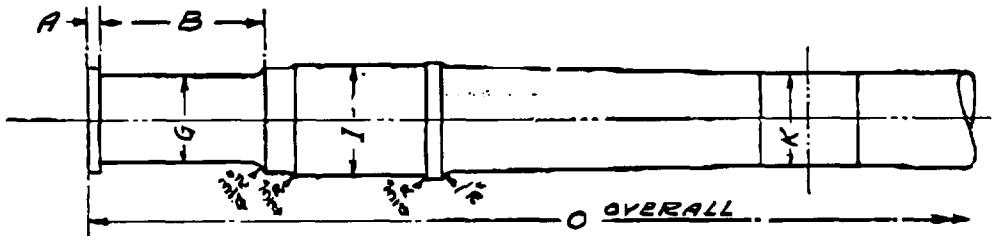
Contained in A. A. R. Code of Rules Governing Cars in Interchange

FOR CARS WITH A. A. R. STANDARD AXLES

(FOUR AXLES PER CAR)

The total weight of car and its lading must not exceed weight given in column headed "Total Weight on Rail". Column headed "Nominal Capacity" is the nominal capacity stenciled on all cars. Axles must be removed from service when less than the "Limits of Wear" prescribed in columns "G", "I", and "K" or when the condemning "Limits of Wear" in columns "A" and "B" are reached.

NOTE, see paragraph (c) Rule 2.—Cars equipped with A. A. R. Standard axles or Alternate Standard tubular axles may be loaded to limits shown in Column headed "Total Weight on Rail" of Rule 86 (which is the total weight of car and lading for the respective capacities given), except where stenciled load limit has been reduced, as indicated by asterisk (*) symbol per Rule 30, account structural limitations on car body or trucks, or when weight must be restricted to comply with the A. A. R. Loading Rules



STANDARD AXLES, LIMITS OF WEAR AND DIMENSIONS, NEW

Axle Letter and Journal Size	Total Weight on Rail	*Nominal Capacity	Limits of Wear					Dimensions–New					
			When Reached		When Less Than								
			A	B	G	I	K	A	B	G	I	K	O
A. A. R.	Lb.	Lb.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	Ft. In.
A - 3¼ x 7	66,000	40,000	1 3/32	7 1/32	3¼	4⅞	4 7/32	⅝	7	3¾	5⅛	4¼	6 11¼
B - 4¼ x 8	103,000	60,000	1 5/32	8 1/32	3¾	5½	4 11/32	⅝	8	4¼	5¾	4¾	7 0¼
C - 5 x 9	136,000	80,000	1 5/32	9 1/32	4½	6¼	5¼	¾	9	5	6½	5⅜	7 2½
D - 5½ x 10	169,000	100,000	1 5/32	10 1/32	5	6¾	5¾	¾	10	5½	7	5⅞	7 4½
E - 6 x 11	210,000	140,000	1 5/32	11 1/32	5½	7⅜	6 1/16	⅞	11	6	7⅝	6 1/16	7 6¾
F - 6½ x 12	251,000	200,000	1 5/32	12 1/32	6	7⅞	6¾	⅞	12	6½	8⅛	6⅞	7 8¾

*NOTE—Nominal capacity means any capacity, in multiples of 1000 lbs., stenciled on car, based on its light weight and total allowable weight for car and its lading. Consideration must also be given to structural limitations. In no event may the nominal capacity as stenciled on car exceed the stenciled load limit.

NOTE—New dimensions and limits of wear specified above are applicable to this type of axle in either freight or passenger service, except that limit of wear dimension "B" applies only to freight service. (See Passenger Rule 7, Paragraph (e-1), for limit of wear dimension "B" for axles in passenger service.)