action, request reconsideration of the action and present to the Director, KCOO, in writing, information in support of such request. The Director shall consider such information in making a determination and notify the warehouseman in writing of such determination. The warehouseman may, if dissatisfied with the Director's determination, obtain a review of the determination and an informal hearing thereon by filing an appeal with the Deputy Administrator, Commodity **Operations**, Agridultural Stabilization and Conservation Service (hereinafter referred to as "ASCS"). The time of filing appeals, forms for requesting an appeal, nature of the informal hearing, determination and reopening of the hearing shall be as prescribed in the ASCS regulations governing appeals, 7 CFR 780. When appealing under such regulations, the warehouseman shall be considered as a "participant" \ and

(2) In § 1421.5552(c)(2), the warehouseman's administrative appeal rights with respect to suspension and debarment shall be in accordance with applicable CCC regulations. After expiration of a period of suspension or debarment, a warehouseman may, at any time, apply for approval under this subpart.

8. Section 1421.5558 is revised to read as follows:

§ 1421.5558 Contract fees.

(a) Each warehouseman who has a non-Federally licensed grain or rice warehouse in States that do not have a Cooperative Agreement with CCC for warehouse examinations must pay an annual contract fee to CCC for each such warehouse which is approved by CCC or for which CCC approval is sought as follows:

(1) A warehouseman who has an existing agreement with CCC for the storage or handling of CCC-owned commodities or commodities pledged to CCC as loan collateral must pay an annual contract fee for each warehouse approved under that agreement in advance of the renewal date of such agreement.

(2) A warehouseman who does not have an existing agreement with CCC for the storage and handling of CCCowned commodities or commodities pledged to CCC as loan collateral but who desires such an agreement must pay a contract fee for each warehouse for which CCC approval is sought prior to the time that the agreement is approved by CCC.

(b) The amount of the contract fee shall be determined and announced annually in the Federal Register. 9. Part 1421 is amended to add a new
§ 1421.5559 to read as follows:

§ 1421.5559 OMB control numbers assigned pursuant to Paperwork Reduction Act.

The information collection requirements contained in this regulation (7 CFR Part 1421) have been approved by the Office of Management and Budget under provisions of 44 U.S.C. Chapter 35 and have been assigned OMB Numbers 0560–0009 and 0560–0036.

Signed at Washington, D.C on July 17, 1985

Everett Rank,

Executive Vice President, Commodity Credit Corporation.

[FR Doc. 85-17383 Filed 7-19-85; 8.45 am] BILLING CODE 3410-05-M

DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

8 CFR Part 238

Contracts With Transportation Lines; Addition of Skystar International, Inc.

AGENCY: Immigration and Naturalization Service, Justice.

ACTION: Final rule.

SUMMARY: This rule adds Skystar International, Inc. to the list of carriers which have entered into agreements with the Service to guarantee the passage through the United States in immediate and continuous transit of aliens destined to foreign countries. EFFECTIVE DATE: July 3, 1985.

FOR FURTHER INFORMATION CONTACT:

Loretta J. Shogren, Director, Policy Directives and Instructions, Immigration and Naturalization Service, 425 I Street NW., Washington, DC 20536, Telephone: (202) 633–3048.

SUPPLEMENTARY INFORMATION: The Commissioner of Immigration and Naturalization entered into an agreement with Skystar International, Inc. on July 3, 1985, to guarantee passage through the United States in immediate and continuous transit of aliens destined to foreign countries.

The agreement provides for the waiver of certain documentary requirements and facilitates the air travel of passengers on international flights while passing through the United States.

Compliance with 5 U.S.C. 553 as to notice of proposed rulemaking and delayed effective date is unnecessary because the amendment merely makes an editorial change to the listing of transportation lines.

In accordance with 5 U.S.C. 605(b), the Commissioner of Immigration and Naturalization certifies that the rule will not have a significant impact on a substantial number of small entities.

This order constitutes a notice to the public under 5 U.S.C. 552 and is not a rule within the definition of section 1(a) of E.O. 12291.

List of Subjects in 8 CFR Part 238

Airlines, Aliens, Government contracts, Travel, Travel restriction.

Accordingly Chapter I of Title 8 of the Code of Federal Regulations is amended as follows:

PART 238-CONTRACTS WITH TRANSPORTATION LINES

1. The authority citation for Part 238 continues to read as follows:

Authority: Secs. 103 and 238 of the Immigration and Nationality Act, as amended (8 U.S.C. 1103 and 1228).

§ 238.2 [Amended]

In § 238.3 aliens in immediate and continuous transit, the listing of transportation lines in paragraph (b) Signatory lines is amended by: Adding in alphabetical sequence, "Skystar International, Inc."

Dated. July 10, 1985. Marvin J. Gibson, Acting Associate Commissioner, Examinations Immigration and Naturalization Service. [FR Doc. 85–17278 Filed 7–19–85, 8:45 am

BILLING CODE 4410-10-M

NUCLEAR REGULATORY COMMISSION

10 CFR Part 60

Disposal of High-Level Radioactive Wastes in Geologic Repositories

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

BUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations for the disposal of high-level radioactive wastes in geologic repositories. These amendments will ensure that the rule contains specific criteria for the disposal of high-level radioactive wastes within the unsaturated zone. This action is necessary to assure that NRC regulations address considerations relevant to all geologic repositories.



whether sited in the saturated or unsaturated zone.

EFFECTIVE DATE: July 22, 1985.

FOR FURTHER INFORMATION CONTACT: Dr. Frank A. Costanzi, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone [301] 427–4362.

SUPPLEMENTARY INFORMATION:

Background

On February 25, 1981, the Nuclear Regulatory Commission (NRC) promulgated a rule that established procedures for licensing the disposal of high-level radioactive wastes (HLW) in geologic repositories (46 FR 13971). NRC promulgated technical criteria to be used in the evaluation of license applications under those procedures on June 21, 1983 (48 FR 28194). Although these technical criteria are generally appropriate to disposal in both the saturated and unsaturated hydrogeologic zones, some further distinctions need to be made for disposal in the unsaturated zone. Consequently, the Commission expressed its intent to issue specific technical criteria for the unsaturated zone after promulgating the final technical criteria so as to afford further opportunity for public comment on this issue. Proposed amendments to these technical criteria to include HLW disposal within either the saturated or unsaturated zone were published for comment on February 16, 1984. These proposed amendments contained provisions for new definitions and favorable and potentially adverse siting criteria. In addition to the proposed amendments, the Commission specifically requested public input on two questions related to groundwater travel time calculations within the unsaturated zone. In conjunction with the proposed amendments, the Commission published for public comment draft NUREG-1046 1 which

contained a discussion of the principal technical issues considered by the Commission during the development of the proposed amendments.

Summary of Comments and Changes

A total of fourteen groups and individuals commented on the proposed amendments and draft NUREG-1046. There was general acceptance of the Commission's view that disposal of HLW within the unsaturated zone is a viable alternative to disposal within the saturated zone. The commenters addressed the Commission's specific questions on groundwater travel time within the unsaturated zone and provided additional comments suggesting word changes to improve the technical accuracy and clarity of the proposed amendments. The principal comments received on the questions and proposed amendments, and the Commission's corresponding responses, are discussed below. Changes and clarifications made in the rule as a result of the Commission's consideration of these comments are also explained in this section. Copies of the individual comment letters and a detailed analysis of these letters by the NRC staff are available in the NRC Public Document Room, 1717 H Street NW., Washington, DC 20555.

(a) Groundwater Travel Time Calculations

Technical criteria governing the postemplacement performance of the particular barriers of the and geologic repository system (i.e. engineered barriers and geologic setting) are set forth at § 60.113 (48 FR 28224; June 21, 1983). The post-closure performance criterion for the geologic setting set forth at § 60.113(a)(2) requires that the geologic repository be located so that pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment be at least 1,000 years or such other travel time as may be approved or specified by the Commission. Although no change was made explicitly to the provisions of § 60.113(a)[2] in the proposed amendments for the unsaturated zone, the proposed definition of the term "groundwater" set forth at § 60.2 would clearly make the scope of § 60.113(a)(2) applicable to geologic repositories within either the saturated or unsaturated zone. Similarly, the proposed amendment to the Siting Criteria (§ 60.122(b)(7)] would have the effect of making pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel

from the disturbed zone to the accessible environment which substantially exceeds 1,000 years a favorable condition for HLW disposal within either hydrogeologic zone.

In the statement of considerations which accompanied the proposed amendments, the Commission discussed possible limitations of the pre-wasteemplacement groundwater travel time performance objective of § 60.113 when applied to the unsaturated zone. However, the Commission stated that if DOE could demonstrate with reasonable assurance that travel time for groundwater movement through the unsaturated zone can be quantified, then DOE should be allowed to include such travel time when demonstrating compliance with § 60.113(a)[2). The Commission also acknowledged that it may be more appropriate to specify another parameter upon which performance may be evaluated for a geologic setting in the unsaturated zone, or to use the approach set forth in § 60.113(b) which provides the Commission with the flexibility to specify variations in performance objectives on a case-by-case basis, as long as the overall system performance objective is satisfied. Further, the Commission observed that calculations of pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel through the unsaturated zone could involve considerable uncertainty, and thus requested public comment on questions related to the applicability of the existing 10 CFR Part 60 performance objective for the geologic setting to sites located in unsaturated geologic media. In response to this solicitation of public comment, seven of the fourteen commenters specifically addressed the questions on groundwater travel time calculations. These questions and the views expressed by the seven commenters are reviewed below.

The notice of proposed rulemaking first requested comment on how groundwater travel time in the unsaturated zone could be determined with reasonable assurance. Comments received in response to this question were divided nearly equally into two categories. The first group of commenters argued that presently it would be difficult to calculate groundwater travel time in the unsaturated zone with reasonable assurance because of the lack of generally acceptable methodology and the limited scope of research efforts currently devoted to this question. A second group of commenters, comprised predominantly of representatives of

Draft NUREG-1046-Disposal of High-Level Radioactive Wastes in the Linsaturated Zone. Technical Considerations is currently being revised to reflect changes made in the amendments to 10 CFR Part 60 related to HLW disposal within the unsaturated zone When this revision is completed. a copy of NUREG-1046 will be placed in the Commission's Public Document Room. Upon publication, copies of NUREG-1046 may be purchased by calling [301] 492-9530 or by writing to the Publication Services Section. Division of Technical Information and Document Control, U.S Nuclear Regulatory Commission, Washington, DC 20555, or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161

other Federal agencies, endorsed the opinion that groundwater travel time could be determined with reasonable assurance. One of these commenters indicated that groundwater travel time calculations could be made by measuring the amount of natural tritium in the groundwater samples from a vertical profile in unsaturated geologic formations. Two other commenters stated that groundwater travel time could be derived from groundwater flux using measurements of ambient water content, degree of saturation, matric potential and hydraulic conductivity to determine moisture-characteristic curves relating these parameters to one another. These curves can be developed so as to predict constitutive relationships over a wide range of conditions. From these relationships and flux determinations these commenters argued that groundwater velocities and subsequently groundwater travel times could then be estimated. One of these two commenters further stated that reasonable assurance may be gained in estimating groundwater travel time using results of laboratory testing, stateof-the-art direct determinations in the field or laboratory, and bounding estimates developed by indirect methods, while both commenters indicated that reasonable assurance may also be gained by incorporating uncertainty analyses into predictive models.

The Commission recognizes that prior to the commencement of HLW disposal studies most groundwater investigations in unsaturated geologic media were generally limited in scope to issues related to near-surface, highly porous soils and unconsolidated rock types. Efforts to predict groundwater movement through potentially suitable geologic repository sites within the unsaturated zone often entail the application of hydrogeologic theories. models and methodologies governing near-surface, porous media to much deeper hydrogeologic environments and different rock properties than they originally were designed for. The Commission realizes that given the current state of groundwater investigations there may be difficulties associated with groundwater travel time calculations in both the saturated and unsaturated zones, as one commenter observed. However, the Commission concludes that groundwater travel time calculations can be determined in the unsaturated zone, though not necessarily with great precision, provided that the proper level of site characterization analysis is conducted. Following a detailed study of the

comments received on this question, the Commission believes it is feasible for DOE to demonstrate compliance with the groundwater travel time provision, using existing field and laboratory experiments. Further, as several commenters indicated, a substantial effort is currently underway to develop new methodologies and to improve existing techniques for measuring the hydrogeologic parameters and flow properties that will provide the necessary imput to groundwater travel time calculations. For example, it was noted that in-situ monitoring techniques. including tracer tests, are undergoing development and may broaden the range of rock types and conditions for which it is feasible to estimate groundwater velocity and, hence, groundwater travel time.

The second part of the first question on which the Commission sought comment centered on whether or not the existing groundwater travel time performance objective in § 60.113(a)[2) should be limited to groundwater movement within the saturated zone. The general consensus among commenters on this issue was that there is no reason to strictly limit the groundwater travel time performance objective to water movement in the saturated zone. Following a review of the discussions presented in these comments the Commission has determined that the groundwater travel time provision $(\S 60.113(a)(2))$ can be applied to a geologic setting located in either the saturated or unsaturated zone. The Commission could discern no obvious advantage for developing a parallel provision for the unsaturated zone as one commenter suggested. With respect to another commenter's concern that if the Commission decided to retain the groundwater travel time provision, travel time along any segment of the flow path, including the unsaturated zone, should be creditable, provided that reasonable assurance has been demonstrated, the Commission has concluded further that the definition of the term "groundwater" set forth at § 60.2 will allow travel time along subsurface flowpaths to be considered regardless of the hydrogeologic regime through which the water is moving. As defined in § 60.2, "groundwater" means all water which occurs below the land surface. The Commission believes that the concerns of one commenter that it would be inappropriate to limit groundwater travel time to the saturated zone because such an action would not accurately indicate the actual radionuclide transport time from the original location of the waste to the

accessible environment will also be largely accommodated by the definition of the term "groundwater" in § 60.2. With respect to the view expressed that the approach set forth in § 60.113(b) may be particularly appropriate in the case of HLW disposal in the unsaturated zone. it should be noted that in those instances when groundwater travel time calculations cannot be demonstrated with reasonable assurance, the Commission may prefer to specify or approve alternative performance objectives pursuant to § 60.113(b).

In its second question related to groundwater travel time the Commission sought public comment on whether groundwater travel time represented an appropriate measure of performance for a site within the unsaturated zone, or whether an alternative performance objective for the geologic setting would be more appropriate. The views expressed by the commenters were nearly equally divided on this issue. Some of the commenters asserted that, although not ideal, the groundwater travel time provision may, under certain circumstances, represent an appropriate measure of performance for a geologic setting in the unsaturated zone. Other commenters argued that groundwater travel time was not an appropriate performance objective for HLW disposal within the unsaturated zone and suggested several alternative performance objectives, as discussed below.

With respect to alternative performance requirements, one commenter considered it unacceptable to establish an alternative performance measure for unsaturated geologic media while using a different measure for a saturated salt site. The Commission anticipates that the decision to apply the groundwater travel time provision to all geologic settings regardless of the hydrogeologic zone in which the site is located should alleviate this commenter's concern. Another commenter stated that although groundwater travel time substantially exceeding 1,000 years is a favorable condition, it is not appropriate as a totally definitive performance objective for disposal in either the saturated or unsaturated zone. However, in view of § 60.113(b), the groundwater travel time performance objective is not such a "totally definitive" objective. The same commenter considered release criteria as the absolute measure of total performance and further argued that realistic estimates of release criteria for the unsaturated zone might not be possible until observations are actually made in shafts and drifts. In response,

the Commission would note that the site characterization program would include such observations. One commenter indicated that if NRC chose to retain the groundwater travel time performance objective that this provision should only be applied if the travel time calculations include combined travel times in the unsaturated and saturated zones so as to better approximate radionuclide transport. The Commission considers the concerns of this commenter to be accommodated by the definition of the term "groundwater" adopted in the final amendments.

Most commenters who argued against the application of the groundwater travel time performance objective to unsaturated geologic media generally suggested alternatives based either on the hydrogeologic concept of flux or upon the case-by-case approach of § 60.113(b).

As derived from U.S. Geological Survey Water Supply Paper-1988 the term groundwater "flux" can be defined as the rate of discharge of groundwater per unit area of parous or fractured geologic media measured at right angles to the direction of flow. In comparison, the term "groundwater travel time" used in 10 CFR Part 60 can be interpreted as the length of time required for a unit volume of groundwater to travel between two locations. Alternatives suggested by the commenters which were based upon the concept of flux included a maximum groundwater flux requirement and a dual "either/or" criterion which would allow the applicant the option of demonstrating compliance with either a minimum groundwater travel time requirement or a maximum groundwater flux requirement. After considering the possibility of an alternative performance objective based upon the maximum groundwater flux, the Commission has decided to retain the groundwater travel time requirement for geologic settings regardless of the hydrogeologic zone in which they are located. This decision was based on the Commission's belief that the groundwater travel time requirement represents an independent measure of the overall hydrogeologic system performance which may encompass a variety of hydrogeologic parameters including groundwater flux. However, the Commission expects that groundwater flux will be an important factor in the technical evaluation of radionuclide releases in the unsaturated zone, as well as in the saturated zone.

The Commission does not consider it necessary to specify a dual "either/or" groundwater criterion suggested by one commenter since under the provisions of § 60.113(b), the Commission already has the flexibility to approve or specify some other radionuclide release rate, designed containment period, or prewaste-emplacement groundwater travel time on a case-by-case basis. Futher, the Commission anticipates that areally integrated or averaged groundwater flow velocity referred to by this same commenter will be addressed in the evaluation of uncertainties surrounding the groundwater travel time calculations.

In addition, to a performance criterion based upon groundwater flux, other alternative performance criteria were discussed by commenters. DOE, in its original comment letter on the proposed amendments expressed general support for a performance criterion based upon groundwater flux, but in an addendum to this letter concluded that it would be impractical to define a performance objective for the geologic setting based on flux through a geologic repository located in the unsaturated zone. Instead, DOE took the position that an alternative performance objective developed upon the concept of a minimum time for groundwater travel to the accessible environment based on four separate physical events would be more appropriate for the unsaturated zone. The four physical events contained in the suggested DOE alternative performance objective are: (1) The creation of a drying zone around the emplaced wastes, (2) the subsequent return of moisture to the rock surrounding the waste canisters, (3) the travel time through the unsaturated zone and finally, [4] the travel time to the accessible environment by groundwater movement through the saturated zone.

The manner in which these or possibly other events may occur within the geologic repository system will depend upon the interactions of a number of site- and design-specific parameters such as the thermomechanical and hydrogeologic properties of the host rock, thermal loading of the underground facility and waste package design. However, as noted at 48 FR 28203, the Commission believes that it is important to consider both natural and engineered barriers individually and has structured the technical criteria of 10 CFR Part 60 in a way that requires that the natural and engineered barriers each make a definite contribution to the overall system performance objective for the geologic repository. To that end the Commission considers it important to maintain a standard of performance for the geologic setting that is a measure of the quality of the natural barriers and is

independent of any interaction between these natural barriers and the engineered barriers.

The existing pre-waste-emplacement groundwater travel time provision (§ 60.113(a)[2]) is such a performance standard since it is characteristic of the area outside of the disturbed zone created by underground facility construction and waste emplacement operations. This parameter is not dependent upon the effects of waste emplacement and is intended to provide assurance of isolation beyond the first 1000 years. The Commission prefers the existing groundwater travel time provision, which is part of its multiple barrier approach, to the alternative performance objective suggested by . DOE since the latter does not offer a measure of performance for the geologic setting that can be evaluated independently of design and engineering factors. Further, the physical parameters needed to evaluate pre-wasteemplacement conditions of the geologic setting can be accurately measured with direct and indirect field methodology.

The DOE suggestion would necessitate that estimates of long-term performance of the geologic setting under post-waste-emplacement conditions be used in the Commission's deliberations on whether the groundwater travel time performance objective is met. The uncertainties associated with such estimates can be affected by a number of factors. including the age and nature of the waste and the design of the underground facility. Evaluations of the performance of the geologic setting under post-wasteemplacement condition must also take into account predictions of future changes in the thermomechanical, geochemical and hydrogeologic properties of the geologic setting through time as a result of the creation of a nonisothermal environment due to waste emplacement. The Commission's view is that the present emphasis on pre-wasteemplacement conditions will provide a higher degree of confidence in the continued isolation capabilities of the natural barriers of the geologic setting over the long term.

The view was also expressed by other commenters that the development of a new alternative performance objective to existing § 60.113(a)(2) may not be necessary since the Commission's approach set forth at § 60.113(b) might be a more appropriate means of specifying alternatives to the groundwater travel time criterion. The Commission notes that it is essentially following this approach in its decision to

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retain the existing provisions of § 60.113(a)(2) and § 60.113(b).

Following a review of the various alternative performance objectives suggested by the commenters, the Commission considers groundwater travel time to represent a more appropriate parameter upon which the performance of the geologic setting can be evaluated than any of the suggested alternatives because a prescribed groundwater travel time can be generically applied and will provide a conservative estimate of a minimum radionuclide release time to the accessible environment. It should be noted, however, that the Commission still retains the option of applying the provisions of § 60.113(b) instead of § 60.113(a)(2) to a particular geologic setting when such an action is deemed appropriate.

(b) Definition of Groundwater

Three commenters addressed the Commission's proposed definition of the term "groundwater" as meaning "all water below the Earth's surface". Two of these commenters, citing possible confusion among the public and scientific community stated that the Commission should not define "groundwater" in this manner, but rather should limit the use of the term to water within the saturated zone. In contrast, one commenter commended NRC on this definition, but noted that it may not be consistent with the definition of the term included in the proposed EPA environmental standards—40 CFR Part 191. In its proposed rule EPA defined

"groundwater" as "water below the land surface in a zone of saturation" (47 FR 58205, December 29, 1982). While the Commission recognizes that limiting the use of the term "groundwater" to water within the saturated zone may currently be a more widely accepted practice, the Commission also notes that numerous members of the scientific community routinely use the term groundwater in the same context as the Commission proposed.

The Commission has carefully reviewed the arguments presented by the commenters on this issue and has decided to retain the definition of groundwater with one minor change the phrase "Earth's surface" has been replaced by "land surface". This change was made for the sake of clarity and internal consistency with wording in the definition of the term "unsaturated zone". The Commission's decision was based on the fact that, at present, no unique definition of the term "groundwater" appears to be universally accepted in the technical

community. Therefore, the Commission has not actually redefined the term "groundwater" as one commenter suggested but rather has adopted one of the commonly used definitions of the term that is most consistent with the Commission's intent concerning the provisions related to groundwater throughout the Part 60 regulation. With respect to the differences between the definition of the term "groundwater" adopted by the Commission and that proposed by EPA, the Commission notes that it does not consider the two definitions to be inconsistent since the scope of the definition adopted in § 60.2 will encompass water within the zone of saturation as well as water within the unsaturated zone. As noted above, the Commission considers it necessary to adopt a broader definition of the term "groundwater" in order to maintain consistency with previous Commission usage of this term and to effectively apply the provisions of 10 CFR Part 60 to the regulation of HLW disposal within unsaturated as well as saturated geologic media. Further, since EPA has not yet promulgated its final environmental standards, the Commission cannot anticipate whether or how "groundwater" will actually be defined in the final EPA regulation.

(c) Definition of the "Unsaturated Zone"

The Commission's proposed definition was derived from U.S. Geological Survey (USGS) Water Supply Paper 1988. Two commenters noted that the phrase "deepest water table" introduced confusion into the definition of the term "unsaturated zone" (§ 60.2). The Commission had inferred that the phrase "deepest water table" as used by the USGS referred to the regional water table and hence adopted this same phraseology in the definition of the term "unsaturated zone" set forth in the . proposed amendments to 10 CFR Part 60. However, in light of confusion expressed by commenters which may be due partially to the incorrect inference by some that the phrase "deepest water table" referred to local rather than regional water tables, the definition of term "unsaturated zone" has been modified. To clarify the Commission's original intent, the phrase "deepest water table" has been replaced by "regional water table" in the final amendments. (A conforming change has also been made to the definition of the term "saturated zone"). Additionally, the phrase "water in this zone is under less than atmospheric pressure" has been rewritten as "fluid pressure in this zone is less than atmospheric pressure" for the sake of technical clarity. The Commission has attempted to maintain

internal consistency with the definitions of hydrogeologic terms presented in USGS Water Supply Paper 1988 wherever practicable and for this reason has not adopted any of the alternative definitions of the term "unsaturated zone" suggested by the commenters.

(d) Favorable Siting Conditions

Section 60.122(b)(2). The term "low hydraulic potential" has been replaced with "low hydraulic gradient" in § 60.122(b)(2)(iii) as suggested by one commenter for the sake of technical accuracy.

Section § 60.122(b)(7). In addition to comments received in response to the Commission's specific request for input on its questions related to groundwater travel time calculations in the unsaturated zone, the subject of groundwater travel time was also addressed by two commenters on proposed § 60.122(b)(7). The issues raised by these two commenters merit discussion here although they have resulted in no change to the rule.

The provisions of § 60.122(b)(7) have the effect of identifying pre-wasteemplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years as a favorable siting criteria for both the saturated and unsaturated zones. Previously these provisions (formerly designated as § 60.122(b)(2)(iv)) applied only to sites within the saturated zone.

One commenter on proposed § 60.122(b)(7) opposed the application of this provision to the unsaturated zone on the grounds that the determination of groundwater travel time in the unsaturated zone may not be necessary nor always be possible. Under such circumstances, this commenter argued, inability to demonstrate that groundwater travel time substantially exceeds 1,000 years should not amount to the absence of a favorable condition. The issue of groundwater travel time in the unsaturated zone has already been discussed in detail in the above section on Groundwater Travel Time Calculations and will not be repeated here. With respect to the second part of this comment the Commission reiterates its position set forth in the Supplementary Information to the final 10 CFR Part 60 technical criteria (48 FR 28201) that a site is not disqualified as a result of the absence of a favorable siting condition.

A second commenter on § 60.122(b)(7) expressed the view that for a HLW repository within the unsaturated zone, minimizing leachate flux would appear

to be at least as important as maximizing groundwater travel time. To that end, this commenter fleet that it might be more appropriate to specify as a favorable siting condition a dual "either/or" criterion such that groundwater travel time is greater than 1.000 years or groundwater flux through the host rock at a proposed site is less than some average rate. This rate, it was argued, could be based on nuclide solubility, leach rate criteria, and population exposure criteria. The commenter stated that whichever criterion was ultimately selected it should be based upon an areally integrated or averaged calculation, over an area on the order of the crosssectional area of the repository normal to the direction of expected flux regardless of hydrogeologic zone to help reduce controversy concerning how the "fastest pathway" can be determined. For a discussion of the concept of applying a dual criterion of either groundwater travel time or groundwater flux see the above section entitled Groundwater Travel Time Calculations.

Minor corrections have been made to the provisions of § 60.122(b)[8) for the sake of clarity and technical accuracy as a result of the comments received. The phrase "and nearly constant" has been deleted from § 60.122(b)[8](i) and a typographical error in the word "overlying" has been corrected.

(e) Potentially Adverse Conditions

Section 60.122(c)(9). This provision of the final technical criteria identified groundwater conditions in the host rock that are not reducing as a potentially adverse condition for the saturated zone. One commenter on the proposed amendments stated that a parallel provision should be provided for the unsaturated zone. The Commission considers this argument to have merit and has modified the final amendments accordingly. Rather than create an additional provision, the Commission has deleted the qualifying phrase "for disposal in the saturated zone" from existing § 60.122(c)(9) to ensure that this provision will be applicable equally to groundwater conditions in the saturated and unsaturated zones.

Section 60.122(c)(23). Minor editorial changes have been made as suggested by one commenter, for the sake of clarity.

Section 60.122(c)(24). During the development of the proposed amendments (47 FR 5935, February 16, 1984) the Commission's staff identified vapor transport of contaminants as a potential concern associated with HLW disposal in the unsaturated zone. The Commission noted that in unsaturated

geologic media, water is transported in both liquid and vapor phases. The relative contribution of tranport via both these phases and their direction of movement with respect to a geologic repository was deemed to directly influence the containment of contaminants. Vapor transport, particularly when a thermal gradient is imposed, may provide a possible mechanism for radionuclide migration from a geologic repository in unsaturated geologic media. This issue was discussed at length by the Commission in the proposed amendments and in draft NUREG-1046. The comments received on the discussion of vapor transport and on the wording of the proposed amendment § 60.122(c)(24) indicated a need for the Commission to clarify its intent with respect to vapor transport.

The issue of vapor transport of contaminants is a relatively new issue that has grown out of scientific investigations of the feasibility of HLW disposal in unsaturated geologic media. Since most scientific studies related to HLW disposal within the unsaturated zone have been initiated very recently, many of the associated issues have not as yet been examined in any great detail. The Commission recognized that vapor formation may not necessarily constitute an adverse condition for a particular geologic repository site, but, given the fact that vapor transport could provide a mechanism for radionuclide transport within the unsaturated zone, it wanted the opportunity to evaluate whether or not vapor transport could adversely affect a geologic repository system. To that end the Commission identified the potential for vapor . transport of radionuclides from an underground facility located in the unsaturated zone to the accessible environment as a potentially adverse condition in the proposed amendments (§ 60.122(c)(24)). The Commission has not reached any conclusions on vapor transport, as one commenter incorrectly inferred, but rather is currently sponsoring research on vapor transport in unsaturated fractured rock in an effort to better understand this subject.

Some confusion was expressed by the commenters with respect to the Commission's use of the term "vapor transport". In particular, one commenter stated that § 60.122(c)(24), as written, was ambiguous and meaningless. The term "vapor transport" as used in the proposed amendments referred to both water vapor and the gaseous state of some constituent contaminants. A second commenter on this issue suggested that the Commission add quantitative clarifications to this

provision since the proposed wording allowed no potential vapor transport of radionuclides by molecular diffusion (i.e., transport at a microscopic level due to concentration gradients) or convective transport (i.e., transport due to temperature or density gradients). The same commenter noted that while the flux values associated with these two transport processes might be miniscule, they would not be zero at any unsaturated site. The Commission does not consider it appropriate to add quantitative clarifications to § 60.122(c)(24) because the movement of radionuclides in the gaseous state is, to a large extent, dependent on site- and design-specific parameters. The Commission considers the movement of radionuclides in the gaseous state may be a potentially important site- and design-related process and will retain the opportunity to evaluate whether or not such a process will adversely affect the geologic repository system. However, to alleviate the confusion surrounding proposed § 60.122(c)(24). the wording of this provision has been extensively modified in the final amendments. Reference to "vapor transport" has been deleted, and this provision now solely addresses the potential for the movement of radionuclides in a gaseous state through air-filled pore spaces of an unsaturated geologic medium to the accessible environment as a potentially adverse condition. The Commission believes the revised wording will more accurately convey its original intent and should remove any ambiguity associated with the previous wording, such as one 'commenter's query of where the vapor transport is occurring and when it is important.

The Commission agrees with the commenter who indicated that vapor transport may also occur in geologic repositories sited in the saturated zone until resaturation occurs. A temporary, localized, unsaturated region could form around an underground facility within the saturated zone as a result of activities related to construction and operation of a geologic repository (e.g. dewatering of shafts and drifts). To date, the issue of vapor transport has not been raised for a geologic repository within the saturated zone primarily because such a phenomenon would be expected to be encompassed within a much larger saturated region, that is, vapor transport might only be expected to occur in that portion of the host rock where the voids are not completely filled or refilled with groundwater. Further, it is anticipated that the time required for waste package integrity

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(300-1,000 yrs) will generally exceed the post-closure time required for resaturation of a geologic repository within the saturated zone (assumed by the NRC staff to occur within a few hundred years following permanent closure). Therefore, the Commission does not consider it necessary at this time to identify vapor transport as a potentially adverse condition for HLW disposal within the saturated zone. However, if future research in the area of vapor transport challenges these current assumptions, the Commission may decide to broaden the provisions of § 60.122[c](24) to include both the saturated and unsaturated zones.

(f) Design Criteria

Changes were made to provisions of the final technical criteria related to design criteria. The provisions of § 60.133(f) have been modified to more closely identify the concept of a potential for creating a preferential pathway for groundwater to contact the waste packages. This change was prompted by a commenter's observation that as originally worded, this provision might not be internally consistent with new § 60.122(b)(8)(iv) which identifies a host rock that provides for free drainage as a favorable hydrogeologic condition in the unsaturated zone. Similar word changes have been made to the provisions of § 60.134(b) for consistency with § 60.122(b)(8)(iv). Additionally, the phrase "radioactive waste migration" has been changed to "radionuclide migration" in both § 60.133(f) and § 60.134(b) for the sake of technical accuracy. The changes should ensure • that these provisions will be equally applicable to geologic repositories within either the saturated or unsaturated zone, and will more accurately convey the Commission's original intent.

Environmental Impact

Pursuant to Section 121(c) of the Nuclear Waste Policy Act of 1982, the promulgation of these criteria does not require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969 or any environmental review under subparagraph (E) or (F) of Section 102(2) of such Act.

Paperwork Reduction Act Statement

The final rule contains no new or amended recordkeeping, reporting or application requirement, or any other type of information collection requirement subject to the Paperwork Reduction Act (Pub. L. 96-511).

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605[b]), the Commission certifies that this rule will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this rule is the U.S. Department of Energy, which is not a small entity as defined in the Regulatory Flexibility Act.

. List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Waste treatment and disposal.

Issuance

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the Nuclear Regulatory Commission is adopting the following amendments to 10 CFR Part 60.

PART 60-DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

1. The authority citation for Part 60 continues to read as follows:

Authority: Secs. 51, 53, 62, 63, 65, 61, 161, 182, 183, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 68 Stat. 1244, 1246 (42 U.S.C. 5642, 5846), secs. 10 and 14. Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851); sec. 102, Pub L. 91-190, 63 Stat 853 (42 U.S.C. 4332); sec. 121, Pub. L. 97-425, 96 Stat. 2228 (42 U.S.C. 10141).

For the purposes of sec. 223, 68 Stat. 958. as amended (42 U.S.C. 2273), §§ 60.71 to 60.75 are issued under sec. 1610, 68 Stat. 950, as amended (42 U.S.C. 2201[0]).

2. Section 60.2 is amended by adding two new definitions of "Groundwater" and "Unsaturated zone" in proper alphabetical sequence and revising the existing definition of "Saturated zone" to read as follows:

§ 60.2 Definitions.

"Groundwater" means all water which occurs below the land surface.

"Saturated zone" means that part of the earth's crust beneath the regional water table in which all voids, large and small. are ideally filled with water under pressure greater than atmospheric. "Unsaturated zone" means the zone between the land surface and the regional water table. Generally, fluid pressure in this zone is less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure. Beneath flooded areas or in perched water bodies the fluid pressure locally may be greater than atmospheric.

3. Section 60.122 is amended by revising paragraphs (b)(2)(iii) and (c)(9). redesignating and revising paragraph (b)(2)(iv) as (b)(7), and adding new paragraphs (b)(8), (c)(22), (23) and (24) to read as follows:

§ 60.122 Siting criteria.

- * * *
- (b) * * *
- (2) * * *

(iii) Low vertical permeability and low hydraulic gradient between the host rock and the surrounding hydrogeologic units.

(7) Pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years.

(8) For disposal in the unsaturated zone, hydrogeologic conditions that provide—

(i) Low moisture flux in the host rock and in the overlying and underlying hydrogeologic units;

(ii) A water table sufficiently below the underground facility such that fully saturated voids contiguous with the water table do not encounter the underground facility;

(iii) A laterally extensive lowpermeability hydrogeologic unit above the host rock that would inhibit the downward movement of water or divert downward moving water to a location beyond the limits of the underground facility;

(iv) A host rock that provides for free drainage; or

 (v) A climatic regime in which the average annual historic precipitation is a small percentage of the average annual potential evapotranspiration.
(c) * * *

(9) Groundwater conditions in the host rock that are not reducing.

(22) Potential for the water table to rise sufficiently so as to cause saturation of an underground facility located in the unsaturated zone.

(23) Potential for existing or future perched water bodies that may saturate portions of the underground facility or provide a faster flow path from an underground facility located in the unsaturated zone to the accessible environment.

(24) Potential for the movement of radionuclides in a gaseous state through air-filled pore spaces of an unsaturated geologic medium to the accessible environment.

4. Section 60.133 is amended by revising paragraph (f) to read as follows:

§ 60.133 Additional design criteria for the underground facility.

(f) Rock excavation. The design of the underground facility shall incorporate excavation methods that will limit the potential for creating a preferential pathway for groundwater to contact the waste packages or radionuclide migration to the accessible environment.

5. Section 60.134 is amended by revising paragraphs (b)(1) and (6)(2) to read as follows:

§ 60.134 Design of seals for shafts and boreholes.

- •
- (b) * * * ^{*}

(1) The potential for creating a preferential pathway for groundwater to contact the waste packages or.(2) for radionuclide migration through existing pathways.

Dated at Washington, DC, this 16th day of July, 1985.

For the Nuclear Regulatory Commission. Samuel J. Chilk,

Secretary of the Commission.

[FR Doc. 85-17364 Filed 7-19-85: 8.45 am] BILLING CODE 7590-01-N

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 85-NM-62-AD; Amdt. 39-5105]

Airworthiness Directives; Boeing Model 737–300 Series Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT. ACTION: Final rule.

SUMMARY: This action publishes in the Federal Register and makes effective as to all persons an amendment adopting a new airworthiness directive (AD) which was previously made effective as to all known U.S. owners and operators of Boeing Model 737–300 series airplanes by individual telegrams. The AD requires the use of only those fuels known to perform properly in the Boeing Model 737–300 fuel system. This action is prompted by four incidents of loss-ofpower during climb while using JP-4 fuel.

DATES: Effective August 6, 1985 as to all persons except those persons to whom it was made immediately effective by telegraphic AD T85–11–52, issued June 7, 1985, which contained this amendment.

FOR FURTHER INFORMATION CONTACT: Mr. Stewart Miller, Propulsion Branch, ANM-140S. Seattle Aircraft Certification Office; telephone (206) 431– 2969. Mailing address: FAA, Northwest Mountain Region, 17900 Pacific Highway South, C-68966, Seattle, Washington 98168.

SUPPLEMENTARY INFORMATION: On June 7, 1985, telegraphic AD T85-11-52 was issued and made effective immediately as to all known U.S. owners and operators of Boeing Model 737-300 series airplanes. The AD requires the use of only certain approved fuels and and appropriate revision to the FAAapproved Airplane Flight Manual. The AD was prompted by reports from one operator of a Boeing Model 737-300 airplane who had experienced four lossof-power incidents during climb while using JP-4 fuel. One of these events resulted in a flame out. Two of these events occurred on the same flight and affected both engines at nearly the same time.

The manufacturer has confirmed through flight test that use of JP-4 fuel in the system as presently configured can result in engine power rollback during climb. This rollback event could result in engine flameout and could occur simultaneously on both engines.

Since it was found that immediate corrective action was required, notice and public procedure thereon were impracticable and contrary to public interest, and good cause existed to make the AD effective immediately by individual telegrams issued June 7, 1985, to all known U.S. owners and operators of Boeing Model 737-300 airplanes. These conditions still exist and the AD is hereby published in the Federal Register as an amendment to § 39.13 of Part 39 of the Federal Aviation Regulations to make it effective as to all persons.

The FAA has determined that this regulation is an emergency regulation that is not considered to be major under Executive Order 12291. It is impracticable for the agency to follow the procedures of Order 12291 with respect to this rule since the rule must be issued immediately to correct an unsafe condition in aircraft. It has been further determined that this document involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). If this action is subsequently determined to involve a significant/major regulation, a final regulatory evaluation or analysis, as appropriate, will be prepared and placed in the regulatory docket (other wise, an evaluation or analysis is not required).

List of Subjects in 14 CFR Part 39

Aviation safety, Aircraft.

Adoption of the Amendment

PART 39-[AMENDED]

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends § 39.13 of Part 39 of the Federal Aviation Regulations as follows:

1. The authority citation for Part 39 continues to read as follows:

Authority: 49 U.S.C. 1354(a) 1421 and 1423; 40 U.S.C. 106(g) (Revised Pub. L. 97–449; January 12, 1983); and 14 CFR 11.89.

2. By adding the following new airworthiness directive:

Boeing: Applies to Model 737–300 series airplanes certificated in any category. To prevent engine flameouts during climb, accomplish the following, unless already accomplished:

1. Before further flight ensure that the fuel being used is one of the following types:

- Jet A or A1 conforming to specification ASTM-D-1655;
- JP5 conforming to MIL-T-5624;
- Fuels conforming to DERD 2494 or 2498;

• Fuels conforming to AIR 3404 or 3405. 2. Within 48 hours incorporate the following information into the Limitations Section of the Airplane Flight Manual and provide to crews:

"The only approved fuels are jet A and A1 conforming to Specification ASTM-D-1655, JP5 conforming to MIL-T-5624, fuels conforming to DERD 2494 or 2498, and fuels conforming to AIR 3404 or 3405."

3. Alternate means of compliance which provide an acceptable level of safety may be used when approved by the Manager, Seattle Aircraft Certification Office, FAA, Northwest Mountain Region.

Note.—Compliance with paragraph 2. of this directive may be effected by including a copy of this AD in the Airplane Flight Manual and Operating Manual.

This amendment becomes effective August 6, 1985. It was effective earlier to all recipients of telegraphic AD 85–11–52. issued June 7, 1985, which contained this amendment.