NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

R-431F

ISSUED: January 28, 1983

Forwarded to:

Honorable Ray A. Barnhart
Administrator
Federal Highway Administration
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

R-83-17 and -18

About 9:50 p.m., P.s.t., on Thursday, January 7, 1982, Southern Pacific Transportation Company (SP) freight train No. 01-BSMFF-05, derailed 14 cars at Thermal, California, while traveling about 57 miles per hour on the tangent single main track. Four transients riding on the train were seriously injured, a fifth transient died as a result of injuries. No crewmembers were injured as a result of the accident. The presence of radioactive material in the derailed Trailer-On-Flat-Car (TOFC) train was discovered about 1 hour after the accident occurred, resulting in the handling of the emergency response effort as a serious radiological emergency. Contributing to misdirected emergency response efforts was erroneous and conflicting information concerning hazardous material on the train. Accurate information regarding the precise nature of the radioactive material shipment was not available at the accident site until about 5 hours after the derailment occurred; at that time, radiological emergency procedures were terminated. Damage was estimated to be about $1,015,350. 1/

The train identification symbol "BSMFF" contributed to the traincrew's initial belief that their train was not carrying hazardous materials. Since the Southern Pacific (SP) normally identifies trains carrying certain hazardous materials, such as radioactive material (RAM), with a "K" designation, the crew assumed that train No. 01-BSMFF-05 did not contain hazardous materials. In addition, the profile for train No. 01-BSMFF-05 did not indicate the presence of hazardous materials on the train. Since train No. 01-BSMFF-05 was a through train with no scheduled stops, pickups, or setouts, the conductor did not review the individual waybills, and consequently did not discover the presence of the hazardous materials until after the accident when he did look at the waybills to apprise the SP dispatcher of the damages. Because the engineer did not have any waybills on the locomotive, he and the head-end crew relied on the erroneous profile on the train consist to operate the train.

When the traincrew relayed the train profile information to the first arriving emergency personnel, the emergency personnel believed that a serious hazardous material emergency did not exist. However, about 1 hour later, contradictory information from an erroneous waybill resulted in an over-reaction to the situation that actually existed. The response personnel were thus led to believe that a serious radiological emergency was at hand with the presence of a large amount of fissionable material to which the emergency personnel might have been exposed. The Safety Board believes the emergency response forces were prompt, efficient, and well organized in their efforts. These efforts were,

1/ For more detailed information, see Railroad Accident Report--"Derailment of Southern Pacific Transportation Company Train No. 01-BSMFF-05, Carrying Radioactive Material, at Thermal, California, January 7, 1982" (NTSB-RAR-83-1).

however, needlessly complicated by erroneous and contradictory information being conveyed to them about the hazardous material.

The documentation for shipping the RAM began with a shipping order presented by the originating shipper to the motor carrier at Houston, Texas. The document described the shipment as "RADIOACTIVE MATERIALS, SPECIAL FORM, N.O.S., NA9182, 180#." The abbreviation "N.O.S." means not otherwise specified. "NA9182" is the identification number assigned to the above described material in accordance with 49 CFR 172.101, Purpose and Use of Hazardous Materials Table. The designation "180#" refers to the gross weight of the RAM shipment in its container. The form also described the shipment as Category "III YELLOW LABEL" indicating the physical properties of the RAM source, in accordance with 49 CFR 172.403(d), labeling requirements for radioactive material. The form also contained packaging, marking, and labeling information. In addition, the shipping order listed one box of oilwell drilling tools and was dated December 31, 1981.

The motor carrier then prepared a freight bill for the shipment, also dated December 31, 1981. Both the shipping order and the freight bill accompanied the RAM shipment to the motor carrier's facility in Grand Prairie, Texas, where the shipment was transferred and consolidated with a trailer load of air circulating fans. At this time, the motor carrier prepared a straight bill of lading for a trailer load of Freight-All-Kind (FAK), dated January 4, 1982. This bill did not reflect the presence of the RAM shipment in the trailer. The motor carrier then contacted a freight forwarder specializing in TOFC rail shipping to arrange for transport of the consolidated shipment in the GIL-10140 trailer from Dallas, Texas, to Los Angeles, California.

The freight forwarder prepared a uniform straight bill of lading which reflected the RAM shipment in truck trailer GIL-10140, and which also reflected the hazardous material identification number NA9182. This bill was dated January 4, 1982. The freight forwarder then prepared a transportation contract form for the shipment of trailer GIL-10140 over the SP to Los Angeles. This form indicated "160 pounds of radioactive material, NOT PLACARDED (NA9182)," and was dated January 4, 1982. The form was subsequently revised and reissued as a corrected bill. The freight forwarder did not have the shipment in its possession during these transactions.

The motor carrier delivered the GIL-10140 trailer to the SP's TOFC ramp in Dallas, Texas, on January 5, 1982. The shipping order presented by the motor carrier's driver at that time indicated one trailer load FAK and did not reflect the RAM shipment in the consolidated trailer. The SP's intermodal freight manager stated that he telephoned the motor carrier's traffic manager to obtain clarification of the contents of the FAK shipment because the motor carrier's straight bill of lading was inconsistent with the freight forwarder's description which listed a radioactive material in the shipment. Based on information received by telephone from the motor carrier's traffic manager, SP's intermodal freight manager added the following information to the shipping order:

NA 9182

(URANIUM 1)
HAZARDOUS MATERIALS IS
1 CTN 180 LBS YELLOW
LABEL III RADIOACTIVE
LABELS REQUIRED

SHIPPER CERTIFIES MATERIAL IS PACKED AND LOADED IN ACCORDANCE WITH CURRENT DOT REGULATIONS

The SP's intermodal freight manager then requested the truckdriver to intitial the URANIUM 1 entry and the shipper certification entry and also to sign the shipping order. The truckdriver acquiesced and dated the form January 5, 1982, at 6:30 p.m. After the trailer was placarded, the SP then accepted the GIL-10140 trailer for shipment.

After accepting the trailer, the freight manager prepared a freight waybill to accompany the shipment, based on the information on the motor carrier's shipping order, as revised by the freight manager. This waybill listed the freight forwarder as the shipper of the trailer. The SP freight manager stated after the accident that he could not recall the reason for the waybill entries of "FISSILE CLASS III 2/ or URANIUM 1" but did recall making those entries. This information was entered into the SP's Total Operations Processing System (TOPS) computer, and the Standard Transportation Commodity Code (STCC) 3/ No. 4927450 was added to the waybill. After the information was entered into the TOPS computer, it became available throughout the SP's communications network.

To determine the exact nature of the RAM shipment, SP personnel were required to backtrack through a series of shipping papers before they were able to contact the originating shipper who had the technical information that was necessary to properly assess the emergency and necessary response action. The Safety Board believes that although the RAM shipment in this accident posed no significant hazard to the involved personnel, improvements are needed in the methods of disseminating vital information concerning hazardous materials shipments which is contained on the originating shipping orders. The Safety Board is concerned that derailments may occur in which erroneous waybill information could fail to disclose the presence of extremely hazardous material and that as a result, proper emergency procedures might not be implemented. This is especially true for TOFC/Container-On-Flat-Car (COFC) shipments, for which a series of shipping documents may be issued. Emergency personnel need to know the precise nature of hazardous materials shipments in order to properly respond to the situation. Had the originating shipper's documentation of the hazardous material accompanied all successive documents, the nature of the shipment and the appropriate emergency procedures to follow would have been known to responding personnel more promptly. This could be accomplished by requiring that the originating shipper's documentation accompany all successive documents for a hazardous material which may be shipped via a TOFC/COFC shipment.

As a result of this investigation, the National Transportation Safety Board recommends that the Federal Highway Administration:

> In conjunction with the Federal Railroad Administration, initiate a regulatory compliance study which samples Trailer-On-Flat-Car and Container-On-Flat-Car shipments designated as Freight-All-Kind to determine if those shipments contain hazardous materials and take enforcement action as required in those cases of noncompliance. (Class II, Priority Action) (R-83-17)

2/ Fissile is a term used to identify certain radioactive materials whose nuclei split, releasing large amounts of radioactivity and heat.

3/ Standard Transportation Commodity Code (STCC) numbers are seven digit numbers defining a specific hazardous material as indexed in the Association of American Railroads Standard Transportation Commodity Code of Hazardous Materials.

In conjunction with the Association of American Railroads, the Federal Railroad Administration, the Research and Special Programs Administration, and the American Trucking Associations, Inc., develop, validate, and urge implementation of a model plan for use by railroads and motor carriers to make certain that waybills for Trailer-On-Flat-Car and Container-On-Flat-Car shipments containing hazardous materials include accurate information regarding the contents of the trailers and/or containers. (Class II, Priority Action) (R-83-18)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

Patricia C. Goldman for

By: Jim Burnett
Chairman