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Transportation Environment Data Bank Index

C. A. Davidson, J. T. Foley

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TRANSPORTATION ENVIRONMENT DATA BANK INDEX

C. A. Davidson
J. T. Foley
Applied Mechanics Division II 1542
Sandia Laboratories
Albuquerque, NM 87115

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ABSTRACT

In an effort to determine the environment intensities to which shipping containers will be exposed, a "Data Bank" of environmental information has been established by Sandia Laboratories, Division 1542, for the ERDA Division of Waste Management and Transportation. This document is an index which can be used to request data of interest.

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TRANSPORTATION ENVIRONMENT DATA BANK INDEX

Introduction

The purpose of the Transportation Environment Data Bank is to store and make available descriptions of the environment of transportation expressed in engineering terms. The data are intended to provide environmental criteria to shipping container design and test engineers as a basis for their functions. The Transportation Environment Data Bank is a segment of a larger ERDA/DOD environmental Data Bank for weapons application.

For purposes of indexing and data retrieval, the data are catalogued under two major headings: Normal and Abnormal Environments. The diagram below illustrates the relationship between these environmental designations.

Normal environments are those which will be encountered at some level during every shipment. They have a high frequency of occurrence, but a relatively low intensity. The abnormal or accident environments, on the other hand, are characterized by higher intensities but lower frequency of occurrence. The very high intensities of environment occur very infrequently. The abnormal environments, while often called by different names to differentiate them, have actually the same engineering parameters as the normal. Thus, an acceleration is experienced by cargo as a truck crosses railroad tracks at 50 mph. A greater acceleration may result if it strikes a bridge abutment at the same speed. To make the difference clear in a succinct manner, the latter is termed, "impact." These short descriptions are shown in the index in parentheses where they apply.

The Environments

Twelve categories of environment have been identified as relevant to transportation. These include:

1. Acceleration/Time*	7. Pressure*
2. Acoustic Noise	8. Radiation*
3. Atmospheric Contents	9. Shock*
4. Fragmentation*	10. Temperature*
5. Humidity	11. Vibration
6. Precipitation	12. Wind*

Three factors operate to limit the number of these environments for which abnormal levels require consideration:

1. Some environments reach an absolute limit regularly, and the limit thus is within the normal range;
2. The abnormal aspects of some of them are encountered so infrequently as to be of little interest; and
3. Protection against the effects of some environments include protection against the abnormal.

After eliminating from consideration those listed environments falling within the above limitations, only the environments indicated by an asterisk in the above list are of interest in the abnormal considerations. Figure 1 presents the environments which relate to transportation and the details of the abnormal environments as to input and response.

Input may be defined as the environmental level which exists at the cargo interface, while response is considered as the way in which the cargo reacts to the environments. As an example, consider the pressure environment. Pressure has both normal and abnormal levels. The normal, which all cargo will experience, includes the variations in atmospheric pressure at a specific location, as well as the variations produced by changes in elevation, both on the earth's surface and while flying. The abnormal aspects of the pressure environment are the result of exposure to an explosion or to immersion (inputs); if the intensity level of input is sufficiently high, a crush response of the cargo will result.

Four of the environments are considered only in the normal aspects for reasons mentioned above. One environment, fragmentation, is considered only in the abnormal aspect. This is because no elements which will cause puncture to the cargo are present under normal conditions, i.e., will be encountered frequently during transportation.

* Environments with both normal and abnormal aspects.

Figure 1. Structure of the Transportation Environment Data Bank

The Data

Both input and response data contained in the Transportation Environment Data Bank relating to the normal environments are measured data. They were obtained from reliable sources, both within Sandia Laboratories and from other reputable agencies. When data were required, but not available, the Data Bank operators arranged for measurements to provide the information.

Most input data in the Data Bank under the heading of Abnormal Environments, however, were not measured directly. Because of the number and randomness of occurrence and type, it is impossible to provide engineering instrumentation for measurement. If an instrumented vehicle is subjected to a staged accident, it represents only the one type of event. Therefore, it is necessary to use statistical techniques to characterize the range of environmental intensities which may be experienced by cargo in accidents. The data to which these techniques are applied are often estimated. The basic data which are most useful to estimate abnormal inputs include the following.

<u>Abnormal Input</u>	<u>Useful Data Parameters</u>
1. Earthquake	Time History
2. Impact	Velocity
3. Explosion	Pressure or Missile Velocity, Radius
4. Projectile/Impalement	Velocity, Radius
5. Immersion	Depth
6. Lightning	Voltage, Amperage, Rise Time, etc.
7. Fire	Temperature or Heat Flux and Duration
8. Windstorm	Velocity

It is these types of data, or information which permit the derivation of these values, which are stored in the input section of the Abnormal Environment part of the Transportation Environment Data Bank. The response section of the Bank is expressed in terms of damage to cargo. Since the damage can be described and measured, measurements and descriptions are included wherever possible.

Mechanics of the Data Bank

The data which have been retrieved and entered in the Data Bank are on microfilm. Two forms of microfilm are used: aperture cards and microfiche. Facilities for viewing the data and obtaining hard copy are located at the bank site. When processing large requests for information, the Bank's operators have access to automated means for obtaining hard copy.

When either raw data or published information is acquired, it is reviewed for engineering data content. Pertinent information is then extracted, collated, and microfilmed. The data cards and/or microfiche are filed in numerical order without regard to subject. This simple technique is

possible because of a computerized indexing and retrieval program which was developed for efficient use of the Data Bank.

The use of a computer-aided system makes it possible to obtain a more flexible file, permits more complete data retrieval, shortens the time necessary for search, and makes feasible more frequent publication of a current index.

Data Sources

Normal environmental information for inclusion in the Data Bank is acquired by the Data Bank's operators from many sources. Military agencies, such as Aberdeen Proving Ground, Wright Air Development Center, Naval Ordnance Test Center, and Army QM R&E Center, and industrial groups, such as railroads, aircraft companies, and trucking concerns, have contributed information. A considerable portion of the information has been obtained from the various test groups in Sandia Laboratories. The Data Bank's operators not only extract information from published sources, but engage in specific research activities to obtain data not otherwise available.

Abnormal environmental information is obtained primarily from U. S. Department of Transportation sources and reports produced by the National Transportation Safety Board. Contacts have been established with various individuals and agencies responsible for accident investigation in the various modes of transportation. An information sources file is maintained as an adjunct to the Bank which integrates this Data Bank's efforts with other Data Banks collecting related accident information such as accident rates, fatalities, etc.

Availability of the Data

The information in the Data Bank is available, within the limits of time, workload, and security regulations, to any requestor. Requests for data should be sent to Division 1542, Sandia Laboratories, Albuquerque, New Mexico, 87115. The request should either outline the specific area for which information is desired, or it should list specific entries, including serial numbers. Requests will be processed as time allows. Agencies outside of the ERDA complex will be furnished information subject to the review and release procedures established by the ERDA.

The Index

The index provided on the following pages is what the Bank's operators call a category index. Entry is made into this index by finding the environmental category of interest, such as shock, temperature, vibration, etc. The 12 categories are listed alphabetically.

The two-part number listed after the title of a particular Data Bank entry is the access number for the data on file. The first number, e.g., 1614, is the file number. The number after the dash (-) is the number of file cards available on the subject. Requests for hard copies of data should cite these two numbers.

Normal Environments

05/13/75

PAGE 1

....ACCELERATION/TIME.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

LOADS IMPOSED ON CARGO BY FLIGHT AND LANDING	UNC	00750-001+
MANEUVER LOAD DATA C-130 AIRCRAFT	UNC	00944-002+
FATIGUE DAMAGE PARAMETERS, TRANSPORT AIRCRAFT	UNC	01085-001+
GUST LOAD FREQUENCY, AIRCRAFT FLIGHTS, 40-45 KILOFEET, IN STORM	UNC	01087-002+
AIRCRAFT RECORDINGS DURING A TURBULENCE INCIDENT	UNC	01090-001+

....ACCELERATION/TIME.....INPUT.....TRANSPORTATION.....SHIP.....

ACCELERATION, SHIP MOTIONS, MAXIMUM	UNC	00739-001+
ACCELERATIONS ON PACKAGES STORED IN SHIPS HOLDS	UNC	00740-001+
ACCELERATION, EXPECTED PEAK VALUES, MARINE	UNC	00741-001+
SHIP MOTIONS, SS SILVER MARINER, NEW YORK-BREMERHAVEN, GERMANY	UNC	00746-001+
SHIP MOTIONS, T-2 TANKER, ESSO ASHVILLE, NORMAL OPERATIONS	UNC	00747-001+
WAVE HEIGHT DISTRIBUTION - ATLANTIC COAST	UNC	01573-004+

....ACCELERATION/TIME.....RESPONSE.....TRANSPORTATION.....AIRCRAFT.....

GUST LOAD FREQUENCY, AIRCRAFT FLIGHTS, 40-45 KILOFEET, IN STORM	UNC	01087-002+
AIRCRAFT RECORDINGS DURING A TURBULENCE INCIDENT	UNC	01090-001+

(IMPACT)

....ACCELERATION/TIME.....INPUT.....GENERAL.....OTHER.....

APPROXIMATE DURATION OF SOME SHORT ACCELERATION LOADS	UNC	00734-001+
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.....ACOUSTIC NOISE.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

SOUND PRESSURE LEVEL VS ANGLE AT 200 FEET,C124,2 ENGINES UP	UNC	00612-001+
SOUND PRESSURE LEVEL VS ANGLE AT 200 FEET,C124,3 ENGINES UP	UNC	00613-001+
OVERALL SOUND PRESSURE LEVEL VS ANGLE,C124,VARIOUS CONDITION	UNC	00614-001+
SOUND PRESSURE LEVEL,AVERAGE,COMPARISON OF C133A AND C124	UNC	00615-001+
COMPARISON OF C118,C124,C133A AND MIL-A-8806 SPL IN COCKPIT	UNC	00616-001+
SOUND PRESSURE LEVEL,OVERALL,CABIN,C133 AIRCRAFT	UNC	00617-001+
NOISE LEVELS IN VICINITY OF JET ENGINES AND NEAR 4-ENGINE AC	UNC	00618-001+
SOUND PRESSURE LEVEL,CVERALL,FOR SIX TURBOJET AIRCRAFT,100FT	UNC	00619-001+
SOUND PRESSURE LEVEL,CVERALL,FOR 5 TURBOJET AIRCRAFT,200 FT	UNC	00620-001+
SOUND PRESSURE LEVEL,CVERALL,FOR 4 TURBOJET AIRCRAFT,400 FT	UNC	00621-001+
SOUND PRESSURE LEVEL,CVERALL,2 TURBOJET A/C,WITH AFTERBURNER	UNC	00622-001+
SOUND PRESSURE LEVEL,CVERALL,MAXIMUM,4 USAF TURBOJET A/C	UNC	00623-001+
NOISE SPECTRUM OF TURBOJET WITH AFTERBURNER	UNC	00827-001+
NOISE, HH43 HELICOPTER, TAKEOFF, HOVER, LANDING	UNC	01564-001+

.....ACOUSTIC NOISE.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

CONTROL OF HIGHWAY NOISE	UNC	01134-003+
ACOUSTIC NOISE SOURCES, TRUCK	UNC	01606-001+
NOISE, TRANSPORTATION, SURFACE AND AIR	UNC	01624-001+

..ATMOSPHERIC CONTENTS.....INPUT.....GENERAL.....OTHER.....

ENVIRONMENT CONDITIONS PREVAILING DURING TRANSIT	UNC	00078-001+
SALT SPRAY PARTICLES IN AIR,DISTRIBUTION,CONCENTRATION,SIZE	UNC	00274-001+
SAND AND DUST-CHARACTERISTICS	UNC	01274-002+

..ATMOSPHERIC CONTENTS.....INPUT.....STORAGE.....OTHER.....

AIRBORNE PARTICULATES	UNC	01568-001+
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..ATMOSPHERIC CONTENTS.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

SAND/DUST IN HELICOPTER/VSTOL A/C FLIGHTS	UNC	01084-005+
FREQUENCY OF OCCURENCE OF AIRCRAFT ICING PARAMETERS	UNC	01089-002+

..ATMOSPHERIC CONTENTS.....INPUT.....TRANSPORTATION.....SHIP.....

SFA SALT ENVIRONMENT ON DECK AT SEA	UNC	01179-002+
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..... HUMIDITY..... INPUT..... GENERAL..... OTHER.....

ENVIRONMENT CONDITIONS PREVAILING DURING TRANSIT	UNC	00078-001+
HUMIDITY, RELATIVE, IN DESERT, TROPICS, ARCTIC AND IN SHIPHOLDS	UNC	00229-001+
HUMIDITY EXTREMES, PROBABLE, FOR STORAGE AND TRANSIT	UNC	00230-001+

..... HUMIDITY..... INPUT..... TRANSPORTATION..... SHIP.....

TEMPERATURES AND RELATIVE HUMIDITY, SHIP HOLD	UNC	00058-001+
HUMIDITY, RELATIVE, ABOARD SHIP	UNC	00232-001+

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HAILSTONES, SIZE, TERMINAL VELOCITIES, DISTRIBUTION OF	UNC	00250-001+
HAIL, FREQUENCY AND DISTRIBUTION OF, FLIGHT THRU THUNDERSTORM	UNC	00251-001+
ELECTROSTATIC FIELDS IN THE ATMOSPHERE	UNC	00459-002+
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HAILSTONE EXTREMES	UNC	01513-001+
GLAZE ICE, WIND LOADS AT EARTH'S SURFACE	UNC	01722-001+

..... PRECIPITATION..... INPUT..... TRANSPORTATION..... AIRCRAFT.....

STATIC ELECTRICITY ACCUMULATION ON HELICOPTERS	UNC	00463-001+
FREQUENCY OF OCCURENCE OF AIRCRAFT ICING PARAMETERS	UNC	01089-002+

..... PRECIPITATION..... INPUT..... TRANSPORTATION..... OTHER.....

RAINFALL INTENSITY, DURATION, HAWAII	UNC	01761-001+
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.....PRESSURE.....INPUT.....GENERAL.....OTHER.....

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TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+
TYPHOON REPORT - PACIFIC OCEAN - 1966	UNC	01808-003+
TYPHOON REPORT - PACIFIC OCEAN - 1967	UNC	01809-003+
TYPHOON REPORT - PACIFIC OCEAN - 1968	UNC	01810-004+
TYPHOON REPORT - PACIFIC OCEAN - 1969	UNC	01811-002+
TYPHOON REPORT - PACIFIC OCEAN - 1970	UNC	01812-003+
TYPHOON REPORT - PACIFIC OCEAN - 1974	UNC	01813-003+

.....PRESSURE.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

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PERFORMANCE AND LOADING-C133A	UNC	00149-001+
FLIGHT PROFILE,NORMAL,C133 CARGO AIRCRAFT	UNC	00150-001+
FLIGHT PROFILE,NORMAL,C124 CARGO AIRCRAFT	UNC	00151-001+

.....RADIATION.....INPUT.....GENERAL.....OTHER.....

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ELECTROSTATIC FIELDS IN THE ATMOSPHERE	UNC	00459-002+
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RADIATION,SOLAR,AT EARTH S SURFACE AND ATMOSPHERE S EDGE	UNC	00479-003+
RADIATION DATA,SOLAR	UNC	00480-001+
RADIATION,MEAN DAILY TOTAL,FLAT SURFACE,LOCATIONS,US/CANADA	UNC	00495-004+
INSOLATION,MONTHLY MAPS OF MEAN DAILY,FOR THE UNITED STATES	UNC	00831-006+
LIGHTNING CHARACTERISTICS	UNC	01107-009+

.....RADIATION.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

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HELICOPTER STATIC ELECTRICITY MEASUREMENTS	UNC	00503-003+

.....RADIATION.....INPUT.....TRANSPORTATION.....RAILROAD.....

TEMPERATURE,INTERNAL AIR,RAILROAD BOXCAR IN DESERT	UNC	00056-001+
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(LIGHTNING)

.....RADIATION.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

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.....SHOCK.....INPUT.....HANDLING.....OTHER.....

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SHOCK, INPUT, 3000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01746-057+
SHOCK, INPUT, 4000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01749-058+
SHOCK, VIBRATION, 7000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01752-041+

.....SHOCK.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

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SHOCK DATA, UNION CARBIDE TRUCK TEST	UNC	01314-013+

.....SHOCK.....INPUT.....TRANSPORTATION.....RAILROAD.....

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ATMX CAR SHOCK CRITERIA SUMMARY	UNC	B1210-002+
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SHOCK SPECTRA SUMMARY, SIX-ATMX CAR TRAIN	UNC	C1215-012+
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SPEED, HUMPING, FREQUENCY OF IMPACTS AT VARIOUS	UNC	00289-001+
RAIL SWITCHING AND HUMPING OPERATIONS	UNC	00290-001+

.....SHOCK.....INPUT.....TRANSPORTATION.....RAILROAD.....

SHOCK DATA,RAILROAD SWITCHING	UNC	00293-002+
SHOCK DATA,RAILROAD SWITCHING	UNC	00294-002+
SHOCK DATA,RAILROAD SWITCHING	UNC	00295-002+
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SHOCK DATA,RAIL/BOXCAR/	UNC	00297-001+
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SHOCK,RAILROAD HUMMING	UNC	00302-005+
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RAIL HUMMING TEST,500 SERIES ATMX CAR	UNC	00305-008+
IMPACT SPEED VS HORIZONTAL TRAVEL OF STRUCK EMPTY CAR	UNC	00309-001+
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SHOCK, RAIL HUMMING 3.4 TO 10 MPH, 3 DIRECTIONS	UNC	01033-010+
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SHOCK SPECTRA,BOXCAR,VERTICAL AXIS	UNC	01205-064+
SHOCK SPECTRA,BOXCAR, LATERAL AXIS	UNC	01206-059+
SHOCK SPECTRA,SERIES 500 ATMX CAR, LONGITUDINAL AXIS	UNC	01211-081+
SHOCK SPECTRA,SERIES 500 ATMX CAR, VERTICAL AXIS	UNC	01212-053+
SHOCK SPECTRA,500 SERIES ATMX CAR, LATERAL AXIS	UNC	01213-018+
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SHOCK SPECTRA,HAMMER CAR,SIX-ATMX CAR TRAIN	UNC	01216-098+
SHOCK SPECTRA,1ST STRUCK CAR,SIX-ATMX CAR TRAIN	UNC	01217-028+
SHOCK SPECTRA,2ND STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01218-015+
SHOCK SPECTRA,3RD STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01219-085+
SHOCK SPECTRA,4TH STRUCK CAR,SIX-ATMX CAR TRAIN	UNC	01220-015+
SHOCK SPECTRA,5TH STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01221-015+
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SHOCK DATA,UNION CARBIDE RAIL TEST	UNC	01317-033+
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.....SHOCK.....INPUT.....TRANSPORTATION.....SHIP.....

SHOCK SPECTRA,SHIP,TYPICAL	UNC	00333-001+
ACCELERATION IN CARGO SHIPS DURING MANEUVERS	UNC	01133-003+

.....SHOCK.....INPUT.....TRANSPORTATION.....OTHER.....

SUMMARY, DYNAMIC ENVIRONMENT OF TRANSPORTATION - 1972	UNC	A1354-018+
SHOCK AND ACCELERATION DATA FOR VARIOUS MEANS OF TRANSPORT	UNC	00344-001+
SHOCK + VIBRATION DATA OBTAINED FROM TRUCK + RAIL SHIPMENT	UNC	01002-006+

.....SHOCK.....RESPONSE.....HANDLING.....OTHER.....

SHOCK, FORKLIFT SUMMARY REPORT (SEE 1745 TO 1752)	UNC	01744-001+
SHOCK,VIBRATION, 2000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01745-047+

.....SHOCK.....RESPONSE.....HANDLING.....OTHER.....

SHOCK, RESPONSE, 3000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01747-057+
SHOCK, RESPONSE, 4000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01750-058+
SHOCK, VIBRATION, 7000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01752-041+

.....SHOCK.....RESPONSE.....TRANSPORTATION.....AUTOMOBILE.....

SHOCK/VIBRATION SUMMARY, UNION CARBIDE TRUCK TEST	UNC	01312-007+
SHOCK DATA, UNION CARBIDE TRUCK TEST	UNC	01314-013+

.....SHOCK.....RESPONSE.....TRANSPORTATION.....RAILROAD.....

RAIL HUMP SHOCK CRITERIA SUMMARY	UNC	A1202-004+
BOXCAR SHOCK CRITERIA SUMMARY	UNC	B1203-002+
ATMX CAR SHOCK CRITERIA SUMMARY	UNC	B1210-002+
SHOCK/VIBRATION ENVIRONMENT SUMMARY, RAIL TRANSPORT	UNC	B1320-011+
SHOCK SPECTRA SUMMARY, SIX-ATMX CAR TRAIN	UNC	C1215-012+
SHOCK SPECTRA, BOXCAR, LONGITUDINAL AXIS	UNC	01204-057+
SHOCK SPECTRA, BOXCAR, VERTICAL AXIS	UNC	01205-064+
SHOCK SPECTRA, BOXCAR, LATERAL AXIS	UNC	01206-059+
SHOCK SPECTRA, SERIES 500 ATMX CAR, LONGITUDINAL AXIS	UNC	01211-081+
SHOCK SPECTRA, SERIES 500 ATMX CAR, VERTICAL AXIS	UNC	01212-053+
SHOCK SPECTRA, 500 SERIES ATMX CAR, LATERAL AXIS	UNC	01213-018+
SHOCK SPECTRA, SERIES 600 ATMX CAR, ALL AXES	UNC	01214-035+
SHOCK SPECTRA, HAMMER CAR, SIX-ATMX CAR TRAIN	UNC	01216-098+
SHOCK SPECTRA, 1ST STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01217-028+
SHOCK SPECTRA, 2ND STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01218-015+
SHOCK SPECTRA, 3RD STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01219-085+
SHOCK SPECTRA, 4TH STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01220-015+
SHOCK SPECTRA, 5TH STRUCK CAR, SIX-ATMX CAR TRAIN	UNC	01221-015+
SHOCK/VIBRATION SUMMARY, UNION CARBIDE RAIL TEST	UNC	01315-007+
SHOCK DATA, UNION CARBIDE RAIL TEST	UNC	01317-033+
SWITCHING SHOCK, CUSHION UNDERFRAME BOXCAR	UNC	01326-055+

.....SHOCK.....RESPONSE.....TRANSPORTATION.....OTHER.....

SHOCK + VIBRATION DATA OBTAINED FROM TRUCK + RAIL SHIPMENT	UNC	01003-006+
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(IMPACT)

.....SHOCK.....INPUT.....GENERAL.....OTHER.....

APPROXIMATE DURATION OF SOME SHORT ACCELERATION LOADS	UNC	00734-001+
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(IMPACT)

.....SHOCK.....INPUT.....HANDLING.....OTHER.....

MAXIMUM DROPS, PACKAGES IN TRANSIT	UNC	01608-004+
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(IMPACT)

.....SHOCK.....RESPONSE.....HANDLING.....OTHER.....

MAXIMUM DROPS, PACKAGES IN TRANSIT UNC 01608-004+

.....TEMPERATURE.....INPUT.....GENERAL.....OTHER.....

TEMPERATURE REGIME FOR DESERT REGIONS	UNC	00006-002+
TEMPERATURES, 1%-99% DESIGN, FOR UNITED STATES AND CANADA	UNC	00018-002+
ENVIRONMENT CONDITIONS PREVAILING DURING TRANSIT	UNC	00078-001+
TEMPERATURE, EXTREMES/DURATION, FOR STORAGE, HANDLING, TRANSPORT	UNC	00080-002+
TEMPERATURE EXTREMES IN TRANSIT	UNC	00084-001+
RADIATION, MEAN DAILY TOTAL, FLAT SURFACE, LOCATIONS, US/CANADA	UNC	00495-004+
TYPHOON REPORT - PACIFIC OCEAN - 1959	UNC	01802-003+
TYPHOON REPORT - PACIFIC OCEAN - 1960	UNC	01803-003+
TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

TEMPERATURES, CARGO COMPARTMENT, C119C AIRCRAFT, ALASKA, WINTER	UNC	00061-001+
TEMPERATURES, AIRCRAFT COMPARTMENT	UNC	00062-001+
TEMPERATURES, MAXIMUM/MINIMUM, IN AIR AND AIRCRAFT CARGO HOLDS	UNC	00064-001+
TEMPERATURES, COMPARTMENT, C141A	UNC	00066-001+
FREQUENCY OF OCCURENCE OF AIRCRAFT ICING PARAMETERS	UNC	01089-002+
TEMP/TIME DATA AIRCRAFT, TRUCK, TRAIN, ATMX	UNC	01288-004+

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

TEMPERATURE/TIME DATA, TRUCK (SEE 1288)	UNC	01309-004+
TEMPERATURE, TRUCK CARGO, HIGH AND LOW	UNC	01327-027+

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....RAILROAD.....

TEMPERATURE, INTERNAL AIR, RAILROAD BOXCAR IN DESERT	UNC	00056-001+
TEMPERATURE TESTS, INTERNAL, RAILROAD FREIGHT CARS WINTER	UNC	00057-001+
TEMPERATURE/TIME DATA, RAIL AND ATMX CARS (SEE 1288)	UNC	01310-004+
TEMPERATURE, HIGH, STANDING BOXCARS	UNC	01401-020+

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....SHIP.....

TEMPERATURES AND RELATIVE HUMIDITY, SHIP HOLD	UNC	00058-001+
TEMPERATURES, MAXIMUM AND MINIMUM, AT SEA	UNC	00059-001+
HUMIDITY, RELATIVE, ABOARD SHIP	UNC	00232-001+
TEMPERATURE IN SHIPS HOLDS	UNC	01262-003+

.....VIBRATION.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

DYNAMIC ENVIRONMENT,TURBOJET CARGO AIRCRAFT	UNC	A1533-CC2+
VIBRATION,MOST PROBABLE EXTREME,PROPELLER DRIVEN AIRCRAFT	UNC	B0420-001+
VIBRATION DATA,AIRCRAFT	UNC	00424-001+
VIBRATIONS,MAXIMUM LATERAL AND VERTICAL,HELICOPTER FLOOR	UNC	00433-001+
VIBRATION,KC-135 FLOOR,VERTICAL,LATERAL,LONGITUDINAL	UNC	00846-001+
VIBRATION,FLOOR,PROPELLER,JET,HELICOPTER AIRCRAFT	UNC	00847-001+
VIBRATION,H-37 HELICOPTER FLOOR,VERTICAL,LATERAL FORE/AFT	UNC	00848-001+
VIBRATION,C-123 FLOOR,LONGITUDINAL,VERTICAL,LATERAL AXES	UNC	00851-001+
VIBRATION,C-130 FLOOR,VERTICAL,LATERAL,LONGITUDINAL AXES	UNC	00852-001+
RESPONSE OF TURBOJET/PISTON ENGINE A/C TO RUNWAY ROUGHNESS	UNC	00910-006+
VIBRATION,AIR-RIDE VAN AND C-130,C-133 AIRCRAFT	UNC	01148-009+
VIBRATION NC135 AFT PASSENGER COMPARTMENT	UNC	01318-010+
VIBRATION SUMMARY,HELICOPTER,HH43,UH1,OH6,CH46,CH47	UNC	01321-009+
VIBRATION, CARGO FLOOR, UH-1 HELICOPTER	UNC	01322-007+
VIBRATION,CARGO FLOOR,OH-6 HELICOPTER	UNC	01323-007+
VIBRATION,CARGO FLOOR, CH-46 HELICOPTER	UNC	01324-043+
VIBRATION,CARGO FLOOR,CH-47 HELICOPTER	UNC	01325-031+
VIBRATION, C130A,C130B CARGO FLOOR	UNC	01356-001+
VIBRATION C130,C133 TAKE OFF AND CRUISE	UNC	01357-001+
C-133 UTILIZATION	UNC	01400-001+
VIBRATION, C5A CARGO FLOOR - SUMMARY- SEE 1440 TO 1444	UNC	01439-029+
VIBRATION, C5A CARGO FLOOR, STANDARD VIBRAN (SEE 1439)	UNC	01440-085+
VIBRATION, C5A CARGO FLOOR, FORMAT 2 VIBRAN, (SEE 1439)	UNC	01441-030+
VIBRATION, C5A CARGO FLOOR, PSD (SEE 1439)	UNC	01442-088+
VIBRATION, C5A CARGO FLOOR, PSD,(SEE 1439)	UNC	01443-095+
DYNAMIC ENVIRONMENT,C141 JET CARGO AIRCRAFT - FIRST FLIGHT	UNC	01534-024+
DYNAMIC ENVIRONMENT,C141 JET CARGO AIRCRAFT -SECOND FLIGHT	UNC	01535-032+
DYNAMIC ENVIRONMENT,C5A JET CARGO AIRCRAFT	UNC	01536-096+

.....VIBRATION.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

VIBRATION-ACCELERATIONS IN HIGHWAY OPERATION OF TRUCKS	UNC	00370-001+
VIBRATION IN ROAD VEHICLES	UNC	00374-001+
VIBRATION,MAXIMUM,ON TRUCKBED,VARIETY OF ROAD OPERATIONS	UNC	00377-001+
VIBRATION,MAXIMUM ACCELERATION IN CARGO TRUCK	UNC	00379-001+
VIBRATION DATA,TYPICAL,VAN TRAILER,NORMAL SUSPENSION	UNC	00397-001+
VIBRATION,FLAT-BED TRACTOR-TRAILER	UNC	00401-001+
VIBRATION,TRUCK FLOOR,EMPTY AND FULLY LOADED	UNC	00849-001+

.....VIBRATION.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

DYNAMIC ENVIRONMENT ON A FLAT BED TRACTOR/TRAILER (AEC/DOD)	UNC	01006-008+
FINAL ANALYSIS, AEC/DOD FLATBED TRUCK TEST	UNC	01083-041+
VIBRATION ENVIRONMENT, AEC VAN WITH TRANSIT RIG SHIPPING CONT	UNC	01245-061+
VIBRATION/SHOCK, 2 1/2 TON TRUCK	UNC	01264-008+
VIBRATION/SHOCK AIR SUSPENSION VAN	UNC	01277-006+
SHOCK/VIBRATION SUMMARY, UNION CARBIDE TRUCK TEST	UNC	01312-007+
VIBRATION DATA, UNION CARBIDE TRUCK TEST	UNC	01313-045+
VIBRATION, TRUCK, TANDEM AXLE, AIR BAG SUSPENSION	UNC	01361-001+
VIBRATION IN COMMON MOTOR CARRIERS	UNC	01742-007+

.....VIBRATION.....INPUT.....TRANSPORTATION.....RAILROAD.....

SHOCK/VIBRATION ENVIRONMENT SUMMARY, RAIL TRANSPORT	UNC	81320-011+
VIBRATION, RAIL TRANSPORT, SUMMARY OF DATA ON	UNC	00355-001+
VIBRATION DATA, RAIL	UNC	00357-001+
VIBRATION TESTS, RAILROAD, SPEED 40MPH	UNC	00358-001+
VIBRATION TESTS, RAILROAD, SPEED 73MPH	UNC	00359-001+
VIBRATION TESTS, RAILROAD, SPEED 80MPH	UNC	00360-001+
VIBRATIONS IN RAILROAD FREIGHT CARS AT SPEEDS FROM 31-73MPH	UNC	00362-001+
VIBRATIONS MEASURED ON ATMX 500 CAR AT SPEEDS 30-70MPH	UNC	00363-001+
VIBRATION ENVIRONMENT PRODUCED DURING RAIL TRANSPORT	UNC	00366-001+
VIBRATION, RAILROAD, SOFT SPRUNG CAR, VERTICAL AND LATERAL	UNC	00850-001+
VIBRATION, RAILROAD CONTINUOUS AND TRANSIENT	UNC	01031-001+
VIBRATION, RAILROAD ENVELOPES DIRECTIONAL COMPOSITES	UNC	01032-001+
SHOCK/VIBRATION SUMMARY, UNION CARBIDE RAIL TEST	UNC	01315-007+
VIBRATION DATA, UNION CARBIDE RAIL TEST	UNC	01316-065+

.....VIBRATION.....INPUT.....TRANSPORTATION.....SHIP.....

VIBRATION, MOST EXTREME PROBABLE, EXPECTED IN SEA TRANSPORT	UNC	80404-001+
VIBRATION MEASUREMENTS ON SHIPBOARD DURING TRANSPORT	UNC	00202-001+
VIBRATION DATA, SHIPS	UNC	00405-001+
VIBRATION DATA, SHIPS IN STRAIGHT RUNS AT VARIOUS SPEEDS	UNC	00407-001+
VIBRATION, SHIPBOARD, NORMAL STEAMING AND HARD TURNS	UNC	00408-001+
VIBRATION DATA, SHIPS, HIGH SPEED MANEUVER AND CRASH BACK	UNC	00409-001+
VIBRATIONS, SHIPBOARD, FROM VARIOUS SOURCES	UNC	00415-001+
VIBRATIONS, MERCHANT SHIP SS WOLVERINE STATE	UNC	00418-025+

.....VIBRATION.....INPUT.....TRANSPORTATION.....OTHER.....

SUMMARY, DYNAMIC ENVIRONMENT OF TRANSPORTATION - 1972	UNC	41354-018+
VIBRATION-MAXIMUM ACCELERATIONS FOR VARIOUS VEHICLES	UNC	00368-001+
SHOCK + VIBRATION DATA OBTAINED FROM TRUCK + RAIL SHIPMENT	UNC	01003-006+
TRANSPORTATION VIBRATION ENVIRONMENTS	UNC	01176-002+

.....VIBRATION.....RESPONSE.....HANDLING.....OTHER.....

SHOCK, FORKLIFT SUMMARY REPORT (SEE 1745 TO 1752)	UNC	01744-001+
SHOCK,VIBRATION, 2000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01745-047+
VIBRATION, INPUT/RESPONSE,3000 LB FORKLIFT (SEE 1744)	UNC	01748-075+
VIBRATION,INPUT/RESPONSE, 4000 LB FORKLIFT (SEE 1744)	UNC	01751-061+
SHOCK, VIBRATION, 7000 LB FORKLIFT TRUCK (SEE 1744)	UNC	01752-041+

.....VIBRATION.....RESPONSE....TRANSPORTATION.....AIRCRAFT.....

VIBRATION NC135 AFT PASSENGER COMPARTMENT	UNC	01318-010+
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.....VIBRATION.....RESPONSE....TRANSPORTATION.....AUTOMOBILE.....

VIBRATION ENVIRONMENT,AEC VAN WITH TRANSIT RIG SHIPPING CONT	UNC	01245-061+
SHOCK/VIBRATION SUMMARY,UNION CARBIDE TRUCK TEST	UNC	01312-007+
VIBRATION DATA, UNION CARBIDE TRUCK TEST	UNC	01313-045+

.....VIBRATION.....RESPONSE....TRANSPORTATION.....RAILROAD.....

SHOCK/VIBRATION ENVIRONMENT SUMMARY, RAIL TRANSPORT	UNC	01320-011+
SHOCK/VIBRATION SUMMARY,UNION CARBIDE RAIL TEST	UNC	01315-007+
VIBRATION DATA,UNION CARBIDE RAIL TEST	UNC	01316-065+

.....VIBRATION.....RESPONSE....TRANSPORTATION.....OTHER.....

SHOCK + VIBRATION DATA OBTAINED FROM TRUCK + RAIL SHIPMENT	UNC	01003-006+
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.....WIND.....INPUT.....GENERAL.....OTHER.....

ENVIRONMENT CONDITIONS PREVAILING DURING TRANSIT	UNC	00078-001+
WIND VELOCITIES, WORLDWIDE, AND DISTRIBUTION IN TEMPERATE ZONE	UNC	00258-001+
WIND SPEED DISTRIBUTION IN THE UNITED STATES	UNC	01595-005+
GLAZE ICE, WIND LOADS AT EARTH'S SURFACE	UNC	01722-001+

.....WIND.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

FATIGUE DAMAGE PARAMETERS, TRANSPORT AIRCRAFT	UNC	01085-001+
GUST LOAD FREQUENCY, AIRCRAFT FLIGHTS, 40-45 KILOFEET, IN STORM	UNC	01087-002+
AIRCRAFT RECORDINGS DURING A TURBULENCE INCIDENT	UNC	01090-001+

.....WIND.....RESPONSE.....TRANSPORTATION.....AIRCRAFT.....

GUST LOAD FREQUENCY, AIRCRAFT FLIGHTS, 40-45 KILOFEET, IN STORM	UNC	01087-002+
AIRCRAFT RECORDINGS DURING A TURBULENCE INCIDENT	UNC	01090-001+

(STORM)

.....WIND.....INPUT.....GENERAL.....OTHER.....

WIND AND WAVE HEIGHTS - TROPICAL STORMS	UNC	01636-002+
TYPHOON REPORT - PACIFIC OCEAN - 1959	UNC	01802-003+
TYPHOON REPORT - PACIFIC OCEAN - 1960	UNC	01803-003+
TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+
TYPHOON REPORT - PACIFIC OCEAN - 1966	UNC	01808-003+
TYPHOON REPORT - PACIFIC OCEAN - 1967	UNC	01809-003+
TYPHOON REPORT - PACIFIC OCEAN - 1968	UNC	01810-004+
TYPHOON REPORT - PACIFIC OCEAN - 1969	UNC	01811-002+
TYPHOON REPORT - PACIFIC OCEAN - 1970	UNC	01812-003+
TYPHOON REPORT - PACIFIC OCEAN - 1974	UNC	01813-003+

Abnormal Environments

(EARTHQUAKE)	ACCELERATION/TIME.....INPUT.....GENERAL.....OTHER.....		
	EARTHQUAKES IN THE UNITED STATES	UNC	00948-004+
	EARTHQUAKE, STRONG MOTION - ACCELOGRAMS G VS TIME	UNC	01526-004+
	EARTHQUAKE, STRONG MOTION - ACCELOGRAMS G VS TIME	UNC	01527-004+
	EARTHQUAKE - ROCK MOTION ACCELOGRAMS G VS TIME, DISTANCE	UNC	01528-001+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS - PART F	UNC	01570-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS - PART C	UNC	01571-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS - PART H	UNC	01572-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS- VOL I,PT I, DATA	UNC	01600-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS- VOL I,PT J, DATA	UNC	01601-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS- VOL I,PT K, DATA	UNC	01602-004+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS-VOL III,RES. SPECTRA	UNC	01603-003+
	STRONG MOTION EARTHQUAKE ACCELOGRAMS-VOL IV,FOURIER SPECTRA	UNC	01604-002+
	EARTHQUAKE, ANCHORAGE, 1964(ENGINEERING INFORMATION	UNC	01661-002+
(IMPACT)	ACCELERATION/TIME.....INPUT.....GENERAL.....OTHER.....		
	APPROXIMATE DURATION OF SOME SHORT ACCELERATION LOADS	UNC	00734-001+
(IMPACT)	ACCELERATION/TIME.....INPUT.....TRANSPORTATION.....AIRCRAFT.....		
	ANALYSIS OF DIRECTION OF LOADS IN AIRCRAFT ACCIDENTS	UNC	00751-001+
	ACCELERATION OF FLOOR-AIRCRAFT CRASHES	UNC	00752-001+
	ACCELERATION,AIRCRAFT CRASH-VARIOUS ANGLES OF IMPACT	UNC	00753-008+
	FLOOR ACCELERATIONS, TRANSPORT AIRCRAFT ACCIDENTS	UNC	01629-001+
	CIVIL AVIATION ACCIDENT DATA - 1962 TO 1972	UNC	01664-009+
	AIRCRAFT ACCIDENT - BOEING 707 -8/28/73	UNC	01801-001+
	AIRCRAFT ACCIDENT - BOEING 747 - 4/12/72	UNC	01818-001+
(IMPACT)	ACCELERATION/TIME.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....		
	ACCELERATIONS,AUTOMOBILE CRASH (HEAD-ON)	UNC	00737-001+
	DECELERATION PATTERNS FOR AUTOMOBILE HEAD-ON COLLISIONS	UNC	00738-001+
(IMPACT)	ACCELERATION/TIME.....INPUT.....TRANSPORTATION.....RAILROAD.....		
	RAIL ACCIDENT STATISTICS	UNC	01020-025+

(PUNCTURE)FRAGMENTATION.....INPUT.....GENERAL.....OTHER.....
FRAGMENTS, MASS, VELOCITY, STANDARD ARTILLERY SHELLS UNC 01814-CC2+

(PUNCTURE)FRAGMENTATION.....INPUT.....TRANSPORTATION.....AIRCRAFT.....
ROTOR FRAGMENT CONTAINMENT-JET ENGINE FAILURE - 1972 UNC 01781-010+

(PUNCTURE)FRAGMENTATION.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....
MOTOR CARRIER ACCIDENT ENVIRONMENT - TAC STUDY UNC A1662-007+
TRUCK ACCIDENT-FLORIDA-8/8/71 UNC 01695-003+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 7 UNC 01753-005+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 8 UNC 01754-004+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 9 UNC 01755-005+

(PUNCTURE)FRAGMENTATION.....INPUT.....TRANSPORTATION.....RAILROAD.....
RAILROAD ACCIDENT ENVIRONMENT - TAC STUDY UNC A1663-006+

(PUNCTURE)FRAGMENTATION.....INPUT.....TRANSPORTATION.....SHIP.....
IMPACT, PENETRATION, SHIP COLLISION AND GROUNDING UNC 01550-001+

(PUNCTURE)FRAGMENTATION.....RESPONSE.....TRANSPORTATION.....AUTOMOBILE.....
CARGO RESPONSE TRUCK AND RAIL ACCIDENTS UNC 01688-002+
TRUCK ACCIDENT-FLORIDA-8/8/71 UNC 01695-003+

(PUNCTURE)FRAGMENTATION.....RESPONSE.....TRANSPORTATION.....RAILROAD.....
CARGO RESPONSE TRUCK AND RAIL ACCIDENTS SEE EDB1688 UNC 01699-002+

(EXPLOSION)FRAGMENTATION.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....
TRUCK ACCIDENT-NEW JERSEY 9/21/72 UNC 01690-003+
TRUCK ACCIDENT-GEORGIA-6/4/71 UNC 01694-003+
TRUCK ACCIDENT-VIRGINIA-3/9/72 UNC 01696-003+

.....PRESSURE.....INPUT.....GENERAL.....OTHER.....

TYPHOON REPORT - PACIFIC OCEAN - 1959	UNC	01802-003+
TYPHOON REPORT - PACIFIC OCEAN - 1960	UNC	01803-003+
TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+
TYPHOON REPORT - PACIFIC OCEAN - 1966	UNC	01808-003+
TYPHOON REPORT - PACIFIC OCEAN - 1967	UNC	01809-003+
TYPHOON REPORT - PACIFIC OCEAN - 1968	UNC	01810-004+
TYPHOON REPORT - PACIFIC OCEAN - 1969	UNC	01811-002+
TYPHOON REPORT - PACIFIC OCEAN - 1970	UNC	01812-003+
TYPHOON REPORT - PACIFIC OCEAN - 1974	UNC	01813-003+

(CRUSH)

.....PRESSURE.....RESPONSE.....TRANSPORTATION.....AUTOMOBILE.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS	UNC	01688-002+
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(CRUSH)

.....PRESSURE.....RESPONSE.....TRANSPORTATION.....RAILROAD.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS SEE EDB1688	UNC	01699-002+
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(IMMERSION)

.....PRESSURE.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

A/C ACCIDENT DEHAVILLAND DHC 16 FEB 1970	UNC	01679-003+
A/C ACCIDENT DC9 MAY 1970	UNC	01682-003+
A/C ACCIDENT SKYVAN SERIES 3 JULY 1970	UNC	01683-003+

(EXPLOSION)

.....PRESSURE.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

HYDROGEN TRANSPORT AND HANDLING EXPLOSION	UNC	01758-001+
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(EXPLOSION)

.....PRESSURE.....INPUT.....TRANSPORTATION.....RAILROAD.....

RAIL ACCIDENT, EAST ST LOUIS, ILLINOIS - 1/22/72	UNC	01706-003+
RAIL ACCIDENT, CRETE, NEBRASKA - 2/18/69	UNC	01707-003+
RAIL ACCIDENT, HOUSTON, TEXAS - 10/19/71	UNC	01708-001+
RAIL ACCIDENT - ONEONTA, NY - 2/12/74	UNC	01782-004+

(LIGHTNING)	RADIATION.....INPUT.....GENERAL.....OTHER.....		
	VOLTAGE AND CURRENT CHARACTERISTICS OF LIGHTNING STRIKE	UNC	00464-002+
	PROPERTIES OF LIGHTNING STROKES	UNC	00999-001+
(LIGHTNING)	RADIATION.....INPUT.....TRANSPORTATION.....AIRCRAFT.....		
	LIGHTNING THREAT TO AIRCRAFT	UNC	01000-002+
	LIGHTNING HAZARD TO AIRCRAFT	UNC	01415-006+
(CRUSH)	SHOCK.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....		
	MOTOR CARRIER ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1662-007+
	TRUCK ACCIDENT REPORTS, NHTSA, NO. 7	UNC	01753-005+
	TRUCK ACCIDENT REPORTS, NHTSA, NO. 8	UNC	01754-004+
	TRUCK ACCIDENT REPORTS, NHTSA, NO. 9	UNC	01755-005+
(CRUSH)	SHOCK.....INPUT.....TRANSPORTATION.....RAILROAD.....		
	RAILROAD ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1663-006+
(IMPACT)	SHOCK.....INPUT.....GENERAL.....OTHER.....		
	APPROXIMATE DURATION OF SOME SHORT ACCELERATION LOADS	UNC	00734-001+
(IMPACT)	SHOCK.....INPUT.....HANDLING.....OTHER.....		
	IMPACTS DUE TO LARGE DROPS WHEN LOADING	UNC	00342-001+
	MAXIMUM DROPS, PACKAGES IN TRANSIT	UNC	01608-004+

(IMPACT)SHOCK.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

AIRCRAFT ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1630-004+
ANALYSIS OF DIRECTION OF LOADS IN AIRCRAFT ACCIDENTS	UNC	00751-001+
ACCELERATION OF FLOOR-AIRCRAFT CRASHES	UNC	00752-001+
ACCELERATION, AIRCRAFT CRASH-VARIOUS ANGLES OF IMPACT	UNC	00753-008+
CRASH TEST, DC-7 AIRCRAFT	UNC	01104-007+
CRASH TEST, CONSTELLATION AIRCRAFT	UNC	01105-018+
FLOOR ACCELERATIONS, TRANSPORT AIRCRAFT ACCIDENTS	UNC	01629-001+
CIVIL AVIATION ACCIDENT DATA - 1962 TO 1972	UNC	01664-009+
ANALYSIS OF CARGO A/C CRASH RECORDS CAB DATA	UNC	01668-005+
CRASH IMPACT CONDITIONS, MULTI ENGINE TRANSPORT A/C	UNC	01670-029+
SURVEY OF A/C CRASH SURVIVABILITY, CARGO AT A/C CG	UNC	01671-004+
ACCIDENT DATA, MULTIENGINE AIRCRAFT	UNC	01672-010+
A/C ACCIDENT DC8 62 SEPT 1970	UNC	01676-003+
A/C ACCIDENT MARTIN 404 OCT 1970	UNC	01677-003+
A/C ACCIDENT CONVAIR 580 DEC 1968	UNC	01678-003+
A/C ACCIDENT DEHAVILLAND DHC 16 FEB 1970	UNC	01679-003+
A/C ACCIDENT DOUGLAS C54D APRIL 1970	UNC	01680-003+
A/C ACCIDENT DC 9 JAN 1970	UNC	01681-003+
A/C ACCIDENT DC9 MAY 1970	UNC	01682-003+
A/C ACCIDENT SKYVAN SERIES 3 JULY 1970	UNC	01683-003+
A/C ACCIDENT DC9 32 SEPT 1970	UNC	01684-003+
A/C ACCIDENT DC8 63F SEPT 1970	UNC	01686-003+
AIRCRAFT ACCIDENT REPORTS - NTSB - 1972	UNC	01724-002+
AIRCRAFT ACCIDENTS, TYPE, RATE, NTSB 1970	UNC	01756-002+
AIRCRAFT ACCIDENTS, TYPE, RATE, NTSB 1973	UNC	01757-001+
AIRCRAFT ACCIDENT - BOEING 707 - 1/16/74	UNC	01800-001+

(IMPACT)SHOCK.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

AIRCRAFT CRASH ENVIRONMENTS - NAVY	UNC	01819-001+
AIRCRAFT ACCIDENT - CONVAIR 600 - 9/27/73	UNC	01820-001+
AIRCRAFT MIDAIR COLLISIONS	UNC	01822-002+
AIRCRAFT DITCHING INVESTIGATION	UNC	01823-002+

(IMPACT)

.....SHOCK.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

ACCELERATIONS,AUTOMOBILE CRASH (HEAD-ON)	UNC	00737-001+
DECELERATION PATTERNS FOR AUTOMOBILE HEAD-ON COLLISIONS	UNC	00738-001+
ACCIDENT REPORT, TRUCK - VENTURA, CALIFORNIA, 8-18-71	UNC	01659-003+
TRUCK ACCIDENT SPEEDS-A SUMMARY	UNC	01687-002+
TRUCK ACCIDENT-NEW JERSEY 9/21/72	UNC	01690-003+
TRUCK ACCIDENT-ARIZONA 8/31/70	UNC	01691-003+
TRUCK ACCIDENT-VIRGINIA 4/13/72	UNC	01692-003+
TRUCK ACCIDENT-PENN-9/5/71	UNC	01693-003+
TRUCK ACCIDENT-GEORGIA-6/4/71	UNC	01694-003+
TRUCK ACCIDENT-FLORIDA-8/8/71	UNC	01695-003+
TRUCK ACCIDENT-VIRGINIA-3/9/72	UNC	01696-003+
TRUCK ACCIDENT-TENN-5/13/72	UNC	01697-002+
STATISTICAL STUDY OF TRUCK ACCIDENT SPEEDS	UNC	01698-012+
RAIL/ROAD VEHICLE ACCIDENT, OKLAHOMA - 4/5/71-SEE 1710	UNC	01711-001+
RAIL/ROAD VEHICLE ACCIDENT, NEW YORK -3/24/72	UNC	01712-003+
RAIL/ROAD VEHICLE ACCIDENT, ILLINOIS -1/24/70-SEE 1714	UNC	01715-001+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 7	UNC	01753-005+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 8	UNC	01754-004+
TRUCK ACCIDENT REPORTS, NHTSA, NO. 9	UNC	01755-005+
TRUCK ACCIDENT REPORTS - BOSTON UNIV., 1973	UNC	01770-004+
TRUCK ACCIDENT REPORTS - NHTSA, NO. 3	UNC	01771-003+
RAIL-HIGHWAY GRADE CROSSING ACCIDENTS, 1972 (SEE 1775)	UNC	01776-001+
RAIL-HIGHWAY GRADE CROSSING ACCIDENTS, 1973 (SEE 1777)	UNC	01778-001+
TRUCK ACCIDENT - TENNESSEE - 8/27/73	UNC	01783-001+
TRUCK ACCIDENT - VIRGINIA - 4/13/72	UNC	01784-002+
TRUCK ACCIDENT - TEXAS - 3/7/73	UNC	01785-002+
TRUCK ACCIDENT - IOWA - 4/3/73	UNC	01786-001+
TRUCK ACCIDENT - VIRGINIA - 3/28/74	UNC	01787-003+
TRUCK ACCIDENT - MASSACHUSETTS - 10/18/73	UNC	01788-002+

(IMPACT)

.....SHOCK.....INPUT.....TRANSPORTATION.....RAILROAD.....

RAILROAD ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1663-006+
RAIL ACCIDENT STATISTICS	UNC	01020-025+
COLLISIONS,RAIL,HEAD ON AND REAR END	UNC	01665-006+
RAIL ACCIDENT STATISTICS, 1969	UNC	01666-002+
RAIL ACCIDENT STATISTICS, 1971	UNC	01667-002+
ACCIDENT DATA RAILROAD 1952 THRU 1955	UNC	01673-001+
RAIL ACCIDENT TANK CAR RUPTURE, FIRE	UNC	01675-036+

(IMPACT)SHOCK.....INPUT.....TRANSPORTATION.....RAILROAD.....

TRANSPORT ACCIDENTS OF RAM 1948-1965 SEE EDB 1689	UNC	01700-011+
RAIL ACCIDENT, COTULLA, TEXAS - 12/1/73	UNC	01701-001+
RAIL ACCIDENT, INDIO, CALIFORNIA - 6/25/73	UNC	01702-001+
RAIL ACCIDENT, SALEM, ILLINOIS - 6/10/71	UNC	01703-002+
RAIL ACCIDENT, MAQUIN, ILLINOIS - 5/24/72	UNC	01704-001+
RAIL ACCIDENT, TAFT, LOUISIANA - 2/21/73	UNC	01705-006+
RAIL ACCIDENT, EAST ST LOUIS, ILLINOIS - 1/22/72	UNC	01706-003+
RAIL ACCIDENT, CRETE, NEBRASKA - 2/18/69	UNC	01707-003+
RAIL ACCIDENT, HOUSTON, TEXAS - 10/19/71	UNC	01708-001+
RAIL ACCIDENT, HERNDON, PENNSYLVANIA - 3/12/72	UNC	01709-003+
RAIL/ROAD VEHICLE ACCIDENT, OKLAHOMA - 4/5/71	UNC	01710-002+
RAIL/ROAD VEHICLE ACCIDENT, NEW YORK - 3/24/72-SEE 1712	UNC	01713-001+
RAIL/ROAD VEHICLE ACCIDENT, ILLINOIS - 1/24/70	UNC	01714-002+
FREIGHT TRAIN ACCIDENTS, NUMBER OF CARS INVOLVED	UNC	01729-007+
RAIL-HIGHWAY GRADE CROSSING ACCIDENTS, 1972	UNC	01775-002+
RAIL-HIGHWAY GRADE CROSSING ACCIDENTS, 1973	UNC	01777-002+
RAIL ACCIDENT - ONEONTA, NY - 2/12/74	UNC	01782-004+

(IMPACT)SHOCK.....INPUT.....TRANSPORTATION.....SHIP.....

IMPACT, PENETRATION, SHIP COLLISION AND GROUNDING	UNC	01550-001+
COLLISION - TUG/BARGE WITH BRIDGE	UNC	01725-001+

(IMPACT)SHOCK.....RESPONSE.....HANDLING.....OTHER.....

MAXIMUM DROPS, PACKAGES IN TRANSIT	UNC	01608-004+
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(IMPACT)SHOCK.....RESPONSE.....TRANSPORTATION.....AIRCRAFT.....

SHOCK SPECTRA, STAGED A/C CRASH TESTS	UNC	01669-018+
SURVEY OF A/C CRASH SURVIVABILITY, CARGO AT A/C CG	UNC	01671-004+

(IMPACT)SHOCK.....RESPONSE.....TRANSPORTATION.....AUTOMOBILE.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS	UNC	01688-002+
TRANSPORT ACCIDENTS OF RAM 1948 TO 1965-UNITED KINGDOM	UNC	01689-011+
TRUCK ACCIDENT-FLORIDA-8/8/71	UNC	01695-003+

(IMPACT)SHOCK.....RESPONSE.....TRANSPORTATION.....RAILROAD.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS SEE EDB 1688	UNC	01699-002+
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.....TEMPERATURE.....INPUT.....GENERAL.....OTHER.....

TYPHOON REPORT - PACIFIC OCEAN - 1959	UNC	01802-003+
TYPHOON REPORT - PACIFIC OCEAN - 1960	UNC	01803-003+
TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+

(FIRE)

.....TEMPERATURE.....INPUT.....GENERAL.....OTHER.....

FIRES, LIQUID HYDROCARBON FUEL, HEAT TRANSFER IN	UNC	00517-011+
BURNING CONDITIONS OF PETROLEUM LIQUIDS	UNC	00518-001+

(FIRE)

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

AIRCRAFT ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1630-004+
CIVIL AVIATION ACCIDENT DATA - 1962 TO 1972	UNC	01664-009+
FIRE INFORMATION AIRCRAFT ACCIDENTS	UNC	01674-002+
A/C ACCIDENT MARTIN 404 OCT 1970	UNC	01677-003+
A/C ACCIDENT CONVAIR 580 DEC 1968	UNC	01678-003+
A/C ACCIDENT DOUGLAS C54D APRIL 1970	UNC	01680-003+
A/C ACCIDENT 747 12 SEPT 1970	UNC	01685-003+
A/C ACCIDENT DC8 63F SEPT 1970	UNC	01686-003+
AIRCRAFT ACCIDENT REPORTS - NTSB - 1972	UNC	01724-002+
AIRCRAFT ACCIDENTS, TYPE, RATE, NTSB 1970	UNC	01756-002+
AIRCRAFT ACCIDENTS, TYPE, RATE, NTSB 1973	UNC	01757-001+
AIRCRAFT ACCIDENT - BCEING 707 - 1/16/74	UNC	01800-001+
AIRCRAFT ACCIDENT - DC 8 - 6/20/73	UNC	01821-001+

(FIRE)

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....AUTOMOBILE.....

MOTOR CARRIER ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1662-007+
FIRE TEMPERATURES-TRUCK	UNC	00520-001+
ACCIDENT REPORT, TRUCK - VENTURA, CALIFORNIA, 8-18-71	UNC	01659-003+
TRUCK ACCIDENT-VIRGINIA 4/13/72	UNC	01692-003+
TRUCK ACCIDENT-PENN-9/5/71	UNC	01693-003+
TRUCK ACCIDENT-TENN-5/13/72	UNC	01697-002+
TRUCK ACCIDENT REPORTS, NHTSA, NJ. 8	UNC	01754-004+
HYDROGEN TRANSPORT AND HANDLING EXPLOSION	UNC	01758-001+
TRUCK ACCIDENT - VIRGINIA - 4/13/72	UNC	01784-002+
TRUCK ACCIDENT - TEXAS - 3/7/73	UNC	01785-002+
TRUCK ACCIDENT - MASSACHUSETTS - 10/18/73	UNC	01788-002+

(FIRE)

.....TEMPERATURE.....INPUT.....TRANSPORTATION.....RAILROAD.....

RAILROAD ACCIDENT ENVIRONMENT - TAC STUDY	UNC	A1663-006+
FIRE TEMPERATURES-RAIL	UNC	00519-001+

(FIRE)TEMPERATURE.....INPUT.....TRANSPORTATION.....RAILROAD.....

ACCIDENT DATA RAILROAD 1952 THRU 1955	UNC	01673-001+
RAIL ACCIDENT TANK CAR RUPTURE, FIRE	UNC	01675-036+
TRANSPORT ACCIDENTS OF RAM 1948-1965 SEE FDB 1689	UNC	01700-011+
RAIL ACCIDENT, COTULLA, TEXAS - 12/1/73	UNC	01701-001+
RAIL ACCIDENT, INDIO, CALIFORNIA - 6/25/73	UNC	01702-001+
RAIL ACCIDENT, SALEM, ILLINOIS - 6/10/71	UNC	01703-002+
RAIL ACCIDENT, MAQUIN, ILLINOIS - 5/24/72	UNC	01704-001+
RAIL ACCIDENT, TAFT, LOUISIANA - 2/21/73	UNC	01705-006+
RAIL ACCIDENT, EAST ST LOUIS, ILLINOIS - 1/22/72	UNC	01706-003+
RAIL ACCIDENT, HOUSTON, TEXAS - 10/19/71	UNC	01708-001+
RAIL ACCIDENT, HERNDON, PENNSYLVANIA - 3/12/72	UNC	01709-003+
FREIGHT TRAIN ACCIDENTS, NUMBER OF CARS INVOLVED	UNC	01729-007+
RAIL ACCIDENT - ONEONTA, NY - 2/12/74	UNC	01782-004+

(FIRE)TEMPERATURE.....INPUT.....TRANSPORTATION.....SHIP.....

FIRE TEMPERATURES-SHIP	UNC	00521-001+
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(FIRE)TEMPERATURE.....RESPONSE.....TRANSPORTATION.....AUTOMOBILE.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS	UNC	01688-002+
TRANSPORT ACCIDENTS OF RAM 1948 TO 1965-UNITED KINGDOM	UNC	01689-011+

(FIRE)TEMPERATURE.....RESPONSE.....TRANSPORTATION.....RAILROAD.....

CARGO RESPONSE TRUCK AND RAIL ACCIDENTS SEE FDB1688	UNC	01699-002+
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.....WIND.....INPUT.....TRANSPORTATION.....AIRCRAFT.....

HELICOPTER DOWNWASH DATA	UNC	01760-001+
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(STORM)WIND.....INPUT.....GENERAL.....OTHER.....

TORNADOES, FREQUENCY AND LOCATION - UNITED STATES	UNC	01541-011+
WIND AND WAVE HEIGHTS - TROPICAL STORMS	UNC	01636-002+
TYPHOON REPORT - PACIFIC OCEAN - 1959	UNC	01802-003+
TYPHOON REPORT - PACIFIC OCEAN - 1960	UNC	01803-003+
TYPHOON REPORT - PACIFIC OCEAN - 1961	UNC	01804-003+
TYPHOON REPORT - PACIFIC OCEAN - 1962	UNC	01805-004+
TYPHOON REPORT - PACIFIC OCEAN - 1963	UNC	01806-003+
TYPHOON REPORT - PACIFIC OCEAN - 1965	UNC	01807-003+
TYPHOON REPORT - PACIFIC OCEAN - 1966	UNC	01808-003+
TYPHOON REPORT - PACIFIC OCEAN - 1967	UNC	01809-003+
TYPHOON REPORT - PACIFIC OCEAN - 1968	UNC	01810-004+
TYPHOON REPORT - PACIFIC OCEAN - 1969	UNC	01811-002+
TYPHOON REPORT - PACIFIC OCEAN - 1970	UNC	01812-003+
TYPHOON REPORT - PACIFIC OCEAN - 1974	UNC	01813-003+

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Chief

Hazardous Materials Safety Division
NTSB
Washington, DC 20594

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