



IAEA/ANL
Interregional Training Course



**Technical and Administrative Preparations
Required for Shipment of Research Reactor
Spent Fuel to Its Country of Origin**

Argonne National Laboratory
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Lecture L.5.1

**Local Transportation Plan
and Local Arrangements**

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MODULE 5

L.5.1

**LOCAL TRANSPORTATION PLAN
AND
LOCAL ARRANGEMENTS**

by

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LOCAL TRANSPORTATION PLAN

LOCAL ARRANGEMENTS

GENERAL COMMENTS

THIS DISCUSSION CONCERNS SHIPMENTS OF IRRADIATED FUEL IN THE US PERFORMED PURSUANT TO USNRC RULES AND REGULATIONS.

IT MAY NOT APPLY TO SHIPMENTS OF IRRADIATED FUEL MADE IN THE US BY THE DOE.

IT IS BEING PRESENTED SINCE SOMETHING LIKE THIS PROCEDURE MAY BE USED IN YOUR COUNTRY.

BACKGROUND

THE US IS A UNION OF INDEPENDENT STATES.

STATES ASSUME THAT THEY HAVE AUTHORITY TO PROTECT THE WELL BEING OF THEIR CITIZENS.

THEREFORE, STATE GOVERNMENTS INCORPORATE DEPARTMENTS OF HEALTH, TRANSPORTATION, EMERGENCY MANAGEMENT AND PUBLIC UTILITIES.

GENERAL COMMENTS (CONTINUED)

IN MANY CASES, CITIES (E.G., NEW YORK) HAVE THEIR OWN DEPARTMENT OF HEALTH, ETC.

EVEN THOUGH MANY NUCLEAR REGULATORY FUNCTIONS HAVE BEEN PRE-EMPTED BY THE US FEDERAL GOVERNMENT, THESE JURISDICTION OFTEN MAKE RULES OF THEIR OWN CONCERNING THE TRANSPORT OF IRRADIATED FUEL.

UNLESS THESE RULES ARE CHALLENGED IN THE COURTS AND OVERTURNED, THEY MUST BE OBEYED. A CHALLENGE WILL BE A LENGTHY AND COSTLY PROCESS.

TO DATE THERE HAVE BEEN NO CHALLENGES. THIS MEANS THAT THERE ARE POTENTIALLY 50 SETS OF RULES. FORTUNATELY, BETWEEN THE SHIPPER'S STATE AND SRS OR INEL THERE ARE FEWER STATES. *FOR EXAMPLE, A SHIPMENT FROM THE RHODE ISLAND REACTOR TO SAVANNAH RIVER MUST MEET THE REQUIREMENTS OF NINE STATES, THE USNRC AND THE USDOT.*

GENERAL COMMENTS (CONTINUED)

FOR THESE REASONS AND OTHERS, SERVICES OTHER THAN STATE SERVICES ARE RARELY AVAILABLE FOR THESE SHIPMENTS. *FOR EXAMPLE, ONLY STATE POLICE AND LOCAL POLICE ARE USED FOR PROTECTIVE SERVICES. THE MILITARY IS NOT USED.*

THE SITUATION IN YOUR COUNTRY MAY BE QUITE DIFFERENT. IF THE GOVERNMENT IS CENTRALIZED, FOR EXAMPLE, THERE MAY BE ONLY ONE RESPONSIBLE JURISDICTION.

THIS PRESENTATION IS ONE OF SEVERAL FROM DIFFERENT COUNTRIES DEALING WITH THIS TOPIC. IF YOUR REGULATORY BODY DOES NOT HAVE EXISTING RULES, THESE PRESENTATIONS WILL PROVIDED ALTERNATIVES FOR CONSIDERATION.

REGULATORY REQUIREMENTS

THE MAIN REGULATORY REQUIREMENTS IN THE US ARE PROMULGATED BY THE USNRC (10CFR) AND THE USDOT (40CFR)

THE NRC DEALS WITH PACKAGE APPROVAL, ROUTING, SECURITY, SEALS, ETC.

THE DOT DEALS WITH LABELING, PLACARDING, ETC.

ADDITIONAL REQUIREMENTS ARE PLACED ON THE SHIPMENT BY THE TRANSIT STATES.

FACILITIES SHOULD CHECK WITH THEIR REGULATORY BODIES TO DETERMINE WHAT RULES, IF ANY, ARE IN PLACE.

IF THEIR ARE NO RULES IN PLACE, IT MAY BE DESIRABLE FOR THE REACTOR FACILITY TO RESEARCH THE SITUATION AND SUGGEST APPROPRIATE RULES TO THE REGULATORY BODY.

ROUTE SELECTION

IN THE US, MOST SHIPMENTS MOVE BY TRAILER TRUCK.

A ROUTE FROM THE FACILITY TO THE PORT OF EXIT SHOULD BE SELECTED BY THE OPERATING ORGANIZATION OR ITS CONTRACTOR.

THE ROUTE WILL REQUIRE APPROVAL FROM THE REGULATORY BODY AND PERHAPS FROM LOCAL AGENCIES SUCH AS THE POLICE AND OTHER SECURITY AND EMERGENCY RESPONSE ORGANIZATIONS.

TRANSPORT COMPANIES, BECAUSE OF EXPERIENCE, ARE HELPFUL WHEN SELECTING ROUTES.

IN THE US, THE NRC DRIVES THE ROUTE CHECKING SUCH THINGS AS COMMUNICATIONS, POLICE RESPONSE TIMES, POPULATION CENTERS, COMMUNICATION DEAD ZONES, HAZARDS, ETC.

THE NRC PRODUCES A STATE BY STATE DESCRIPTION OF CONDITIONS ALONG THE SELECTED ROUTE. THIS INFORMATION IS SAFEGUARDED AND PROTECTED FROM PUBLIC DISCLOSURE.

AN EXAMPLE FOR THE STATE OF "UTOPIA" FOLLOWS.

(FICTITIOUS EXAMPLE)

SAFEGUARDS INFORMATION

UTOPIA

PATROL COVERAGE ALONG THE 300 MILES OF INTERSTATES 1 and 2 in UTOPIA, WHEN SUPPLEMENTED BY THE COUNTY SHERIFF'S DEPARTMENT, IS CONSIDERED TO BE EXCELLENT. AVERAGE RESPONSE TIME ALONG THE ENTIRE ROUTE, IN SPITE OF THE FACT THAT OVERALL MANPOWER TOTAL FOR THE UTOPIA STATE POLICE IS LOW, IS GOOD AND SHOULD FALL WITHIN A 9-16 MINUTE TIME FRAME DURING THE DAY SHIFTS AND UP TO 30 MINUTES FROM 2300 TO 0700

MOBILE TELEPHONES (MT) COVERAGE ALONG THE ROUTE IS QUITE GOOD WITH ONE EXCEPTION FOR THE FIRST 20 MOUNTAINOUS MILES ALONG THE INTERSTATE.

THE UTOPIA STATE POLICE MONITOR CITIZENS BAND (CB) RADIO CHANNEL 9 AT THEIR SUBSTATIONS. ALL PATROL CARS HAVE CB RADIOS WHICH MONITOR CHANNEL 9. EMERGENCY CALLS WILL DRAW A RESPONSE FROM SP UNITS LOCATED AT WEIGH STATIONS. THE COUNTY SHERIFF'S DEPARTMENT ALSO MONITORS CB RADIO. THIS MONITORING CAPABILITY IS SUPPLEMENTED BY REACT GROUPS WHICH ASSIST THE LAW ENFORCEMENT AGENCIES (LEA).

(FICTITIOUS EXAMPLE, CONTINUED)

EUTOPIA

SAFE HAVENS

- a) TRUCK WEIGH STATION LOCATED ONE AND ONE-HALF MILES NORTH OF I-1, EXIT 6, AT MILE MARKER (MM) 127. MANNED TWENTY FOUR HOURS PER DAY BY EUTOPIA STATE POLICE. WEIGH STATION IS TEN MILES SOUTH OF STATE POLICE SUBSTATION, COUNTY A.
- b) GULF TRUCK STOPS OF AMERICA, ETC.
- c) EUTOPIA ROAD UNION AND TRUCK STOP. ETC.
- d) etc.

INDIVIDUAL RECEIVING ADVANCED NOTIFICATION OF SPENT FUEL SHIPMENT PURSUANT TO 10CFR73.37(f) IS _____PHONE_____

NOTE: EUTOPIA STATE POLICE DIVISION HEADQUARTERS LOCATED ON I-1 SIX MILES SOUTH OF INTERSECTION WITH I-5.

I-1 SOUTH, MM 4 STEEP GRADE FOR SEVEN MILES, HIGH HAZARD AREA, FALLING ROCKS, AND SLIPPERY WHEN WET. RUNAWAY TRUCK RAMP AT MM 3.

(FICTITIOUS EXAMPLE, CONTINUED)

SAFEGUARDS INFORMATION

UTOPIA

STATEWIDE EMERGENCY NO.:1-800 555 1212 (24HRS)

DISASTER RELIEF NO.: XXX 555 1213

STATE POLICE NO.: XXX 555 1214

MOBILE TELEPHONE: CHANNEL 9/19

REACT GROUP: CHANNEL 9/19

LEA	SP	SP	SP	SP
	.			
	///MOUNTAIN DEAD ZONE//		////////E////////	
	(a)			
MILES				
D				
IN JURISDICTION	70	65	65	100
TOTAL MILES	125	195	260	325
300				425

KEY

- . LAW ENFORCEMENT RESPONSE CENTER
- SP STATE POLICE
- CH. NO. CHANNEL MONITORED
- E ESCORT REQUIRED
- R REACT GROUP
- (a) SAFE HAVEN

insert bravo time strip

EMERGENCY PLANNING

THE OPERATING ORGANIZATION SHOULD INSURE THAT EMERGENCY PLANS EXIST ALONG THE TRANSPORT ROUTE TO COVER TRANSPORTATION ACCIDENTS, RADIATION ACCIDENTS AND OTHER EVENTS.

IN THE US, STATES HAVE EMERGENCY MANAGEMENT AGENCIES WHICH ARE TRAINED TO RESPOND TO ACCIDENTS INVOLVING RADIOACTIVITY. THIS IS BACKED UP BY A US GOVERNMENT RESPONSE UNIT.

IN YOUR COUNTRY, THIS TRAINING MAY EXIST IN SOME OTHER FAST RESPONSE AGENCY SUCH AS THE REGULATORY BODY OR THE MILITARY.

IRRADIATED FUEL IS SHIPPED IN A TYPE B PACKAGE. IF THE PACKAGE IS PROPERLY USED, THE PROBABILITY OF RELEASE OF RADIOACTIVE MATERIAL FROM THE CASK IS EXTREMELY LOW BECAUSE OF DESIGN AND TESTING. **MAKE SURE THE PACKAGE IS PROPERLY USED.**

THE DESIGNERS AND FABRICATORS OF THE CASK, WORKING WITH THE CASK CERTIFYING AGENCY, HAVE USED THE NON-RELEASE OF THE CONTENT UNDER STRINGENT ACCIDENT CONDITIONS AS THE DESIGN BASIS. DO NOT REPEAT THIS FOR THE PREPARATION OF EMERGENCY PLANS.

(EMERGENCY PLANNING, CONTINUED)

TECHNICALLY, A TRUCK ACCIDENT WILL NOT BE MORE SERIOUS THAN A TRUCK ACCIDENT WITHOUT THE RADIOACTIVE MATERIAL. POLITICALLY, IT WILL BE MUCH DIFFERENT. BE PREPARED TO DEAL WITH THE DIFFERENCE IN A COHERENT AND TRUTHFUL MANNER.

PROVIDE THE DRIVERS WITH INSTRUCTIONS (PROCEDURES) WHICH THEY WILL USE IN EMERGENCIES. REVIEW THE INSTRUCTIONS WITH THE DRIVERS.

EMERGENCY PLANNING AND PHYSICAL PROTECTION PLANNING ARE SOMETIMES TIED TOGETHER. IF THIS HAPPENS, DISCUSSIONS OF EMERGENCY RESPONSE BECOME COMPLICATED BECAUSE OF THE CLASSIFIED (UNDISCLOSED) NATURE OF PHYSICAL PROTECTION PLANS.

PHYSICAL PROTECTION

THE PHYSICAL PROTECTION PLAN AT THE FACILITY MAY ALLOW FUEL ASSEMBLIES TO BE STORED ONLY IN SPECIFIC LOCATIONS.

AN AMENDMENT TO THE PLAN MAY BE NECESSARY FOR STORAGE IN A SHIPPING CASK, EITHER INSIDE OR OUTSIDE THE REACTOR BUILDING.

WHILE IN TRANSIT, SELF PROTECTING FUEL IS SUBJECT TO THE PHYSICAL PROTECTION PROVISIONS OF 10CFR73.37. MOST FUEL SHIPPED IN THE US FALLS INTO THIS CATEGORY.

SELF PROTECTING MEANS “A *TOTAL EXTERNAL RADIATION DOSE RATE IN EXCESS OF 100 REMS PER HOUR AT A DISTANCE OF 3 FEET FROM ANY ACCESSIBLE SURFACE WITHOUT INTERVENING SHIELDING*”.

OBJECTIVES OF PHYSICAL PROTECTION ARE:

MINIMIZE POSSIBILITY FOR SABOTAGE ESPECIALLY IN HEAVILY POPULATED AREAS.

FACILITATE LOCATION AND RECOVERY OF SHIPMENTS WHICH HAVE COME UNDER CONTROL OF UNAUTHORIZED INDIVIDUALS.

(PHYSICAL PROTECTION, CONTINUED)

TO ACHIEVE THESE OBJECTIVES, THE PLAN:

PROVIDES FOR EARLY DETECTION AND ASSESSMENT OF ATTEMPTS TO GAIN UNAUTHORIZED ACCESS.

PROVIDES FOR NOTIFICATION TO THE APPROPRIATE RESPONSE FORCE.

PROVIDES IMPEDIMENTS TO SABOTAGE WITHIN HEAVILY POPULATED AREAS OR ATTEMPTS TO MOVE SHIPMENTS INTO HEAVILY POPULATED AREAS. (E.G., DISABLE TRUCK)

THE GENERAL REQUIREMENTS INCLUDE:

A VARIETY OF NOTIFICATIONS.

EMERGENCY PROCEDURES AND THEIR RETENTION.

INSTRUCTIONS FOR EACH ESCORT FOR DEALING WITH THREATS AND THEIR RETENTION.

A STAFFED COMMUNICATIONS CENTER WHICH WILL MONITOR THE PROGRESS OF THE SHIPMENT.

MAINTENANCE OF A WRITTEN LOG BY ESCORTS AND COMMUNICATIONS CENTER.

ARRANGEMENTS WITH LOCAL LAW ENFORCEMENT ALONG THE ROUTE.

ADVANCED APPROVAL OF ROUTES.

AVOIDANCE OF SCHEDULED INTERMEDIATE STOPS

(PHYSICAL PROTECTION, CONTINUED)

ONE ESCORT MAINTAINS VISUAL SURVEILLANCE WHEN SHIPMENT IS STOPPED.

ESCORTS HAVE SUCCESSFULLY COMPLETED TRAINING.

CALL TO COMMUNICATIONS CENTER EVERY TWO HOURS.

ESCORT REQUIREMENTS IN HEAVILY POPULATED AREAS.

ESCORT REQUIREMENTS OUTSIDE OF HEAVILY POPULATED AREAS.

NOTIFICATION REQUIREMENTS IN TRANSIT STATES.

COMMUNICATION CAPABILITIES OF TRANSPORT VEHICLE AND ESCORTS.

NRC APPROVED FEATURES THAT PERMIT IMMOBILIZATION OF TRANSPORT VEHICLE.

DRIVER IS CAPABLE OF IMPLEMENTING IMMOBILIZATION, COMMUNICATIONS AND OTHER SECURITY PROCEDURES.

MISCELLANEOUS

IN SOME CASES, THE IRRADIATED FUEL ASSEMBLIES MAY BE SHIPPED IN ITS OWN CASK BUT ON THE SAME TRANSPORT VEHICLE AS FOREIGN FUEL. THIS MAY REQUIRE SPECIAL AUTHORIZATION FROM COMPETENT AUTHORITIES.

IN SOME CASES THE IRRADIATED FUEL ASSEMBLIES MAY BE ADDED TO A CASK WHICH ALREADY CONTAINS ASSEMBLIES FROM A FOREIGN COUNTRY. THIS MAY REQUIRE SPECIAL AUTHORIZATION FROM COMPETENT AUTHORITIES.