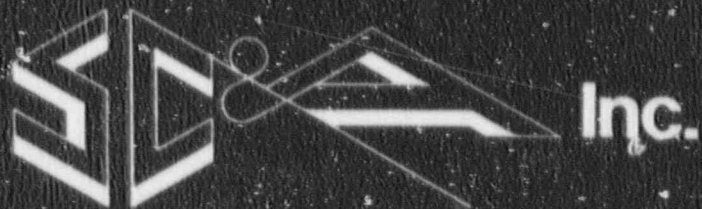


BEST AND FINAL
RESPONSE TO QUESTIONS
GENERIC DEREGULATION OF
BELOW REGULATORY CONCERN
RADIOACTIVE WASTES
SOLICITATION NUMBER RS-RES-89-052

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions *outside scope of request*
FOIA: 90-496



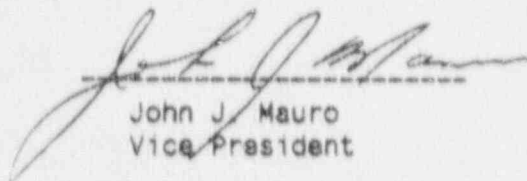
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BEST AND FINAL
RESPONSE TO QUESTIONS
GENERIC DEREGULATION OF
BELOW REGULATORY CONCERN
RADIOACTIVE WASTES
SOLICITATION NUMBER RS-RES-89-052

Submitted to:

U.S. Nuclear Regulatory Commission
Division of Contracts and Property Management
Mail Stop P-1020
Washington, D.C. 20555

Submitted by:



John J. Mauro
Vice President

May 1, 1990

Date

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McLean, Virginia 22101
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RESPONSE TO NRC QUESTIONS

The following presents SC&A's response to NRC questions (letter dated March 16, 1990) pertaining to RFP No. RS-RES-89-052, entitled "Generic Deregulation of Below Regulatory Concern Radioactive Waste." Our Best and Final Cost Proposal is provided under separate cover.

1. Question 1 - Provide more details regarding the geographical location of the primary processing and disposal facilities sufficient for pathway modeling, pertinent characteristics of the processing and disposal facilities, and a demographic description of the critical populations, including maximum exposed individuals and identification of expose workers.

It appears appropriate to restate Section C.1.3.1 of the RFP prior to answering this question. The RFP states:

- 1(4) "The geological location of the primary processing and disposal facilities for BRC waste. The unlicensed (emphasis added) facilities would be the likely disposal sites for the large majority (nominally 85% to 90%) of the deregulated wastes on a national basis."
- 1(5) "A description of the pertinent characteristics of the processing and disposal facilities, sufficient to allow appropriate pathway modeling....."
- 1(6) "A demographic description of the critical populations, maximum exposed individuals and identification of exposed workers."

Once the NRC has deemed the waste to be below regulatory concern, the question then becomes whether the waste is hazardous or not by EPA definitions. If a waste is hazardous, it is covered by RCRA (Resource Conservation and Recovery Act) Subtitle C regulations. If wastes are not hazardous, they are still covered by Subtitle D regulations. The classification of the waste stream will determine the category of disposal method available for that waste.

A waste may be hazardous if it is listed as hazardous by the EPA or exhibits any of the four characteristics of hazardous wastes (ignitability, corrosivity, reactivity and toxicity). Used oil, for example, is not listed as a hazardous waste. It is frequently treated as a hazardous waste, however, because of its ignitability or toxicity. The EPA is encouraging the public to return used motor oil to a designated collection center for recycling. A petition involving waste oil, then, needs to be examined in light of NRC Decision Criteria No. 10 (where the disposed form of the waste has a negligible potential for recycle).

Another example might be scintillation cocktail fluids such as xylene and toluene. If the waste stream has more than 10 percent by volume of either xylene or toluene, it is considered a hazardous waste (Xylene: hazardous waste number F001; Toluene: hazardous waste number F005, see 40 CFR 261.31). If a generator

produces any of these wastes, it is necessary to determine how much of these wastes are generated per month and the State in which they are generated. If no more than 100 kg/month is generated, the producer may be exempted from Subtitle C requirements as a small quantity generator. Some States have no exemption for small quantity generators, e.g., California, Louisiana, Minnesota, Rhode Island, and West Virginia.

Subtitle C Facilities

Subtitle C facilities must be permitted by the EPA or the State if the EPA has determined that the State program is equivalent to, or more stringent than the Federal Subtitle C program. Lists of such permitted facilities are available from the Agency. Exhibit 1-1 shows a status summary of RCRA landfills and incinerators as of January 1989. Exhibit 1-2 is a sample listing for (1) facilities with permits issued after November 1985, and (2) those that have applied for permits after that date. The facilities include incinerators, landfills, and surface impoundments. Part B of a RCRA permit application includes a site characterization which contains information such as climatology and hydrogeology. Permit applications for new facilities must include exposure information and a health assessment. In other words, the information requested in RFP 1(4) through 1(6) is available for Subtitle C facilities in Part B of the permit applications.

Subtitle D Facilities

Municipal Landfill Facilities

In support of proposed 40 CFR Part 258, the EPA undertook a survey of municipal solid waste landfills (MSWLFs). The survey received responses from 1,102 MSWLFs. Exhibit 1-3 is a discussion of summary statistics for selected questions. Many of these questions are directly relevant to the topics of pathway modeling and a demographic description of critical populations. For example, the survey asked:

- o What is the shortest distance from the edge of a property line to a residence?
- o What is the shortest distance from the edge of a landfill unit to a residence?
- o What is the total area of the landfill facility?

- o Is any part of the landfill facility located in the following
 - 100 year floodplain
 - area designated as a wetland
 - karst terrain

- o What is the single most predominant type of soil between bedrock and the bottom of landfilled wastes? (Choices include: sand, clayey sand, silt, sandy clay, clay, and other.)

- o Identify all other soil types between bedrock and the bottom of landfilled wastes. (Choices include: sand, clayey sand, silt,, sandy clay, clay, and other.)

- o Is the landfill facility located completely above the seasonal high water table?

- o What is the average distance between the bottom of the landfilled wastes to the seasonal high water table?

- o How many downgradient private and public drinking water wells are within one mile of the edge of any landfill unit?

- o Estimate the number of people using drinking water wells within one mile of the edge of any landfill unit?

- o How far away from the edge of any landfill unit are the closest downgradient drinking water wells? Give the distance separately for the closest private and public well (if within one mile).

- o How many downgradient rivers/streams and lakes/reservoirs that are used for drinking water within one mile of the edge of any landfill unit? Estimate the number of people who use these sources for drinking water.

- o How far away from the edge of any landfill unit are the closest downgradient river/stream and lake/reservoir that are used for drinking water? Give the distance separately for the closest river/stream and lake/reservoir (if within one mile).

Questions concerning active and planned landfill units are also asked, such as:

- o What types of liners are used?
- o What is the layer thickness for each liner?
- o What types of final cover are used?
- o What is the layer thickness for each type of cover used?
- o Does the unit have a leachate collection system?
- o What is done with any leachate collected from the unit?

Inspection of the models, assumptions, and parameters used in IMPACTS-BRC (as described in Section 5 of NUREG/CR-3585) reveals that the database that characterizes Subtitle C and D facilities may be used to verify or revise the key IMPACTS-BRC reference assumptions, as necessary. In addition, using the range of parameters in the database, the range of impacts can be characterized for a full range of different Subtitle C and D facilities.

EPA's database of responses to this survey is not publicly available in electronic form. EPA maintains a printed version of the database, and will disclose some of the information included in this version upon request; the amount of information EPA will publicly disclose is limited, however, by claims of confidentiality made by survey respondents. One of our proposed subcontractors, Eastern Research Group, has initiated a Freedom of Information Act (FOIA) request for survey data from a sample facility to determine how much useable information may be derived from this source. If this information proves useful to the NRC program, we will expand this FOIA request to acquire information from the remaining facilities surveyed. If, however, claims of confidentiality limit the value of information available through FOIA, an inter-agency agreement might be initiated to acquire additional information from the EPA survey for use by NRC's program.

If the information is available only in hard-copy format, Eastern Research Group (ERG) can design an appropriate input screen for rapid data entry to a database program such as PARADOX. The data can be output in ASCII fixed-length fields and records for transfer between computer systems and programs. This approach has been used by ERG for creating databases for OSHA for evaluating personal protective equipment from injury/fatal accident records from over 5,000 firms and for evaluating electric power transmission standards.

Industrial Subtitle D Establishments

If a request is made for disposal of BRC waste in an industrial Subtitle D facility, it is presumed that the site characterization information for that facility would be made available to the NRC and its contractors for evaluation.

SECPOP

In addition to the documentation prepared by the EPA and applicants in support of the Subtitle C and Subtitle D permitting process, there are other software packages that are currently available for quickly and reliably characterizing the population distribution at any location in the United States. One program, SECPOP, was developed by EPA specifically for this purpose and is available at no charge, other than computer time.

SECPOP was developed by the Dr. Christopher Nelson of EPA Office of Radiation Programs to characterize the population distribution at any location in the United States in order to calculate population doses associated with the release of radionuclides to the atmosphere at the specified location. The user of SECPOP specifies the longitude and latitude of the point of interest and SECPOP prints out the population distribution in the vicinity of the release. The output is in the form of a "population wheel" divided into any designated number of radii and segments and out to any specified distance from the source. The radii and segments are typically selected to correspond to the segmentation used in atmospheric dispersion and deposition models, such as in the computer code XOQDOQ.

SECPOP currently utilizes an edited and compressed version of the 1980 United States Census Bureau's MARF data containing housing and population counts for each census enumeration district (CED) and the geographic coordinates of the population centroid for the district. This data base will be updated with the 1990 census when it becomes available. In the Standard Metropolitan Statistical Areas (SMSA), the CED is usually a "block group" which consists of a physical city block. Outside the SMSAs, the CED is an "enumeration district," which may cover several square miles or more in a rural area.

In the 1980 census, there are over 250,000 CEDs in the United States with a typical population of about 800 persons. The position of the population centroid for each CED was marked on the district maps by the individual census official responsible for each district and is based only on personal judgment from inspection of the population distribution on a map. The CED entries are sorted in ascending order by longitude on the final data tape.

The resolution of a calculated population distribution generated by SECPOP cannot be better than the distribution of the CEDs. Hence, in a metropolitan area the resolution is often as small as one block, but in rural areas it may be on the order of a mile or more. Accordingly, the data base, and therefore SECPOP, cannot be used reliably for estimating doses to the maximum individual, but it is very useful for performing population dose calculations.

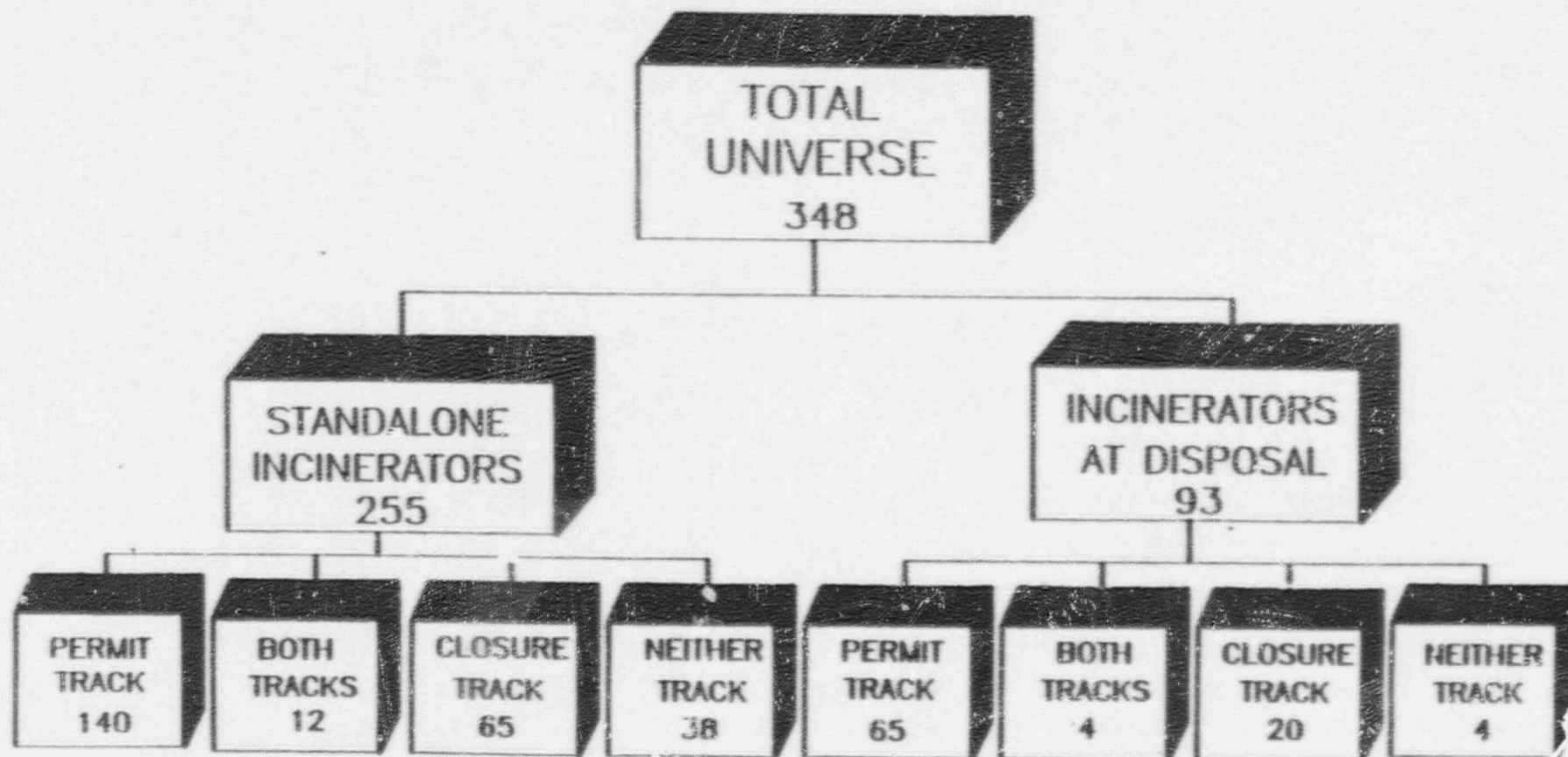
Exhibit 1-1

SUMMARY REPORT
ON RCRA PERMIT ACTIVITIES
FOR
DECEMBER 1988

PREPARED BY
STATE PROGRAMS BRANCH
INFORMATION MANAGEMENT STAFF
OFFICE OF SOLID WASTE

JANUARY 19, 1989

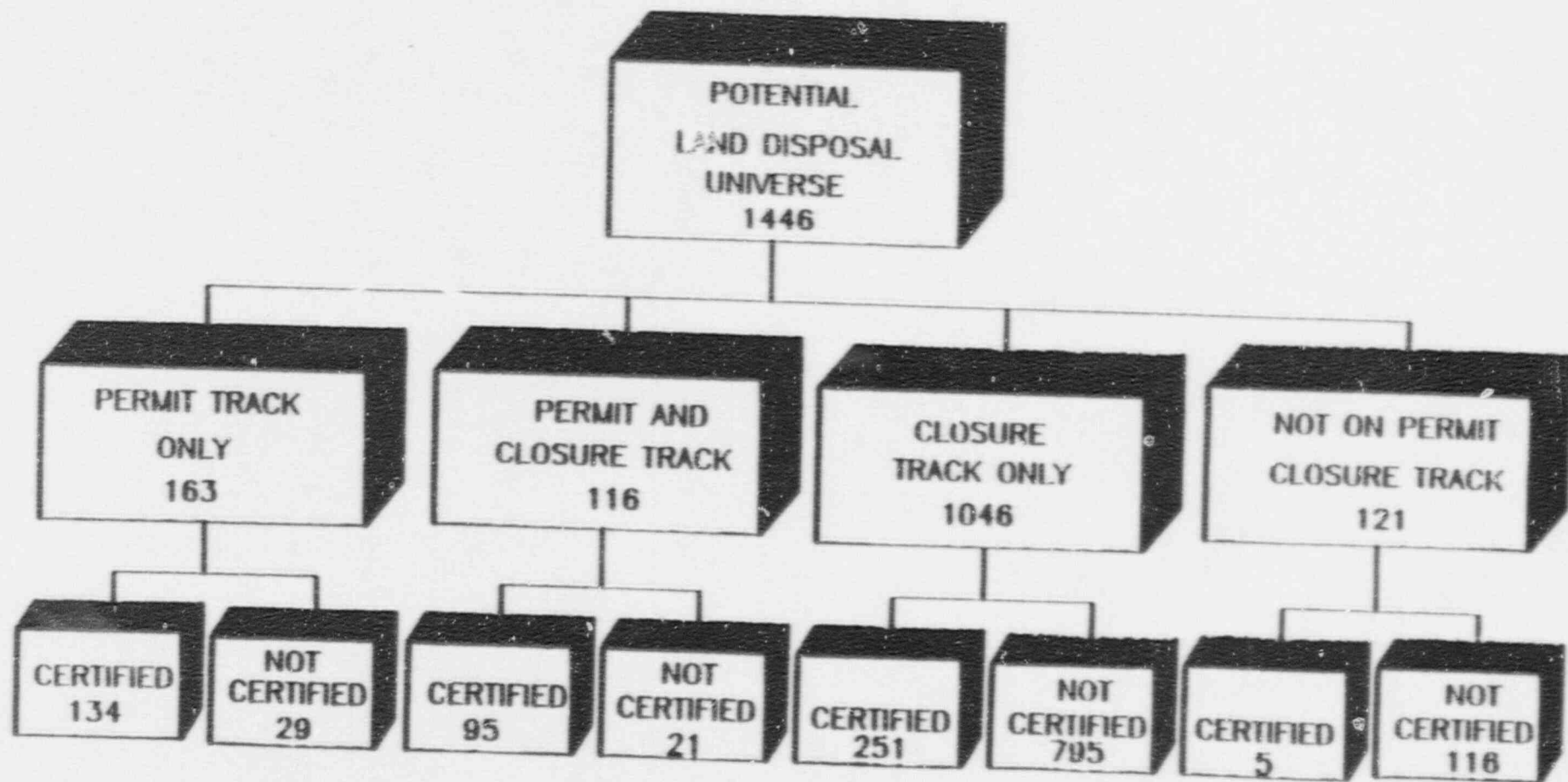
INCINERATOR UNIVERSE



AS OF 01/12/89

FIGURE 2

LAND DISPOSAL UNIVERSE



AS OF 01/12/89

FIGURE 1

Exhibit 1-2

2

DATA REQUEST FOR EPA/OSM/5FB
PREPARED BY OPRM, REQUEST NUMBER R090102
DATA SOURCE: HADMS VERSION 6.5

COUNT AND LIST OF FACILITIES WITH PERMIT ISSUED AFTER 11/08/05
AS OF 01/11/09

REGION	EPA ID	FACIL NAME	EPA ID	FACIL NAME
01	16	CECOS TRMT CORP	CTD00064466	AVCO LYCORING TEKTRON
		CECOS TRMT CORP	CTD900515270	BRISTOL SAN 1571
		PRATT AND WHITNEY	CTD005925905	GENERAL DYNAMICS CORP
		SOLVENTS RECOVERY SERVICE OF NEW ENGLAND	CTD00717604	GENERAL ELECTRIC CO WASTE WATER FACILITY
		CLEAN HARBORS OF HATECK INC	MAD900523203	SUNBIT CORPORATION OF MARIETTA
		GENERAL CHEMICAL CORPORATION	MAD0019371079	US NAVY NAVAL SEAWARINE BASE NEW LONDON
		HAMPDEN COLOR AND CHEMICAL CO	MAD001114234	CLEAN HARBORS INC
		US ARMY FORT DEVENS	MAD7210025154	GENERAL ELECTRIC CO
		CYRO INDUSTRIES	MED0040249096	I C T AMERICAS INC DIGHTON SITE
		CYRA-GEIST CORPORATION	RID001194323	JET LINE SERVICES INC
		ETICAM MARINEK FACTY	RID000906906	MENSANTO COMPANY
		US NAVY NAVAL EDUCATION & TRAINING CTR	~1170024263	NORTH EAST SOLVENTS RECLAMATION CORP
		BRADLEY CE LABORATORIES INC	VTD000000000	POLAROID CORP
		INTERNATIONAL BUSINESS MACHINES	VTD002003934	POLAROID CORPORATION
		SAFETY KLEEN CORP 2-105-01	VTD002004705	SHULTON TOILETRIES INC
		AMERADA HESS CORP.	VTD000791699	SAFETY KLEEN CORP 2 011 01
		AMERICAN CYANAMID COMPANY	MJD002173276	US AIG FORCE LOGGING AIR FORCE BASE
		AIRT TECHNOLOGIES, INC.	MJD006960924	ETICAM MARINEK FACTY
		ATLAS ASSOCIATES	MJD0059014509	ADVANCED EMV TECH CORP
		B & L CORP	MJD065025391	AIR PRODUCTS AND CHEMICALS, INC.
		SUPPORT E I DE METZERS & CO	MJD064901900	AMERICAN CYANAMID CO
		SUPPORT E I DE METZERS & CO	MJD00020159	AMERICAN CYANAMID CO
		ENGELHARD INDUSTRIES DIVISION	MJD002205730	AT AND T BELL LABORATORIES
		EXXON RESEARCH & ENGINEERING COMPANY	MJD056699267	AT AND T BELL LABORATORIES
		EXXON RESEARCH AND ENGINEERING CENTER	MJD000696111	AT AND T BELL LABORATORIES
		FAIRMORR CHEMICAL CO INC	MJD061074371	COBAN CHEMICAL CORPORATION
		FISHER SCIENTIFIC	MJD002151322	DEPT OF THE AIR FORCE - MCUIRE AFB
		FMC CORPORATION	MJD052207902	EASTERN SURGICAL DRESSINGS PLANT JJP INC
		INGERSOLL-RAND COMPANY	MJD000506164	ENGELHARD INDUSTRIES DIVISION
		M TARRANTING TRUCKING	MJD002395302	EXXON RESEARCH & ENGINEERING COMPANY
		MERCK AND COMPANY, INC.	MJD002454544	EXXON RESEARCH AND ENGINEERING COMPANY
		MENSANTO COMPANY	MJD001317064	FAIRMORR CHEMICAL CO INC
		ORTHO DIAGNOSTIC SYSTEMS, INC.	MJD001700507	FISHER SCIENTIFIC CO.
		SAB. JASIE, INC.	MJD068715424	FMC CORPORATION
		SAFETY-KLEEN CORP	MJD791291105	GPC DELCO REMY DIV FLY 12 NEW BRUNSWICK
		SAFETY-KLEEN CORP.-LIMBEN RC	MJD009033626	MERCURY INCORPORATED KENVTL WORKS
		SCHERING CORPORATION	MJD002102057	LEVER BROTHERS COMPANY
		AYERST LABORATORIES INCORPORATED	MJD0003307621	MINERALS & CHEMICALS DIVISION
		BATTERY DISPOSAL TECHNOLOGY	MJD020613596	NAVAL WEAPONS STATION EARLE
		CECOS INTERNATIONAL INC.	MJD000663272	OMI INTERNATIONAL CORPORATION
		CIBA-GEIGY	MJD000336261	ORTHO PHARMACEUTICAL CORP
		CIBA-GEIGY	MJD000010418	PASS RECOVERY SYSTEMS, INC.
		CHEMICAL SERVICES	MJD002087740	PETROLEUM RECYCLING INC
			MJD9949036679	PITTSBURGH METAL & EQUIPMENT CO, INC

DATA REQUEST FOR EPA/OSM/5FB
PREPARED BY OPRM, REQUEST NUMBER R090102
DATA SOURCE: HADMS VERSION 6.5

COUNT AND LIST OF FACILITIES WITH PERMIT ISSUED AFTER 11/08/05
AS OF 01/11/09

REGION
COUNT

EPA ID
COUNT

REGION
COUNT

EPA ID
COUNT

REGION
COUNT

1

116

92

Exhibit 1-3

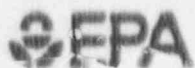
DRAFT

United States
Environmental Protection
Agency

Office of Solid Waste
and Emergency Response
Washington, DC 20460

EPA/530-SW88-034
September 1988

Solid Waste



National Survey of Solid Waste (Municipal) Landfill Facilities

APPENDIX A

SUMMARY STATISTICS FOR SELECTED QUESTIONS

Statistics are presented in this appendix in a question and answer format similar to the Solid Waste Landfill Survey Questionnaire (see Appendix A). Some questions have been reworded slightly. Estimates are reported for approximately half of the questions asked in the questionnaire.

Two types of statistics are reported: averages and percents. In most cases averages are for all landfill facilities or units; exceptions are noted or can be gleaned from wording of the question. Percents reported for subparts to a question may not add up to 100 because (1) there was rounding, (2) multiple responses were allowed or (3) the set of respondents varied by subpart.

Stratified estimates were computed for all results presented. All estimates are subject to error. An indication is given of the sampling variability of the estimates. For *averages*, asterisks following the estimates have the following interpretation:

- * One asterisk indicates that the estimated standard error of the average is greater than 25 percent of the estimate; and
- ** Two asterisks indicate that the estimated standard error of the average is greater than 50 percent of the estimate.

A similar convention is used for *percentages*:

- * One asterisk indicates that the estimated standard error of the percentage is greater than either 25 percent of the estimate or 25 percent of 100 minus the estimate, whichever is less; and
- ** Two asterisks indicate that the estimated standard error of the percentage is greater than either 50 percent of the estimate or 50 percent of 100 minus the estimate, whichever is less.

With one asterisk, a 95 percent confidence interval for an estimate (an average or percentage less than 50 percent) will be at least as wide as an interval ranging from half the estimate to one and a half times the estimate. With two asterisks, the confidence interval will be at least as wide an interval ranging from zero to twice the estimate.

Part 1: Landfill Facility, Owner, and Operator

Q1.5 Which one of the following categories best describes the *landfill facility owner*? (Only one response allowed.)

Percent

3.3	Federal
.9	State
28.8	County
28.3	City
24.9	Other government
13.9	Private

Q1.7 Does this landfill facility have a solid waste *permit or license*?

Percent

91.2 Yes

Q1.8 Who issued the solid waste permit or license? (Multiple responses allowed.)

Percent (computed for facilities that report having a permit or license)

90.9	State Government
10.4	County Government
1.8	City Government
6.1	Other government

Q1.9 Did the authority that issued the permit or license review any engineering plans before issuing the permit or license?

Percent (computed for facilities that report having a permit or license)

78.4 Yes

Q1.10 In what year was waste first placed in any of the landfill units at this landfill facility?

Average

1967 Year

Q1.11 In what year do you expect all active (and planned) landfill units at this facility to be completely filled?

Average

2007 Year

Part 2: Facility Jurisdiction, Size, and Operations

Q2.7 What is the shortest distance from the edge of the *property line* to a residence?

Average

2,686 Feet

Q2.8 What is the shortest distance from the edge of the *landfill unit* to a residence?

Average

3,194 Feet

Q2.9 What is the *total area* of this landfill facility? Include all buildings, buffer areas, lagoons and holding ponds, and roads on the property as well as landfill areas.

Average

86.5 Acres

Q2.10 What is the *total design capacity* of this landfill facility? Include the combined total amount of waste that the active, closed, and planned landfill units will hold. Do not include the volume of cover material in your estimate.

Average

2,648,292 Cubic Yards

Q2.11 What is the *total remaining design capacity* of this landfill facility? Include the *additional waste volume* that all active, unused, and planned landfill units can hold. Total remaining design capacity is the total design capacity (provided in Question 2.10), minus the amount of waste currently in the landfills.

Average

1,574,877 Cubic Yards

Q2.12 Which landfill method(s) does this facility use? (Multiple responses allowed.)

Percent

48.4 Area Fill Method
66.9 Trench or Cell Method
5.5 Other Method

Q2.13 Which waste processing technique(s) does this facility use prior to landfilling? (Multiple responses allowed.)

Percent

2.1 Baling
1.7 Shredding
38.8 Other Technique

Q2.16 What is the ratio of waste to cover material at this landfill facility?

Average

4.4 to 1 Ratio.

Part 3: Hydrogeologic and Water Source Information

Q3.1 Is any part of this landfill facility located in any of the following? (Multiple responses allowed.)

Percent

12.8 a 100-year floodplain.
5.6 an area designated as a wetland
3.8 karst terrain

Q3.2 Identify the single most predominant type of soil between bedrock and the bottom of the landfilled wastes. (Only one response allowed.)

Percent

13.8	Sand
9.1	Clayee Sand
3.6	Silt
20.7	Sandy Clay
35.1	Clay
<u>17.8</u>	Other
100.0	

Q3.3 Identify all other soil types occurring between bedrock and the bottom of the landfilled wastes. (Multiple responses allowed.)

Percent

24.2	Sand
20.6	Clayee Sand
21.8	Silt
26.9	Sandy Clay
24.9	Clay
21.7	Other

Q3.4 Is this landfill facility located completely above the seasonal high water table?

Percent

92.8	Yes
------	-----

Q3.5 What is the average distance from the bottom of the landfilled wastes to the seasonal high water table?

Average (computed for facilities located above the seasonal high water table)

85.7	Feet
------	------

Q3.9 What sources of information did you use to answer hydrogeologic question 3.1 - 3.8 above? (Multiple responses allowed.)

Percent

29.0	Site-Specific Hydrogeologic Study
18.4	General Literature Sources (e.g., County Report)
14.3	State Agency
69.3	No Hydrogeologic Data Available; "Best Estimates" Provided

Q3.10 How many downgradient private and public *drinking water wells* are within one mile of the edge of any landfill unit?

Average

6.99 Private Wells
.14 Public Wells

Also estimate the number of people using drinking water wells within one mile of the edge of any landfill unit.

Average

11.1 People Use Private Wells for Drinking Water
110.3** People Use Public Wells for Drinking Water

Q3.11 How far away from the edge of any landfill unit are the *closest* downgradient drinking water wells? Give the distance separately for the closest private and public well (if within 1 mile).

Average (computed for facilities that report having such a well)

1,835 Feet to Closest Private Well
2,327 Feet to Closest Public Well

Q3.13 How many downgradient *rivers/streams* and *lakes/reservoirs* that are used for drinking water are within one mile of the edge of any landfill unit?

Average

.040 Rivers/Streams
.017* Lakes/Reservoirs

Also, estimate the number of people who use these sources for drinking water.

Average (computed for facilities that report having these sources)

141.2* People Who Use Rivers/Streams for Drinking Water
70.3* People Who Use Lakes/Reservoirs for Drinking Water

Q3.14 How far away from the edge of any landfill unit are the *closest* downgradient river/stream and lake/reservoir that *are used for drinking water*? Give the distance separately for the closest river/stream and lake/reservoir (if within 1 mile).

Average (computed for facilities that report having such a source)

1,936 Feet to Closest River/Stream
3,397 Feet to Closest Lake/Reservoir

Q3.18 What sources of information did you use to answer water source questions 3.10-3.17 above? (Multiple responses allowed.)

Percent

19.0 Site-Specific Water Source Study
11.1 Local Water Department
72.8 No Water Source Data Available; "Best Estimates" Provided
16.0 Other

Part 4: Waste Characteristics

Q4.1 What is the *average annual quantity of waste* received at this landfill facility?

Average

34,604 Tons Per Year

Q4.2 Estimate the *average annual percent of the waste* received at this landfill facility in each of the waste categories listed.

Percent

71.8 Household Wastes
17.3 Commercial Wastes
.1 Small Quantity Generator Hazardous Wastes
.2 Asbestos-Containing Materials
5.9 Construction/Demolition Wastes
2.7 Industrial Process Wastes
.1* Infectious Wastes
.1* Municipal Incinerator Ash
.2 Other Incinerator Ash
.5 Sewage Sludges
1.2 Other Wastes

Also, for which categories does this facility refuse to accept waste?

Percent

.1**	Household Wastes
5.5	Commercial Wastes
71.5	Small Quantity Generator Hazardous Wastes
55.9	Asbestos-Containing Materials
15.4	Construction/Demolition Wastes
43.5	Industrial Process Wastes
67.9	Infectious Wastes
53.8	Municipal Incinerator Ash
51.5	Other Incinerator Ash
54.1	Sewage Sludges
2.7	Other Wastes

Q4.3

Of the total amount of *industrial process wastes* received at this landfill facility, estimate the percent received from each of the industrial categories listed below.

Percent (computed for facilities that report receiving industrial process waste)

.4**	Electric Power Generation
3.2*	Fertilizer/Agricultural Chemicals
21.5	Food and Related Products and Byproducts
1.7*	Inorganic Chemicals
5.9*	Iron and Steel Manufacturing
2.6**	Leather and Leather Products
4.2*	Non-Ferrous Metals Manufacturing/Foundries
.3*	Organic Chemicals
.2*	Petroleum Refining Industry
8.9*	Plastics and Resins Manufacturing
9.3	Pulp and Paper Industry
7.5	Rubber and Misc. Plastic Products
9.4	Stone, Glass, Clay, and Concrete Products
14.4	Textile Manufacturing
.7*	Transportation Equipment
.8*	Water Treatment
9.1	Other

Also, for which categories does this facility refuse to accept waste?

Percent (computed for facilities that report receiving industrial process waste)

27.8	Electric Power Generation
32.8	Fertilizer/Agricultural Chemicals
7.1*	Food and Related Products and Byproducts
32.0	Inorganic Chemicals
16.7	Iron and Steel Manufacturing
15.9	Leather and Leather Products
16.3	Non-Ferrous Metals Manufacturing/Foundries
32.9	Organic Chemicals
30.0	Petroleum Refining Industry
16.9	Plastics and Resins Manufacturing
18.4	Pulp and Paper Industry
14.1	Rubber and Misc. Plastic Products
10.4*	Stone, Glass, Clay, and Concrete Products
15.9	Textile Manufacturing
22.5	Transportation Equipment
24.2	Water Treatment
.9**	Other

Q4.4

What percent of the total facility wastes received by this landfill facility are bulk liquids and drummed/containerized wastes?

Percent

.14	Bulk Liquids (not containerized)
.05*	Drummed/Containerized Liquids
.09*	Drummed/Containerized Other Waste Forms

Also, for which categories does this facility refuse to accept waste?

Percent

65.7	Bulk Liquids (not containerized)
65.8	Drummed/Containerized Liquids
62.5	Drummed/Containerized Other Waste Forms

Q4.7

Does this landfill facility have *separate disposal or management areas* for specific wastes?

Percent (computed for facilities that report having a liner of the given type)

46.0 Yes

Q4.8 Does this landfill facility have a *separate disposal or management area for asbestos*?

Percent

6.9 Yes

Part 5 Individual Landfill Unit Information

Q5.1 How many closed, active, and planned landfill units are there at this facility?

Average

.52 Number Closed
1.09 Number Active
.64 Number Planned

Closed Landfill Units

QC3. What is the *total area* of the landfill unit?

Average

9.1 Acres

QC4. What is the *total volume* of the landfill unit?

Average

358,070 Cubic Yards

QC9. What *types of liners* are used? (Multiple responses allowed.)

Percent

33.8 In-Situ Clay
16.8 Re-compacted Clay
17.9 Soil
.4* Synthetic Membrane
.1* Asphalt
7.6 Other
39.0 None or Unknown

QC10. What is the *layer thickness* for each type of liner used?

Average

17.1	Feet, In-Situ Clay
2.8	Feet, Re-compacted Clay
20.0*	Feet, Soil
20.0*	Mils, Synthetic Membrane
1.0**	Inches, Asphalt
22.3	Feet, Other

QC13. What *types of final cover* are used? (Multiple responses allowed.)

Percent

50.8	Soil Layer
11.7	Sand or Gravel Layer
32.3	Re-compacted Clay Layer
1.4*	Synthetic Membrane
33.6	Topsoil Layer
9.8	Other
2.8	Unknown

QC14. What is the *layer thickness* for each type of cover used?

Average

2.0	Feet, Soil Layer
2.0	Feet, Sand or Gravel Layer
2.2	Feet, Re-compacted Clay Layer
34.5	Mils, Synthetic Membrane
1.3	Feet, Topsoil Layer
2.8	Feet, Other

QC17. Does this landfill unit have a *leachate collection system*?

Percent

7.8	Yes
-----	-----

QC20. What is done with any leachate collected in this landfill unit? (Multiple responses allowed.)

Percent

- 17.2* Recirculate - Spray on active landfill area
- 4.3** Recirculate - Injection
- 4.4** Recirculate - Other
- 4.7** Land Application, Spreading or Treatment
- 14.5* Truck to POTW or Sewer
- 18.4* Discharge through Sewer to POTW
- 16.0* Discharge to Surface Water
- 4** Other or Unknown Off-site Treatment
- 17.5* On-site Treatment - Biological
- 13.2** On-site Treatment - Physical/Chemical

Active Landfill Units

QA3. What is the *total area* of the landfill unit?

Average

32.5 Acres

QA4. What is the *total volume* of the landfill unit?

Average

1,528,274 Cubic Yards

QA10. What *types of liners* are used? (Multiple responses allowed.)

Percent

- 27.5 In-Situ Clay
- 18.6 Re-compacted Clay
- 20.7 Soil
- 1.1 Synthetic Membrane
- .1** Asphalt
- 6.6 Other
- 39.7 None or Unknown

QA11. What is the *layer thickness* for each type of liner used?

Average

29.6	Feet, In-Situ Clay
4.0	Feet, Re-compacted Clay
17.5*	Feet, Soil
44.8	Mils, Synthetic Membrane
7.6**	Inches, Asphalt
25.6*	Feet, Other

QA14. What *types of final cover* are planned? (Multiple responses allowed.)

Percent

49.9	Soil Layer
14.2	Sand or Gravel Layer
32.5	Re-compacted Clay Layer
1.7	Synthetic Membrane
37.3	Topsoil Layer
5.2	Other
6.0	Unknown

QA15. What will be the *layer thickness* for each type of cover planned?

Average

2.0	Feet, Soil Layer
2.0	Feet, Sand or Gravel Layer
2.1	Feet, Re-compacted Clay Layer
36.2	Mils, Synthetic Membrane
1.2	Feet, Topsoil Layer
2.0	Feet, Other

QA18. Does this landfill unit have a *leachate collection system*?

Percent

11.5	Yes
------	-----

QA21. What is done with any leachate collected in this landfill unit? (Multiple responses allowed.)

Percent

21.0	Recirculate - Spray on active landfill area
5.1*	Recirculate - Injection
5.1*	Recirculate - Other
12.6*	Land Application, Spreading or Treatment
21.6	Truck to POTW or Sewer
16.8*	Discharge through Sewer to POTW
13.5*	Discharge to Surface Water
2.7**	Other or Unknown Off-site Treatment
14.2*	On-site Treatment - Biological
7.0*	On-site Treatment - Physical/Chemical

Planned Landfill Units

QP3. What is the *total area* of the landfill unit?

Average

18.8 Acres

QP4. What is the planned *total volume* of the landfill unit?

Average

1,026,630 Cubic Yards

QP6. What *types of liners* are planned? (Multiple responses allowed.)

Percent

30.2	In-Situ Clay
20.2	Re-compacted Clay
15.4	Soil
6.4	Synthetic Membrane
.1	Asphalt
8.0	Other
34.5	None or Unknown

QP7. What will be the *layer thickness* for each type of liner planned?

Average

11.9	Feet, In-Situ Clay
3.5	Feet, Re-compacted Clay
24.6*	Feet, Soil
52.8	Mils, Synthetic Membrane
1.0**	Inches, Asphalt
28.5*	Inches, Other

QP10. What *types of final cover* are planned? (Multiple responses allowed.)

Percent

49.5	Soil Layer
10.4	Sand or Gravel Layer
32.9	Re-compacted Clay Layer
2.5	Synthetic Membrane
37.3	Topsoil Layer
10.2	Other
4.3	Unknown

QP11. What will be the *layer thickness* for each type of cover planned?

Average

2.1	Feet, Soil Layer
2.5	Feet, Sand or Gravel Layer
1.8	Feet, Re-compacted Clay Layer
32.4	Mils, Synthetic Membrane
1.1	Feet, Topsoil Layer
2.6	Feet, Other

QP14. Will this landfill unit have a *leachate collection system*?

Percent

21.2	Yes
------	-----

QP17. What will be done with any leachate collected in this landfill unit? (Multiple responses allowed.)

Percent

- 30.4 Recirculate - Spray on active landfill area
- 1.9** Recirculate - Injection
- 3.2** Recirculate - Other
- 9.1* Land Application, Spreading or Treatment
- 39.5 Truck to POTW or Sewer
- 16.2 Discharge through Sewer to POTW
- 3.4** Discharge to Surface Water
- 3.2** Other or Unknown Off-site Treatment
- 16.6 On-site Treatment - Biological
- 7.3* On-site Treatment - Physical/Chemical

Part 6: Monitoring Systems

Q6.1 Does all or part of this landfill facility have any of the following, either completed or under construction? (Multiple responses allowed.)

Percent

- 6.7 A Landfill Gas Monitoring or Detection System
- 2.1 A Landfill Gas Recovery System

Q6.3 Is the ground water monitored at this landfill facility?

Percent

- 35.8 Yes

Q6.4 How is the ground water is monitored at this landfill facility? (Multiple responses allowed.)

Percent (computed for facilities that monitor ground water)

- 39.1 Individual Landfill Units Have Monitoring Wells
- 83.0 Overall Facility Has a Monitoring System

Q6.6 Describe the *upgradient ground-water monitoring wells* at this landfill facility.

Average (computed for facilities that monitor ground water)

- 2.1 Number of wells
- 63.2 Feet, depth of wells from ground surface
- 3.3 Number of times wells are sampled per year
- 1.9 Number of samples per well per sampling period
- 5.0 Years, longest time any of these wells have been sampled?

Describe the *downgradient ground-water monitoring wells* at this landfill facility.

Average (computed for facilities that monitor ground water)

- 3.8 Number of wells
- 54.2 Feet, depth of wells from ground surface
- 3.3 Number of times wells are sampled per year
- 2.1 Number of samples per well per sampling period
- 5.1 Years, longest time any of these wells have been sampled?

Q6.7 Has this landfill facility ever been found to be a *source of ground-water contamination* by any government authority?

Percent

- 2.1 Yes

Q6.9 Does this landfill facility *monitor air emissions*?

Percent

- 2.7 Yes

Q6.10 Does this landfill facility *monitor surface water*?

Percent

- 15.3 Yes

Q6.11 How many *times per year* is *surface water sampled* at this facility?

Average (for facilities that monitor surface water)

- 3.5 Times per year

Part 7: Landfill Operating Costs and Revenues

Q7.2 What is the approximate *total annual operating cost* of this landfill facility?

Average

\$270,030 Per year
\$51.70 Per ton

Q7.5 What is the average *tipping fee* per ton of waste disposed at this landfill facility for each of the categories below?

Average (computed for facilities that reported a tipping fee by the ton, cubic yard, or no fee at all)

\$1.77 Per Ton, for Commercial and Residential Wastes
.39 Per Ton, for Sewage Sludges
.22 Per Ton, for Municipal and Other Incinerator Ash
1.56 Per Ton, for Non-hazardous Industrial Process Waste

Average (computed only for facilities that reported a tipping fee by the carload)

\$7.48 Per Carload or Truckload, for Commercial and Residential Wastes

2. Question 2 - Clarify what and how much site specific analyses are anticipated (p. 1-16-17).

On pages 1-16 and 1-17 of our proposal, we state that Task 1 will require expertise in the structure, data files and input requirements of pathway codes "which may be used to assess impacts on a generic or facility and site specific basis." It is difficult to judge the degree to which site-specific analyses, if any, will be required on the project. However, we envision that site-specific analyses may be useful on the project for the following reasons.

- (1) As discussed on page 1-16 of our proposal, the performance of selected site-specific analyses may be useful in helping to demonstrate the applicability of IMPACTS-BRC to a broad range of sites. Section 2.2 (page 2-23) of our proposal identifies several site conditions under which IMPACTS-BRC may be overly conservative or inappropriate. In order to explicitly address the potential importance of these conditions, site-specific analyses could be part of the sensitivity and uncertainty analyses performed in support of the preparation of a rule or regulatory guide in Task 3, or a petition review performed in Task 4.
- (2) Though a waste stream proposed for exemption will be characterized on a generic basis, in accordance with Decision Criterion 7, the review of the petition by agreement states may reveal that for any particular compact or state, the disposition of the waste stream may be limited to specific processing and/or disposal facilities in the state or compact. Accordingly, site-specific analyses may be part of the Task 4 support provided during the agreement state review process.
- (3) Though the RFP states that Task 4 work assignments will address petitions filed in accordance with 10 CFR Part 2, Appendix B, we did not rule out the possibility that we may be called upon to review site-specific requests for exemptions filed under Part 20.302(a).

The extent to which site-specific analyses may be needed also depends on the type and level of verification and validation analyses performed by Sandia in support of its recent revision of IMPACTS-BRC. In order to make the most effective use of the work recently performed by Sandia (and avoid "reinventing the wheel"), we have made arrangements with Sandia to provide consulting assistance to us on the project. A description of the scope of this work and the Sandia letter of commitment is provided in our response to Question 3.

Conditions under which site specific analyses may be useful will be identified and discussed with the Project Officer and work will not begin until we have received authorization to do so. In our original proposal, Task 2 was assigned 3450 hours, about half of which was allocated to Subtask 2.2, Uncertainty and Sensitivity Analysis. An unspecified portion of this was intended for use on site-specific studies, as needed. In this best and final, Sandia has been added as a subcontractor (see our response to Question 3) in order to make the most effective use of the uncertainty and sensitivity analyses that they have performed as part of the development of Version 2.0 of IMPACTS-BRC. Accordingly, we are able to reduce the number of hours allocated to Subtask 2.2

3. Question 3 - Provide assurance that Sandia intends to support you in implementing the IMPACTS BRC computer code.

[REDACTED] A
copy of their recent paper (titled, IMPACTS-BRC: The Microcomputer Version) presented at the February 1990 HPS Mid-Year Topical Symposium was obtained and reviewed. Version 2.0 operates in a DOS-shell environment which makes it easier and more efficient to use. Some of the previously identified problems with file designations and addresses have also been resolved. Version 2.0 of the IMPACTS-BRC code will be available in May 1990 through the Argonne National Energy Software Center. The necessary steps will be made to procure this software package from Argonne.

[REDACTED] The stochastic version is, however, not ready for use since it still requires about 2-3 man-months to complete. The stochastic version of IMPACTS-BRC could prove to be useful to the project if it were completed in time to support Task 2 activities.

[REDACTED] At this point in time, a level of effort involving about 100 work hours has been identified. Sandia has indicated that they are prepared to provide additional support, as needed. Sandia's support will be provided in Task 2 and will consist of:

- (1) helping the project team to quickly "come up to speed" and make the most intelligent use of Version 2.0 of IMPACTS-BRC,
- (2) assisting the project team in identifying conditions under which the data files and decision indices may need to be modified and how best to make those modifications,
- (3) assisting the project team in identifying conditions under which Version 2.0 algorithms may need to be revised and how best to make those modifications,
- (4) describing the validation and verification tests that have been performed in support of the development of Version 2.0 so that intelligent judgements can be made regarding the possible need for additional validation

and verification analyses, including site-specific analyses (see our response to Question 1), and

- (5) assisting us in identifying conditions under which Version 2.0 should be replaced or supplemented with other models.

In addition to these 5 areas, we also propose an optional subtask under Task 2 that would be performed by Sandia. If authorized by the Contracting Officer, Sandia will develop a stochastic version of IMPACTS-BRC. The stochastic version of IMPACTS-BRC may be a more comprehensive and possibly cost-effective method for performing uncertainty analyses in support of a rulemaking. However, due to uncertainties in the costs at this time, we have not included it in our cost proposal. Instead, at such time that the Contracting Officer authorizes work to proceed on Task 2, we will discuss the costs and benefits of this optional task.

A letter of intent from Sandia National Laboratories is included in Exhibit 3-1 for inspection. Our revised cost proposal includes only the expenditures associated with 100 work hours, as noted above. This cost estimate does not include any expenditures to complete the stochastic version of the IMPACTS-BRC code. This work, or any portion of this work, will be performed under Task 2 and, as such, will only proceed following written authorization by the Contracting Officer.

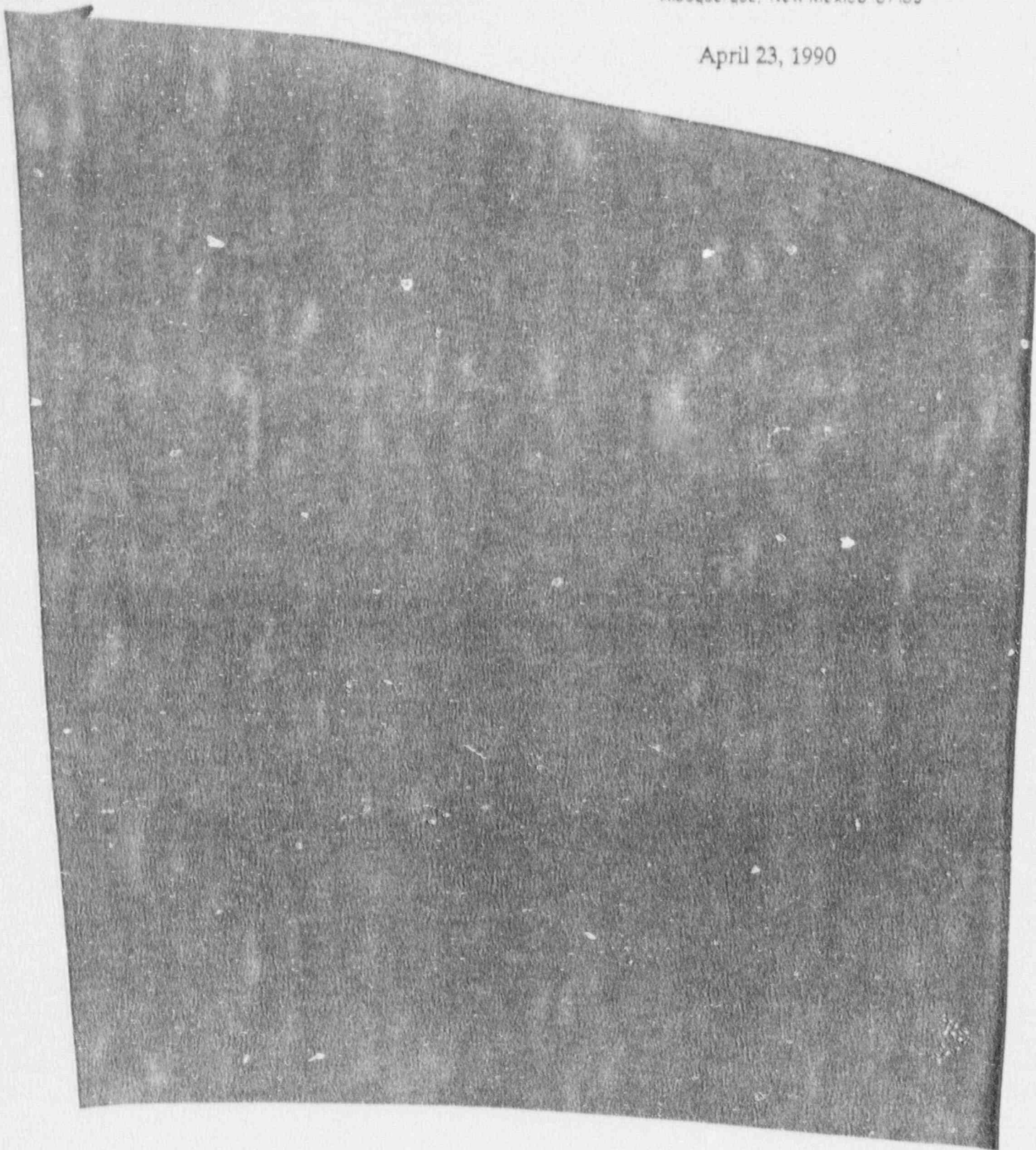
Exhibit 3-1

LETTER OF COMMITMENT

Sandia National Laboratories

Albuquerque, New Mexico 87185

April 23, 1990



Mr. Sanford Cohen, PhD

-2-

April 23, 1990

If you have any questions concerning Sandia's potential involvement in this program, please contact me at (505) 844-8368 or Jim Campbell at (505) 844-5644.

Sincerely,

R. M. Cranwell

R. M. Cranwell, Supervisor
Safety & Reliability Analysis
Division 6415

Attachment: Cost Estimate

RMC:6415:jm

Copy to:

John Mauro, SCNA

209 Ueland Road, Red Bank, NJ 07701

6410 D. A. Dahlgren
6415 J. E. Campbell
6415 R. M. Cranwell

4. Question 4 - Provide additional details regarding the applicability and limitations of the MIMS database mechanics of access to the databases.



Exhibit 4-1

SAMPLE REPORT CHARACTERIZING WASTE SHIPMENT VOLUMES
ACTIVITY, AND NUMBER OF PACKAGES



Exhibit 4-2

SAMPLE SUMMARY REPORT OF SHIPMENT INFORMATION



Exhibit 4-3

SAMPLE SUMMARY REPORT FOR A WASTE CONTAINER AND
AN UNIDENTIFIED WASTE GENERATOR

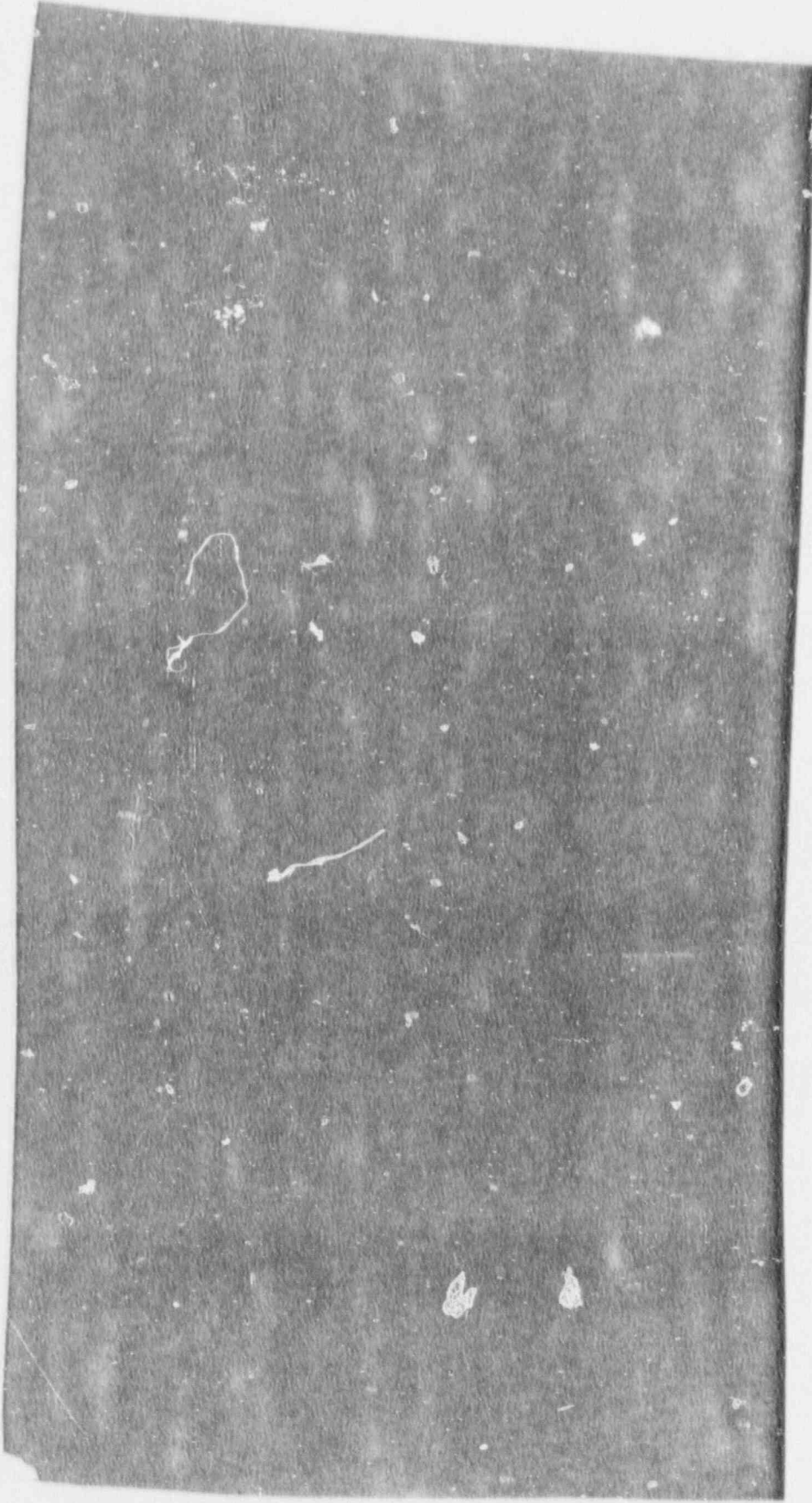


Exhibit 4-4

SAMPLE SUMMARY REPORT FOR A WASTE CONTAINER AND
AN IDENTIFIED WASTE GENERATOR

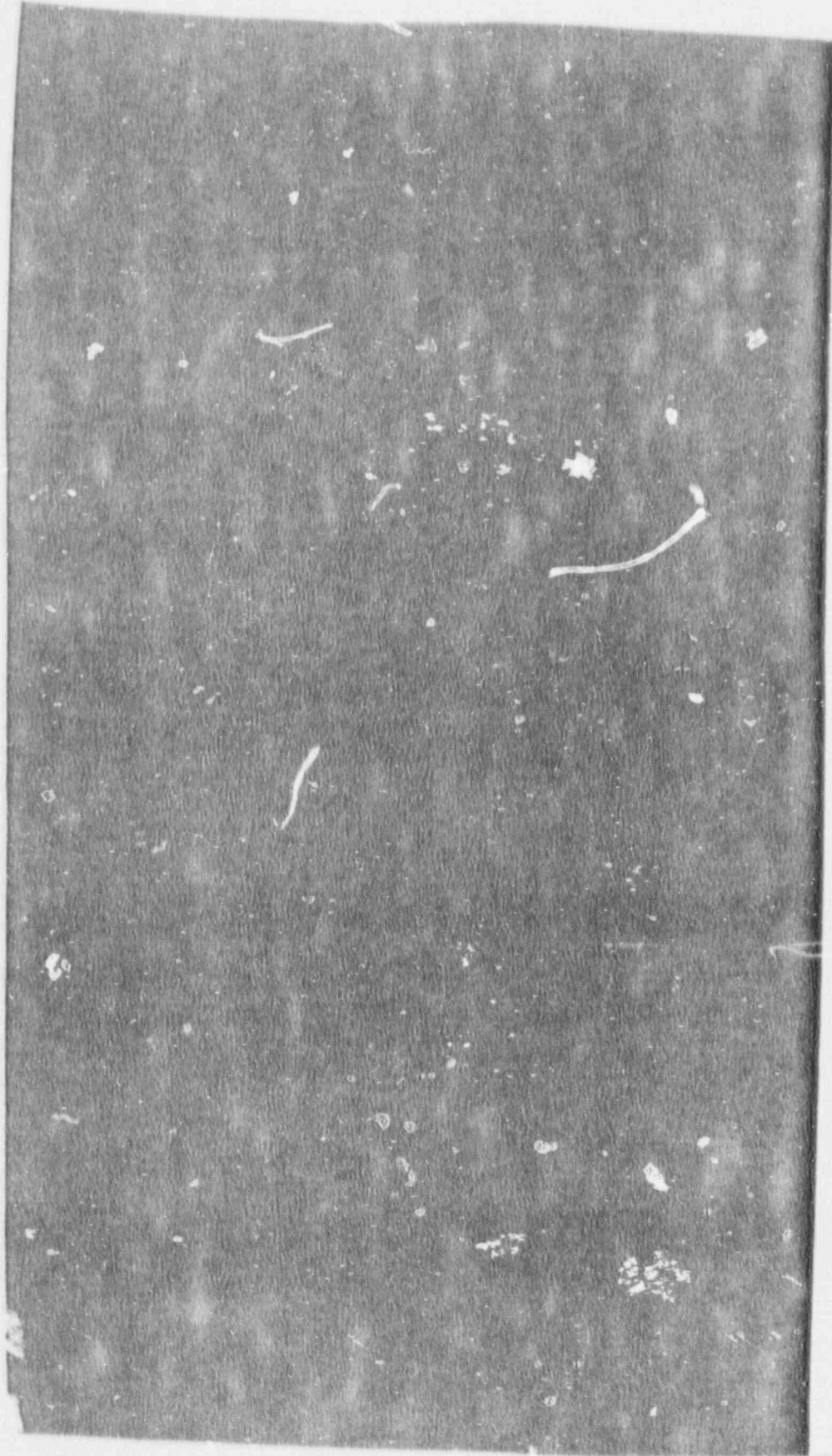
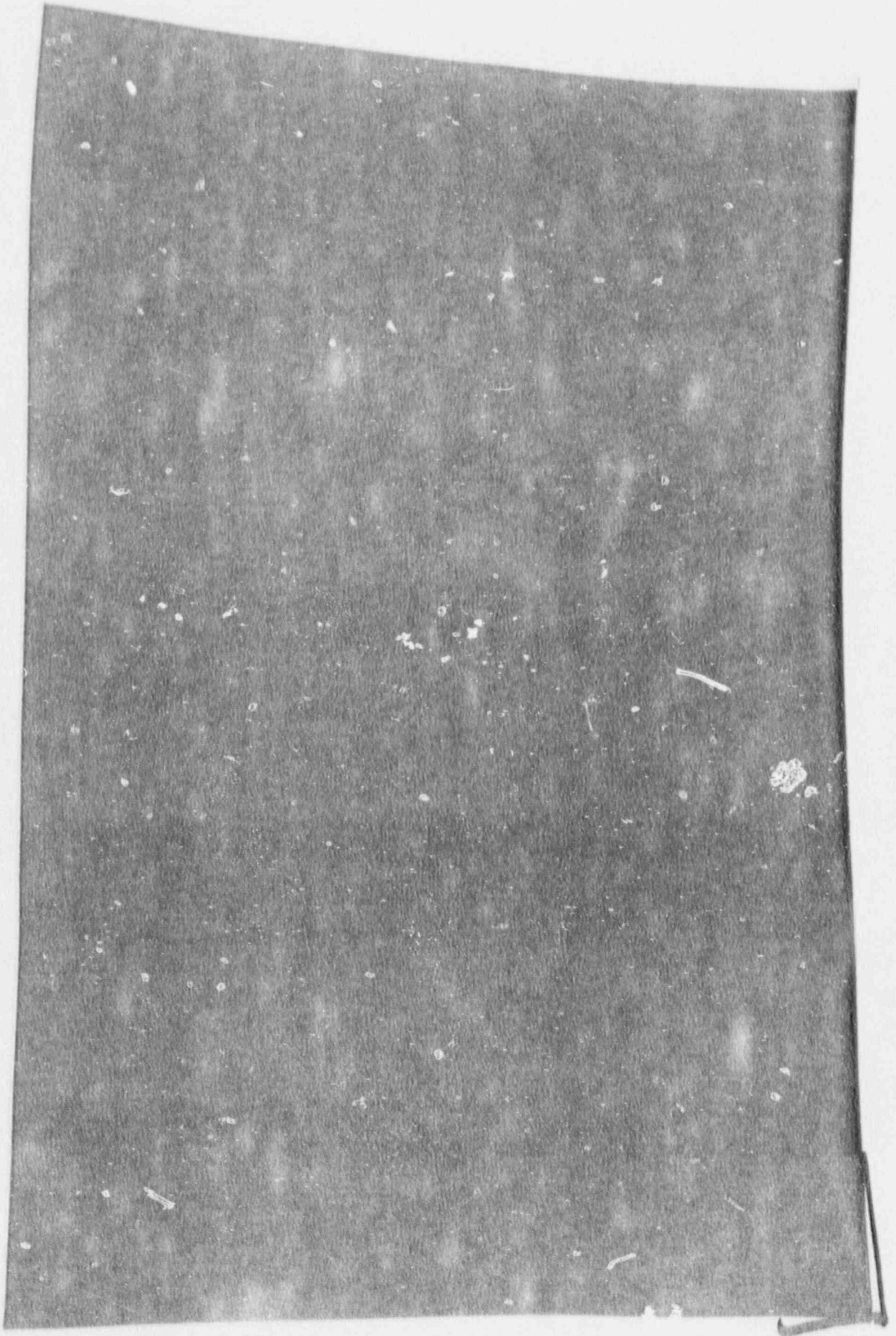


Exhibit 4-5

WASTE DESCRIPTION AND CHARACTERIZATION CODES



5. Question 5 - Discuss how the information missing from the manifests due to the use of brokers would be supplemented by surveys from a selected few waste generators (p. 2-2).

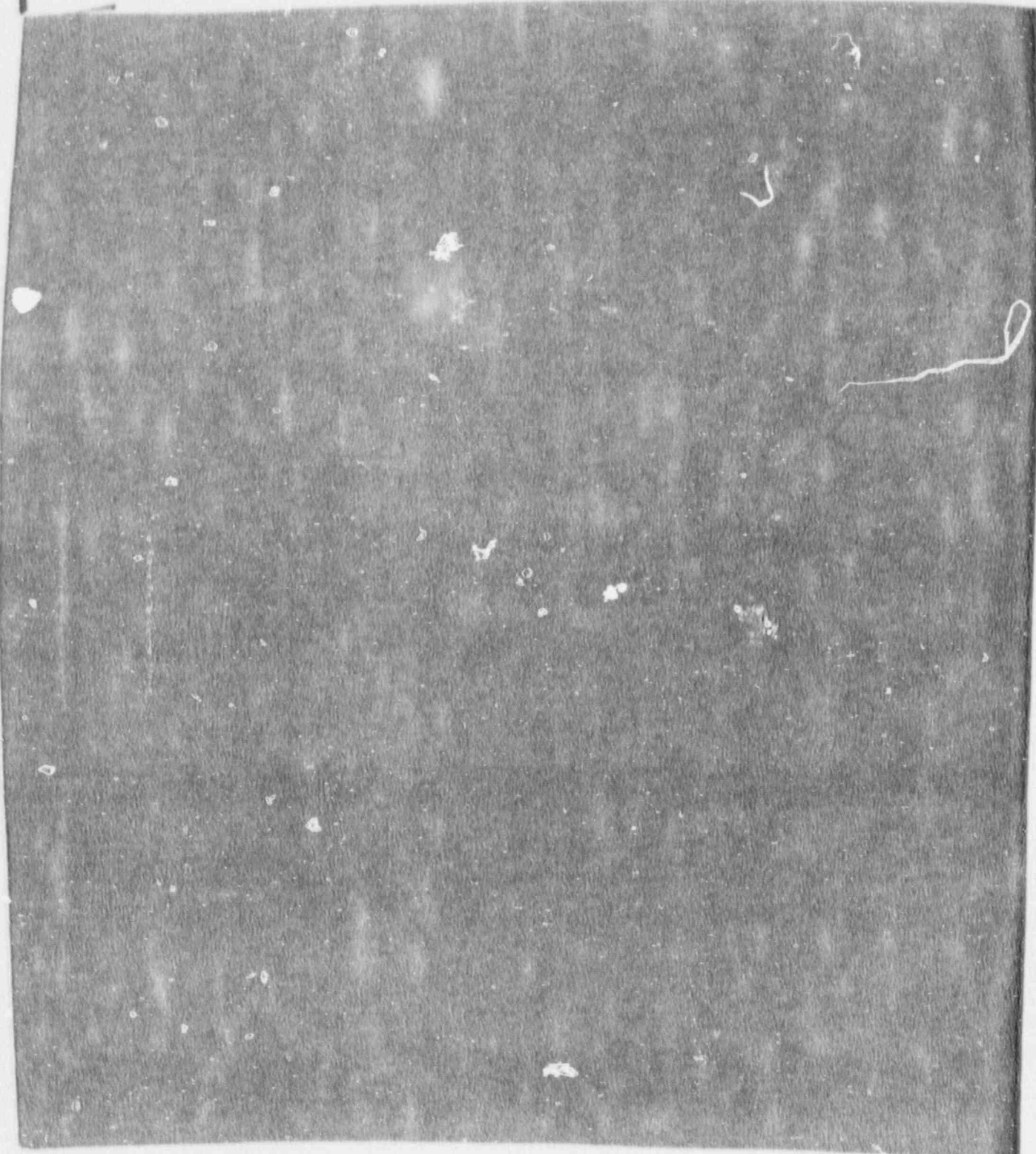
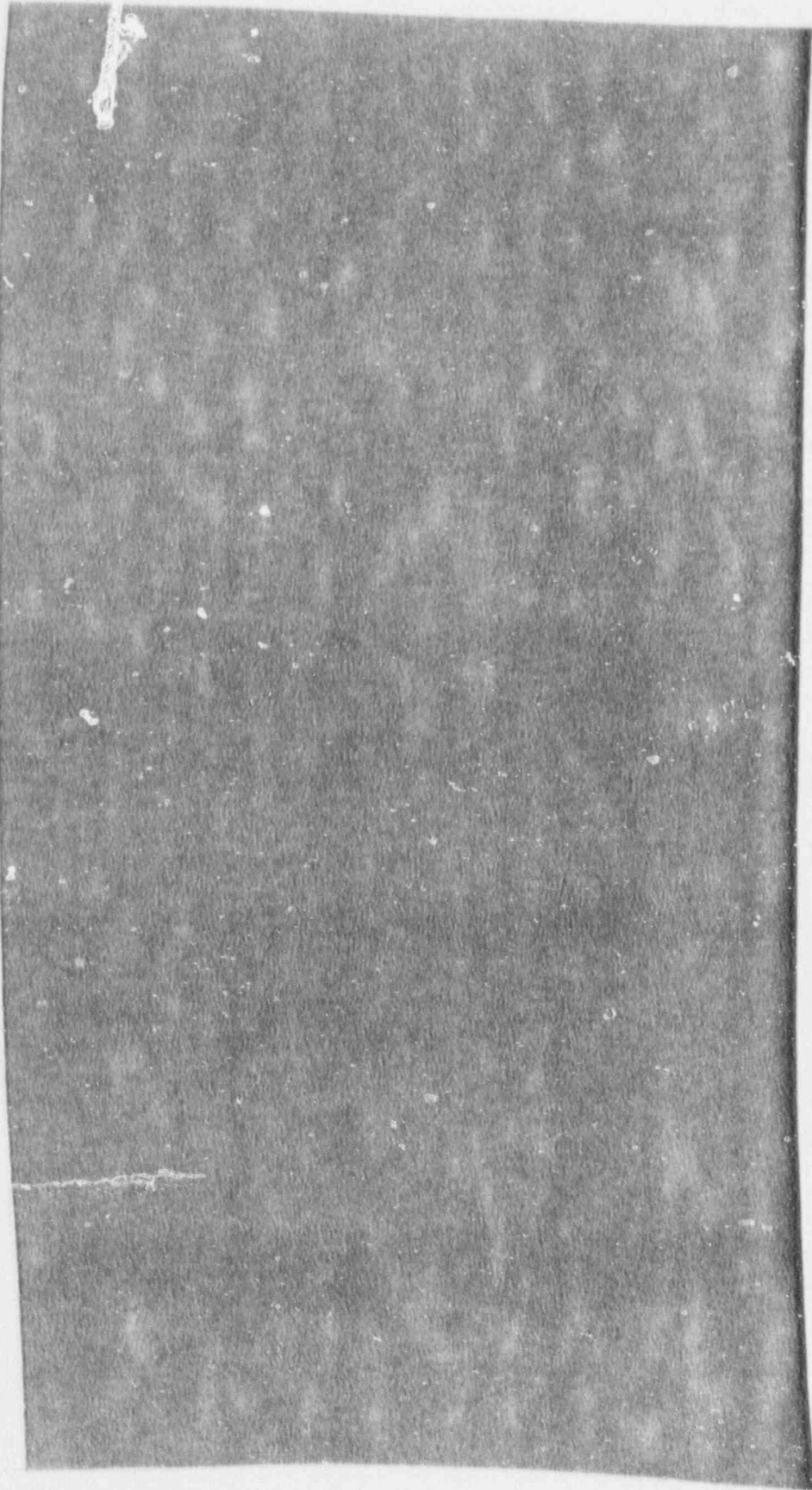


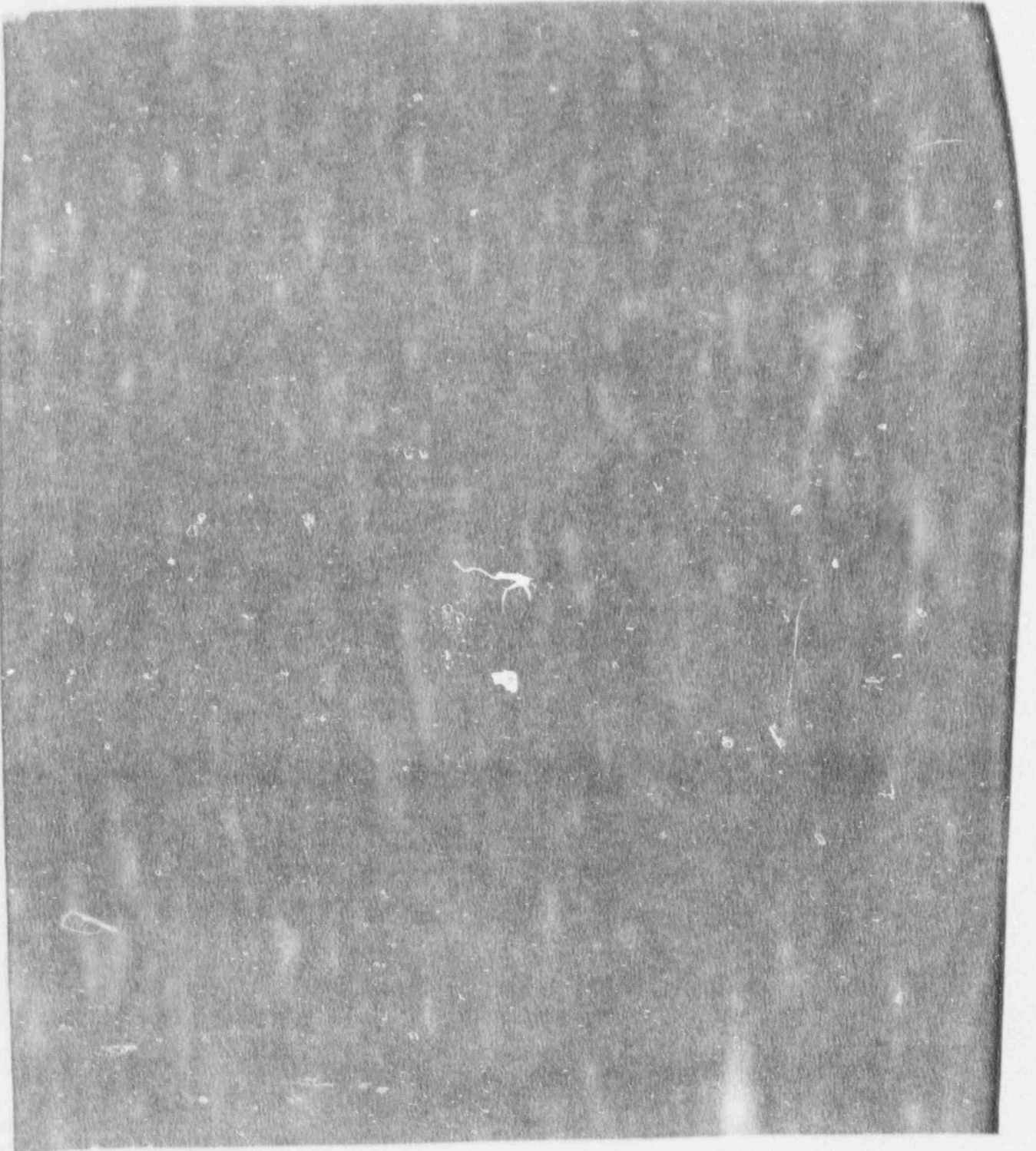
Exhibit 5-1

SAMPLE SUMMARY REPORT FOR A WASTE CONTAINER AND
AN IDENTIFIED WASTE BROKER



7

6. Question 6 - Discuss how the proposed individuals are qualified in the areas of computer modeling (p. 3-13, 20 and Table 3-1), as well as computer simulations of containment exchange, dose projections, health effects projections, and environmental impacts.



7. Question 7 - How would petition reviews be planned?

It is our understanding that, upon NRC's receipt of a petition for rulemaking for deregulation of a waste stream, the NRC Contracting Officer will issue a Task Order to SC&A. The Task Order will be put into effect in accordance with the Task Order Procedures set forth in Section G.5 or Section G.6 of the RFP. The plan for performing the review will be an integral part of the Task Order Proposal prepared by SC&A in response to the Task Order Request for Proposal.

The following describes the mechanics of preparing a Task Order proposal, including the planning process, followed by a description of the key technical elements of the planning process.

Planning Mechanics

SC&A's quick response procedures are already established to receive, approve, plan, and perform tasks on extremely short notice. Dr Mauro, who is the proposed Project Manager as well as a principal within SC&A, has the authority to accept tasks without further management approval. This eliminates the time-consuming cycle of approvals from other company managers. The procedure for processing of a Task Order is as follows:

Day 1 - 2 Task Order Requests for Proposal issued in writing by the Contracting Officer are received by the SC&A Project Manager. The Project Manager, Project Director, and Task 4 Leader will identify the most qualified Task Manager for the assignment. Appointment of the Task Manager will generally reflect particular experience directly related to the assigned task. The Task Order is reviewed with respect to:

- o the goals and objectives the Contracting Officer establishes for the performance of the assignment;
- o the subject of the assignment;
- o the established Task Order budget;
- o requirements of concurrent and potential future tasks for this and other assignments;

After this initial review, the Project Manager, Task 4 Leader, and Task Manager (if different than the Task 4 leader) consults with the NRC Contracting Officer and Technical Representative

to ensure that SC&A's understanding of the work to be performed agrees completely with that of the NRC.

Day 3 - 7 The Task Order Proposal (technical and cost) will be prepared in accordance with the Task Order RFP instructions and any additional instructions provided by the NRC Technical Representative. The technical and cost proposals will be prepared in accordance with the format and contents delineated in Section G.5 of the RFP, including scope and approach to be taken to complete the assignment, an estimated schedule for completion, an estimate of direct labor hours required for completion, the cost for labor and other direct costs (travel, material, computer, etc.), and a listing of people assigned to the project with an estimate of time to be spent by each person.

Day 7 - The Task Order Proposal is completed and submitted to the NRC. Work on the assignment will begin following written approval of the Contracting Officer.

This planning and resource allocation exercise for the task has several benefits. It flags potential problems so that when and if they are encountered in the course of task performance, the options for solution have already been conceptualized. It identifies all available technical resources so that if a problem should be encountered during the performance of the task, alternative personnel may be assigned quickly. Similarly, alternative Task Managers will have been identified. Thus, with all aspects of the task carefully examined in advance, slippage in the performance of a subtask can be corrected for efficiency, without jeopardizing the overall performance of the task.

The above schedule for initiating work on a give Task 4 assignment could be shortened for those assignments that require little planning. Under these circumstances, the Task Order Proposal could be turned around in one day. Finally, work can begin immediately following verbal authorization by the Contracting Officer under the Accelerated Task Order Procedures delineated in Section G.6 of the RFP.

SC&A is very experienced in assembling technical skills from a pool of its own resources and those of subcontractors into task teams in order to accomplish complex technical task assignments. A recent example is the technical support provided to the EPA Office of Radiation Programs to provide a Background Information Document in support of its radionuclide regulations under the

Clean Air Act (a re-proposal).¹ SC&A assembled a team of approximately 20 professionals drawn from three firms to develop the draft of the Background Information Document within a period of approximately six months.

Many of SC&A's projects have consisted of quick response tasks. For example:

For the Office of Technology Assessment, SC&A was required to deliver a report on the nuclear regulatory process within 45 days of work initiation. The report, which included three on-site, utility case studies, was needed in support of a workshop on nuclear power.

For the Edison Electric Institute, the results of a 50-page survey of 80 utilities were compiled and summarized in two weeks.

For the Nuclear Safety Oversight Committee (now defunct), interviews were held with 16 NRC branches in a one month period, in order to prepare a report on the NRC before the Committee went out of existence.

For the Nuclear Regulatory Commission, a method was developed in 45 days for projecting volumes of low-level waste generated at nuclear power plants on a job-specific basis.

For the EPA Office of Radiation Programs, comments on Clean Air Act standards for radionuclides were summarized within days after they came into the agency. Additionally, the first draft of the Background Information Document was reviewed and substantially updated within 45 days of the initiation of work. All available pathway models for predicting dose from contaminated surfaces were reviewed, summarized, and critiqued over a two-month period.

Key Technical Elements of the Planning Process

The above discussion emphasizes the mechanics of the planning process. This section describes the technical elements of the planning process.

¹ It is appropriate to note that the Background Information Document included a detailed evaluation of the source terms, offsite doses and risks associated with routine atmospheric emissions from DOE facilities

Section 10 of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (the Act) addresses disposal of wastes below regulatory concern and provides for the Commission to establish procedures for acting expeditiously on rulemaking petitions to exempt specific BRC waste streams from regulation. 10 CFR 2.802 sets forth the general requirements for petitions for rulemakings. In response to Section 10 of the Act, the Commission developed and issued a Policy Statement on Radioactive Waste Below Regulatory Concern, Appendix B to 10 CFR 2. The policy statement identifies the information to be submitted by the petitioner in support of the petition, the 14 decision criteria that will be used by the staff in acting on the petition, and the administrative procedures for assuring expeditious handling. In addition to the Policy Statement, a draft Standard Review Plan (SRP) (NUREG-1351) has been developed to provide guidance to both the staff and petitioners on how BRC petitions will be reviewed and the basis for those reviews. It is worth noting that the expeditious handling of petitions (i.e., review against Appendix B of 10 CFR 2 and the SRP) is based on the petitioner providing complete and accurate information on all aspects of the scope described in the policy statement.

In planning how a BRC Petition review would be conducted, we would base our schedule and our scope on the requirements and guidance provided in the Policy Statement and the SRP. Since the Statement of Work is not clear at the exact stage of the rulemaking process that the Task Order would be executed, we have assumed that it calls for us to perform an active role in the process from the time that the petition is determined by the Regulatory Publications Branch (RPB) of the Office of Administration (ADM) to be a BRC petition. Given this assumption, the first Task would be to determine whether or not the petition provides the information and analyses required by 10 CFR 2.802(c) to qualify for docketing and the additional information and analyses required by Appendix B to 10 CFR 2 to satisfy the 14 decision criteria and thus qualify for expedited processing. In our original proposal, we referred to this acceptance review as a minireview. The objective of the review is not to perform an in-depth review of the petitioner's bases, supporting analyses, alternatives, and proposed rule. Rather, it is to identify the completeness of the submission with respect to the requirements of 10 CFR 2.802(c) and the 14 decision criteria of Appendix B to qualify for expedited handling.

The results of the review would be a decision memorandum stating, as appropriate: 1) that the petition does not qualify for docketing because it does not meet the requirements of 10 CFR 2.802(c); 2) that it qualifies for docketing but does not meet the requirements of Appendix B to 10 CFR 2 for expedited handling; or 3) that the petition should be granted expedited handling as it covers in reasonable detail all of the pertinent

topics listed in either the SRP or Section II of the staff implementation plan, and that the petition addresses and appears to satisfy each of the 14 decision criteria. The estimated time for performing the acceptance review is 2-4 weeks if the petition does not qualify for docketing, and 4-8 weeks if it qualifies for docketing with or without expedited handling.

The next step in the Petition Review process is to prepare the Federal Register Notice of Receipt of Petition. The FR Notice defines the scope of the proposed rulemaking (including alternatives) and summarizes the Petitioner's basis for the action including identification of the environmental, economic, and public health and safety impacts. The notice explicitly requests interested parties to provide pertinent information and comments on the issues to be addressed and other areas of concern. The scope of the proposed rulemakings, the alternatives, and the environmental, economic, and public safety impacts are summarized from the petition itself. The issues to be addressed and other areas of concern are developed from the specifics of the petition, the tentative conclusion of the acceptance review, the Policy Statement, and inputs from cognizant staff. Preparation of the FR notice is estimated to require approximately 3 weeks.

Concurrent with the development of the FR Notice of Receipt of Petition, the detailed technical review and evaluation work is started. The first sub-task involves the identification and assignment of the specific members of the SC&A team who will be responsible for the reviews and confirmatory analyses. Once the review team is chosen, the technical review begins. The technical review includes review and evaluation of the information and analyses submitted to support the petition in the following areas and topics:

1. General Considerations
 - 1.1 10 CFR 2 Requirements
 - 1.2 Environmental Impacts
 - 1.3 Economic Impacts on Small Facilities
 - 1.4 Computer Programs
 - 1.5 Geographic Scope
2. Waste Characteristics
 - 2.1 Radiological Properties
 - 2.2 Non-Radiological Properties
 - 2.3 Total Volumes of Waste
 - 2.4 Basis for the Waste Characterization
 - 2.5 ALARA Considerations
3. Waste Management Options

4. Analyses

- 4.1 Radiological Impacts
- 4.2 Non-radiological Impacts
- 4.3 Regulatory Analyses

5. Recordkeeping and Reporting

- 5.1 Surveys
- 5.2 Reports

6. Proposed Rule

The SRP provides a detailed scope, review procedures, and acceptance criteria for each of these areas and topics. It should be noted that affirmative findings must be made with respect to each of these areas for the process to proceed to the point of preparing the Federal Register Notice for the Proposed Rule. In the event that the petitioner's analyses do not allow an affirmative finding, the petition will be rejected with a finding that the proposed waste stream should continue to be subjected to regulatory control as low-level waste.

The result of the technical review will be an in-depth technical report detailing the scope, basis, and results of the reviews. This report will serve as the basis of the FR Notice for the Proposed Rule. The technical review is estimated to require between 3-6 months. It should also be noted that if the petition involves waste streams from power reactors, then review and concurrence by the Committee to Review Generic Requirements (CRGR) is required prior to proposal.

In addition to the above discussion, our responses to Questions 16 and 17 provides additional information that is also applicable to this question. Our response to question 16 describes the project tracking system that will be used as a management tool for a petition review. Our response to Question 17 presents a preliminary work breakdown structure and the critical milestones for a petition review.

8. Question 8 - How do you plan to prepare technical information for both a rule and a regulatory guide as stated in the Statement of Work of the solicitation? (p.2-30)

Our concept of the project is that Task 1 will be devoted to establishing a comprehensive database that will support analyses and decisions pertinent to the development of BRC rules and/or regulatory guides (i.e., Task 3) and the review of petitions (i.e., Task 4). In many respects, Task 2 will serve a similar function, except that the emphasis will be the performance of pathways analysis (using input data gathered in Task 1) that will be used to support Task 3 and 4.

Technical Support of a Rule and/or
Regulatory Guide (i.e., Support of Task 3)

In support of Task 3, Tasks 1 and 2 will provide information that will aid in a broad range of decision making processes, including

- o whether a rule and/or regulatory guide is needed, and
- o whether the rule or regulatory guide should be prescriptive or performance based.
- o Once these decisions are made, the information available from Tasks 1 and 2 will be used to prepare and defend the rules and regulatory guides.

Since the rules and/or regulatory guides that will be prepared in Tasks 3 are yet to be defined and could take a variety of forms, the types and level of detail of the data and the amount of data processing required in Task 1, and the pathways analyses performed in Task 2, need to be as complete as possible. Task 1 should not be limited by preconceptions regarding the types of rules and/or regulatory guides that they will support. Accordingly, the data gathered in Task 1 and the analyses performed in Task 2 will need to be as comprehensive as possible.

For the purpose of responding to this question, let us assume that a highly prescriptive rule is being considered; i.e., a rule that exempts specific waste streams and/or specific waste streams that have radionuclide concentrations that are below a prescribed level. In addition, let us assume that the rule will not establish any constraints on the methods by which the waste stream may be processed and/or disposed. The data gathered in Task 1 and the analyses performed in Task 2 will need to be able to support such a rule.

It is conceivable that IMPACTS-BRC or one of its family of codes, such as INVERSE or INVIMPS, could be used to identify waste

streams and/or back-calculate that concentration of individual radionuclides in individual waste streams that will result in 10 mrem/yr to the maximum individual and 1000 manrem/yr to the general population, or simply calculate doses on a per unit basis (i.e., mrem/yr per pCi/g and person rem/yr per pCi/g). This information could, in theory, be used to prepare a rule that establishes limits on the individual radionuclide concentrations in individual waste streams, similar in concept to the MPC tables in Appendix B to 10 CFR 20, and, if the waste stream contains more than one radionuclide, the sum of doses rule would be used.

The above described analysis will be performed as part of Task 2. However, by no means is it sufficient by itself to support a prescriptive rulemaking for a number of reasons, including the following:

- o There is a degree of uncertainty regarding the completeness of the process, disposal, and exposure scenarios explicitly addressed in IMPACTS-BRC.
- o For those scenarios addressed in IMPACTS-BRC, there is a degree of uncertainty regarding the representativeness of the default databases and assumptions used in IMPACTS-BRC.
- o For any given radionuclide concentration derived using the above described method, the volume of waste in a given waste stream that will fall within the BRC criteria is uncertain, and as such, the cost-benefit of the criteria is uncertain.

The technical database and analyses required to support a prescriptive rulemaking would need to be developed and defended by the NRC to at least the same level of detail as that required to support a petition for rulemaking filed by an Applicant in accord with Appendix B of 10 CFR 2.802 and reviewed under Task 4. Accordingly, guidance on the types of technical analyses required to support a rulemaking can be taken from the 14 Decision Criteria set forth in the Policy Statement. Given this understanding of the types of technical information that may be required to support a rulemaking or regulatory guide, the following describes how the technical information will be prepared.

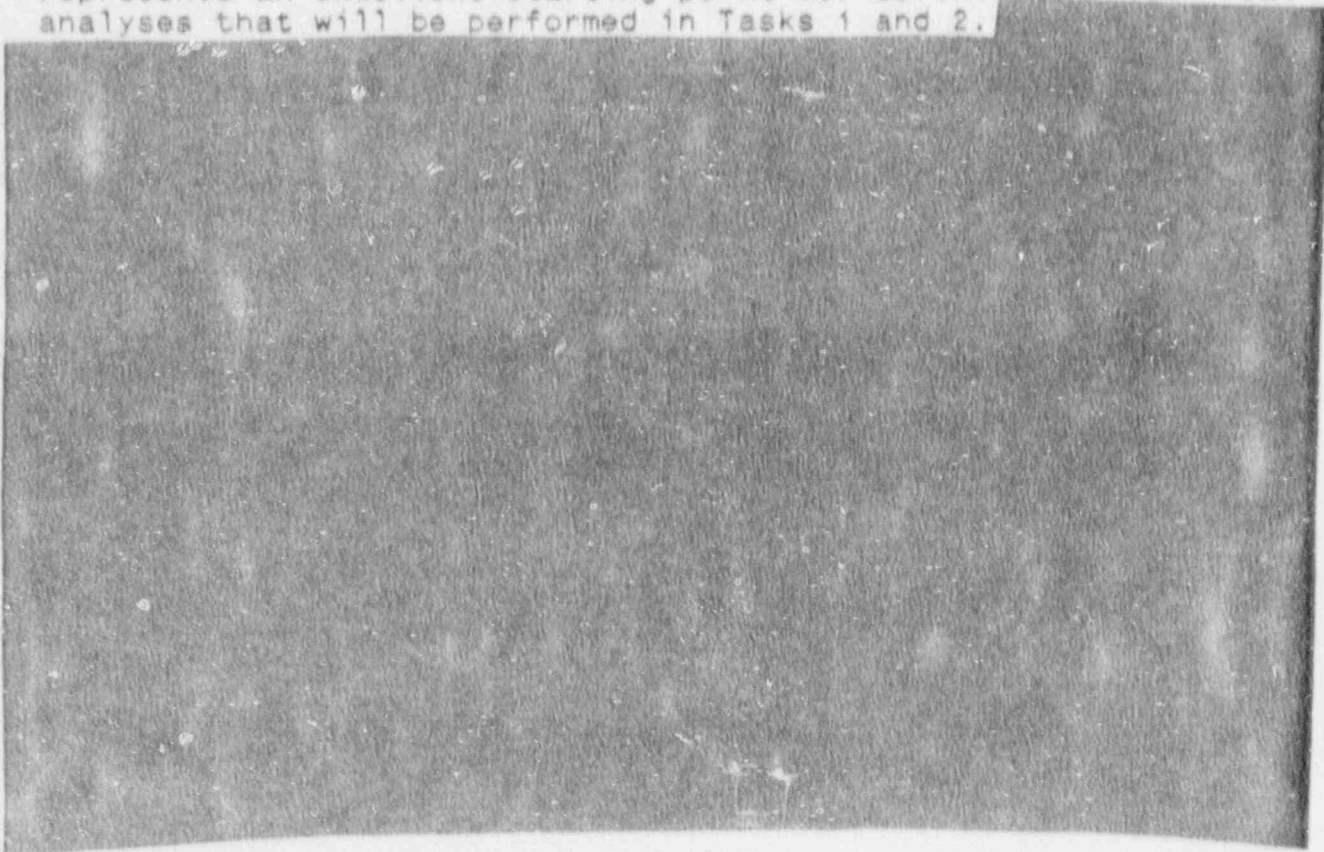
Section 2.1 (beginning on page 2-1) of our proposal describes the technical information that will be acquired and the methods that will be used to acquire this information. Section 2.2 (beginning on page 2-22) of our proposal describes the pathways analyses that will be performed. The descriptions are fairly detailed but they do not make any assumptions regarding the specific type of rule or regulatory guide that the data and analyses will be

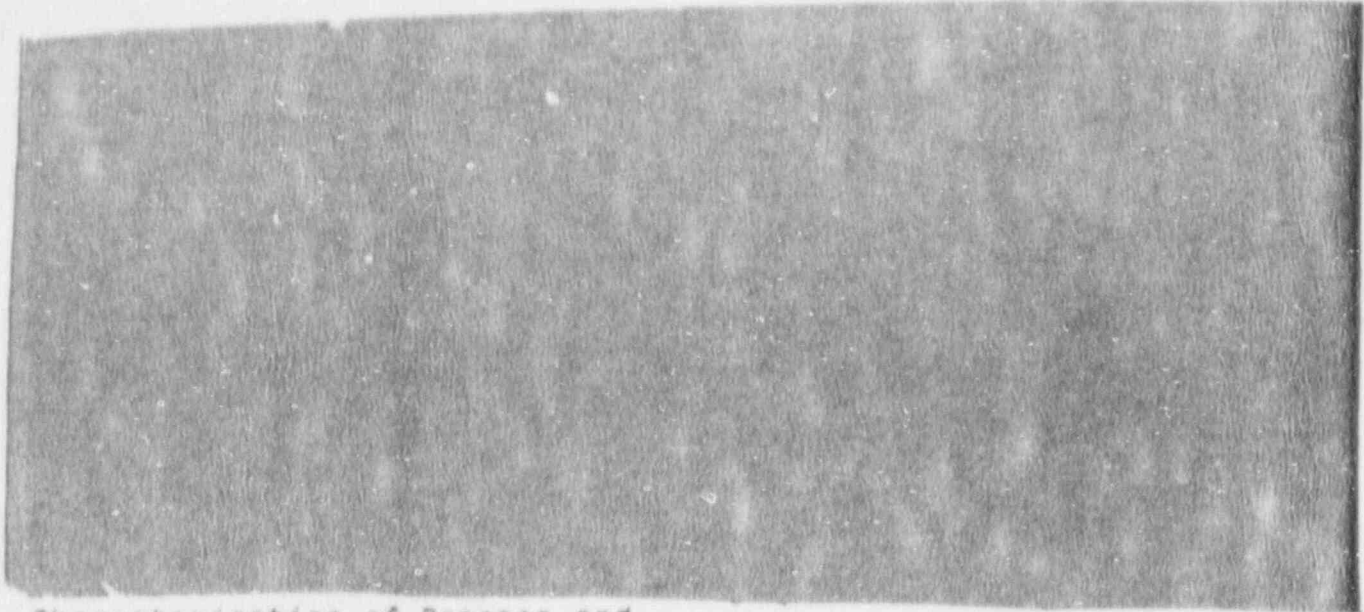
called upon to support. In the discussion that follows, a more detailed description is provided on how the information collected in Task 1 and the analyses performed in Task 2 may be used to support a prescriptive rulemaking or regulatory guide in Task 3.

The various subtasks comprising Task 1 can be grouped into two broad categories; those that characterize potential BRC waste streams (i.e., Subtasks 1.1 to 1.5) and those that characterize the processing and disposal options (Subtasks 1.6 to 1.8). Subtask 1.9 represents the point where these two sets of activities come together to identify critical exposure pathways. The following description of how technical information will be prepared in Task 1 is divided into these two categories.

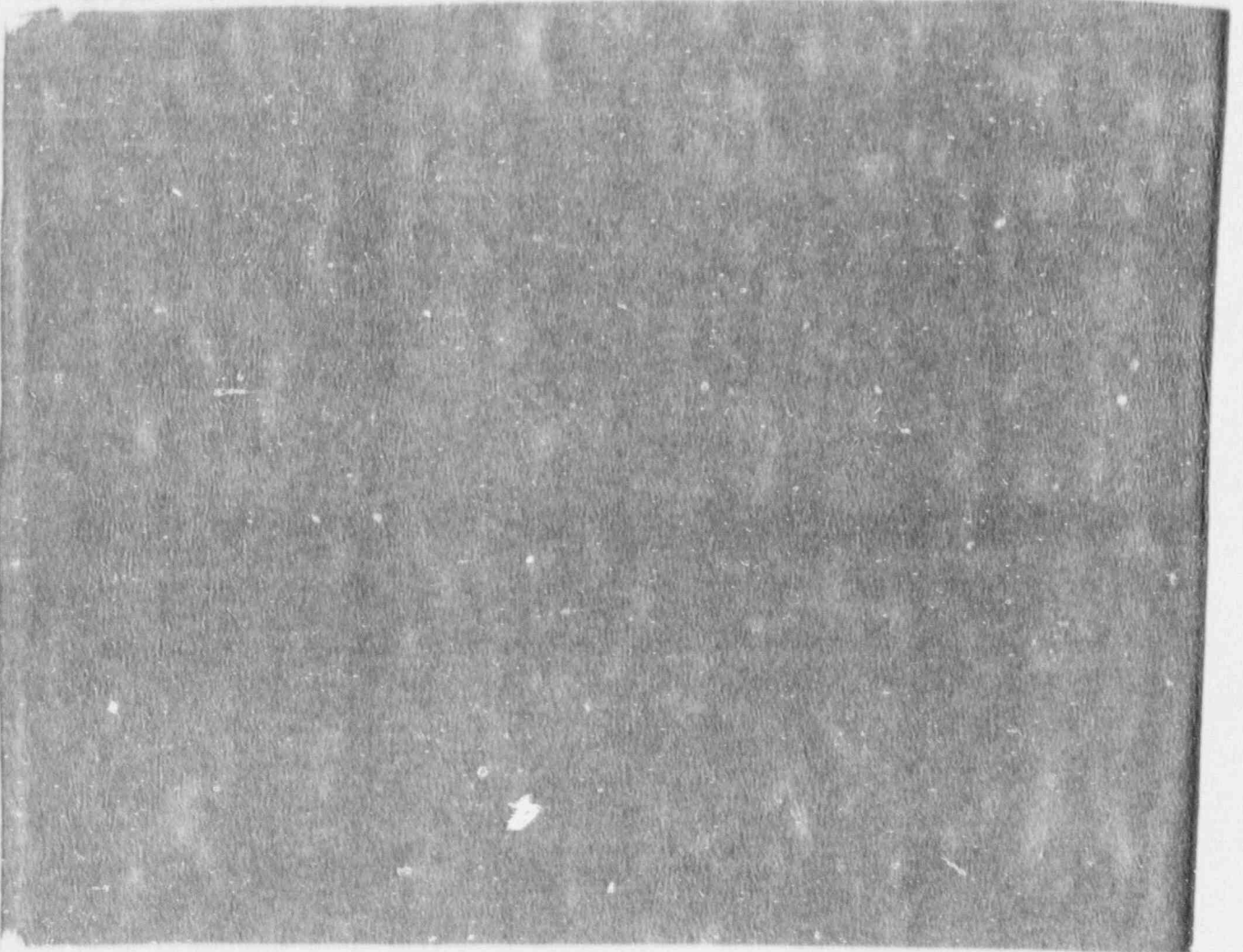
Waste Stream Characterization:

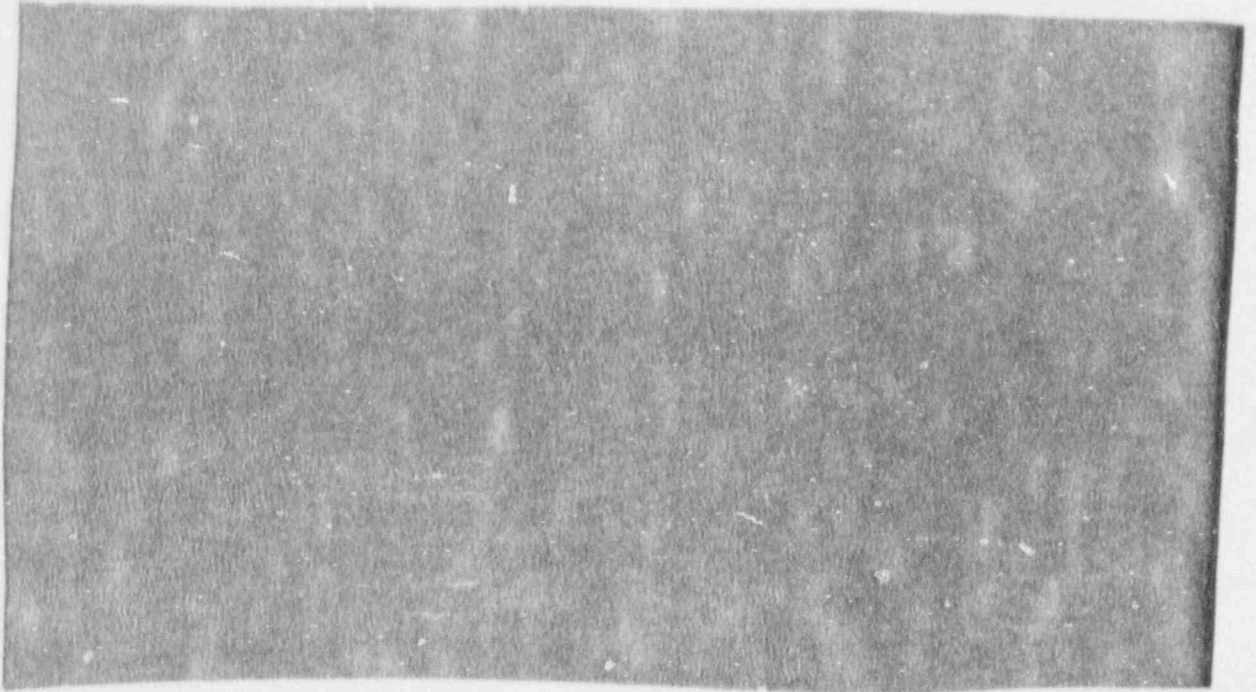
One of the major objectives of Task 1 will be the creation of a database characterizing the radionuclide concentration distributions in waste streams. In the Part 61 update report (NUREG/CR-4370), approximately 150 waste streams were defined. Each waste stream was assigned a radionuclide concentration for up to 100 radionuclides, and each radionuclide was assigned to up to three solubility classes (D, W, Y). These data and assumptions were assembled to support the Part 61 rulemaking and also the BRC report (NUREG/CR-3585). Accordingly, this work represents an excellent starting point for defining the technical analyses that will be performed in Tasks 1 and 2.



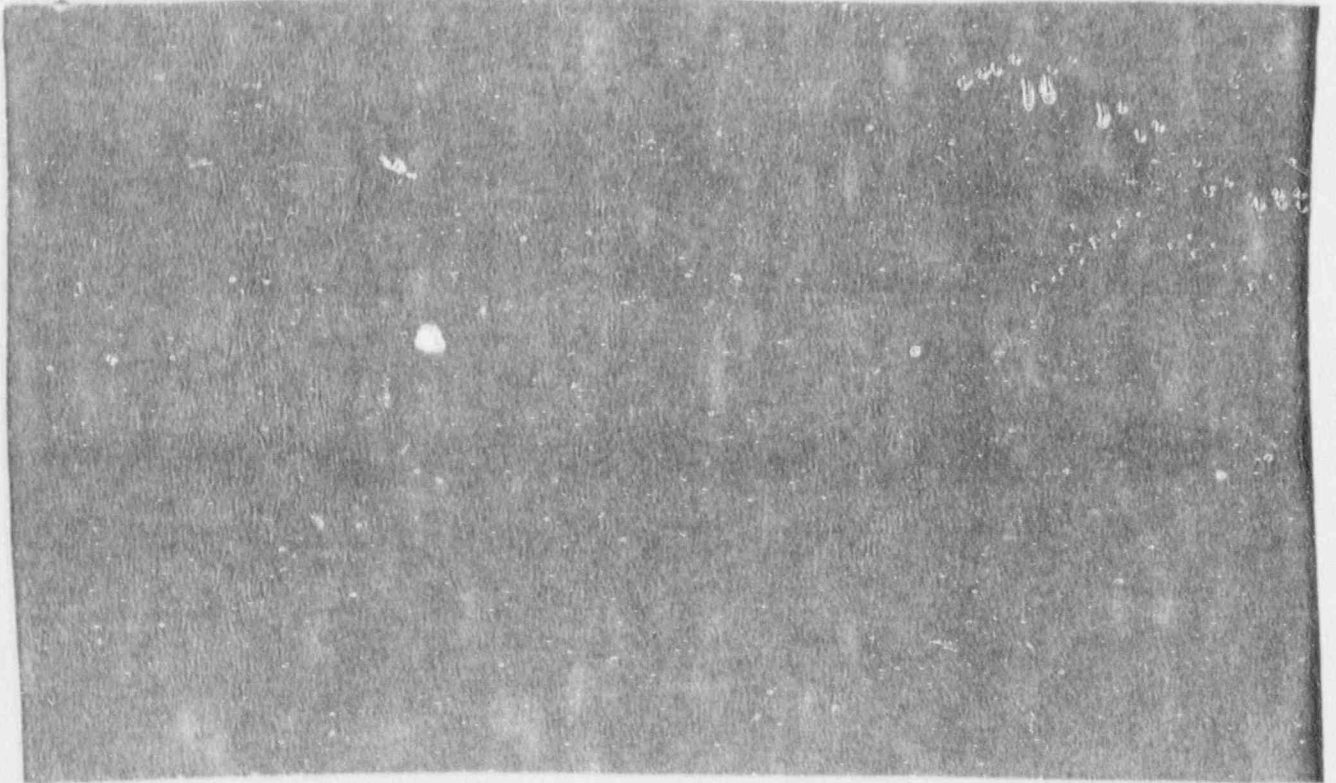


Characterization of Process and
Disposal Options:





Task 2:





Technical Support of Petition Reviews

Technical information and analyses performed in Tasks 1 and 2 will also support the petition reviews performed in Task 4. However, unlike a rulemaking or regulatory guide, which require in-depth analyses, a petition review will use the information compiled in Task 1 and the pathways analyses performed in Task 2 to independently confirm the data and analyses provided in a petition. The level of detail of independent analysis required as part of the review process will be based on the judgement of the NRC reviewers and in accordance with NUREG-1351. Accordingly, the information and analyses developed to support a rulemaking and regulatory guide should be more than sufficient to support a petition review performed in accordance with NUREG-1351.

² Please note that the above scenario is hypothetical (though an effort was made to use numbers that are close to reality) and represents only one type of data gathering and processing that could be used in support of a rule. The hypothetical example is intended solely to provide insight into the types of technical information that we believe may be of use to a rulemaking.

EXHIBIT 8-1

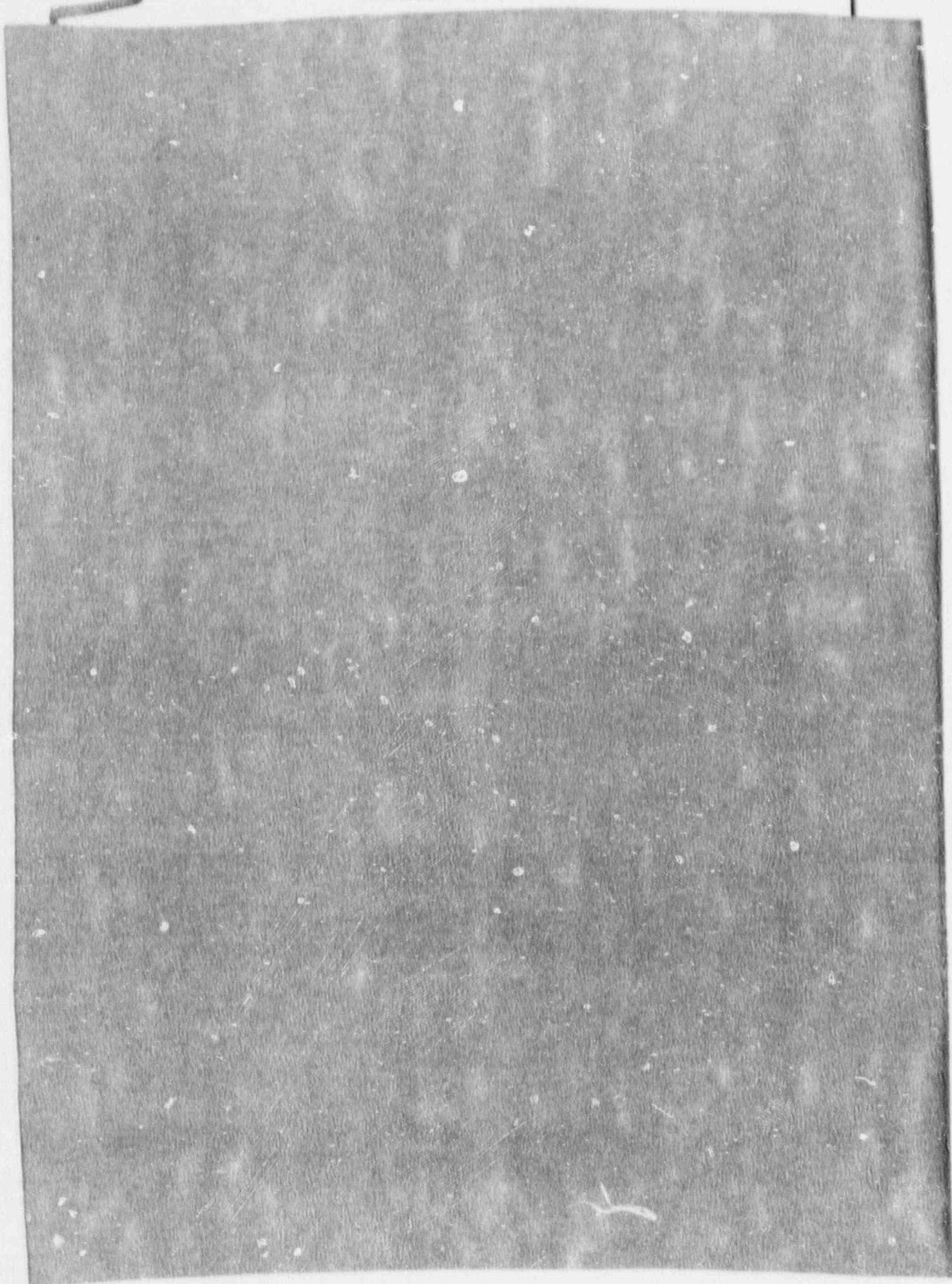


EXHIBIT 8-2


9. Question 9 - How will site specific study (studies) support a generic rule? (p.2-33)

As discussed in our response to Question 2, the number of site-specific studies, if any, required to support a generic rule is uncertain. However, such studies could be useful to confirm the applicability of IMPACTS-BRC to a broad range of sites, or to specific sites that may be under consideration in specific states or compacts. The extent to which such analyses will be needed also depends on how comprehensive the Sandia verification and validation program was in support of the development of Version 2.0 of IMPACTS-BRC.

Our response to Question 8 also provides insight into areas where site-specific analyses may be helpful. For example, the upper end of the unit dose conversion factors in Figure 8-2 and the upper end of the radionuclide concentrations in Figure 8-1 could very well represent specific sites.

10. Question 10 - Would the analysis of petitions include evaluation and response to public comments under Task 4 of the Statement of Work? (p.2-35)


If requested in the Task Order, we are fully prepared to assist the NRC in all aspects of soliciting, evaluating, and responding to public comments.



For a given BRC petition, the complete rulemaking will require three Federal Register notices: the Notice of Receipt of Petition, the Notice of Proposed Rulemaking (NPR), and the promulgation of the Final Rule. The Notice of Receipt of Petition and the NPR both establish a minimum 60-day public comment period and include specific areas and issues that the Commission is seeking comment on. The following paragraphs describe the support that we would provide in soliciting, evaluating, and responding to public comments.


In the Notice of Receipt of Petition, the Commission defines the scope of the proposed rulemaking (including alternatives) and summarizes the Petitioner's basis for the action including identification of the environmental, economic, and public health and safety impacts. The notice explicitly requests interested parties to provide pertinent information and comments on the issues to be addressed and other areas of concern. Public hearings might also be held. As requested in the Task Order, we would support the preparation of the Notice of Receipt of Petition by developing the list of issues and concerns on which public comment is requested. This list would be developed as part of the minireview of the petition and through consultations with cognizant NRC personnel.

Once comments are received in the Docket, work begins on the task of evaluating and responding to the public comments, including testimony presented at public hearings. Evaluation of the comments received begins with the development of a categorization scheme or topology of issues. This topology reflects the issues and areas of concern that were included in the Notice of Receipt of Petition, and is modified, as needed, based on a review of the Docket, to include additional issues and concerns. Individual submissions are then read and each substantive comment is cross-referenced to the corresponding issue in the topology.



The process of requesting public comments in the NPR is similar to that for the Notice of Receipt of Petition, although the focus shifts more specifically to the proposed rule and the underlying assumptions and analyses on which it is based. Public hearings are also held. We would support the preparation of the NPR by developing the list of issues to be addressed and the summary of public comments received on the Notice of Receipt of petition. Consultations with cognizant NRC personnel are an integral part of this step.

The comments received on the proposed rule must also be evaluated and responses prepared. Timely evaluation of the comments is essential so that the information received can be factored into the final rule.



[11. Question 11 - Clarify specifically how distribution curves and application of volume will be used and how sample verifications of electronic and hard copy data would be validated statistically (p.2-8).

Note: Because the responses to questions no. 8, 11, 12, and 14 complement each other, the reader is urged to review the responses to all four questions for a complete perspective.

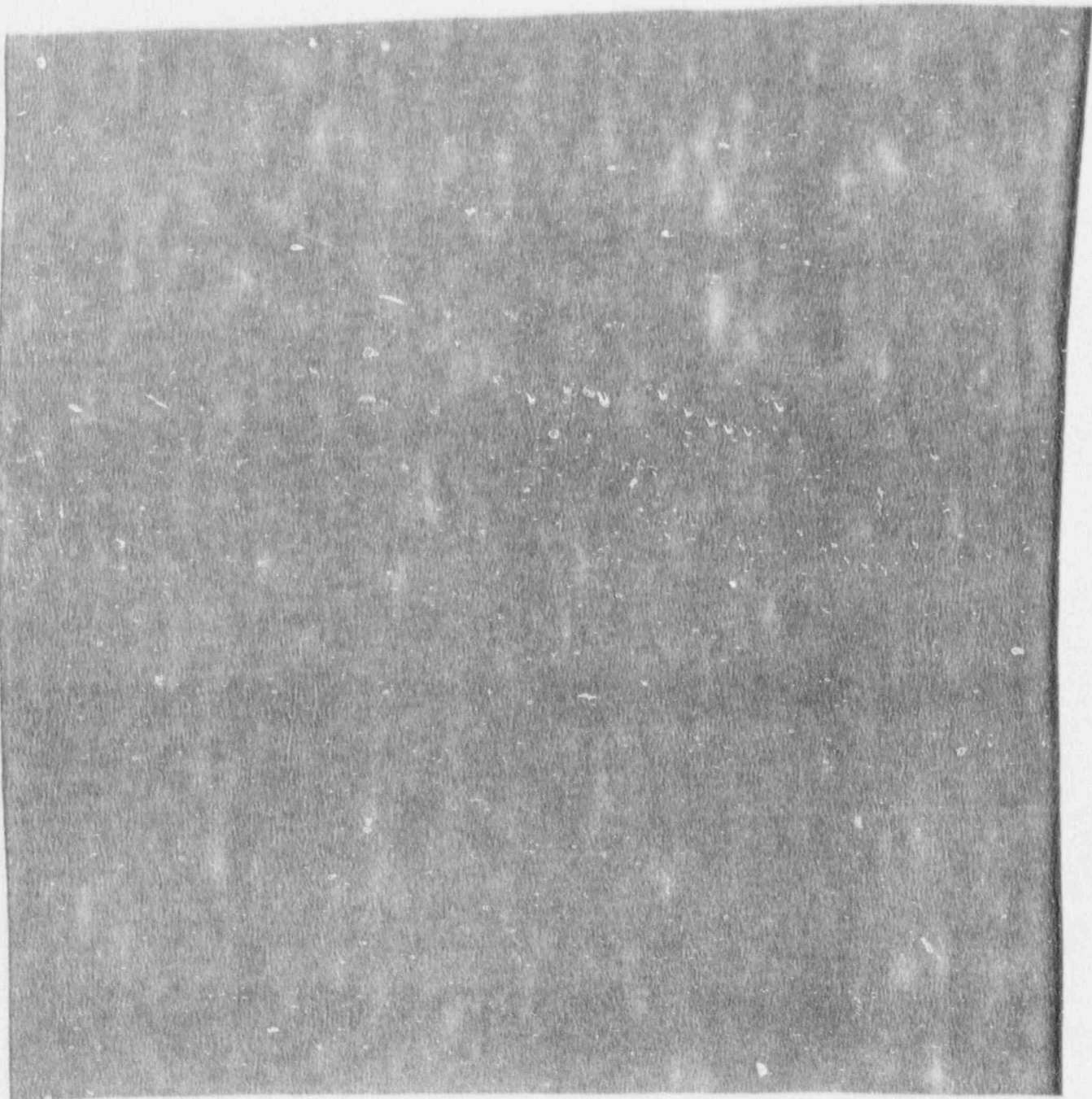


Exhibit 11-1

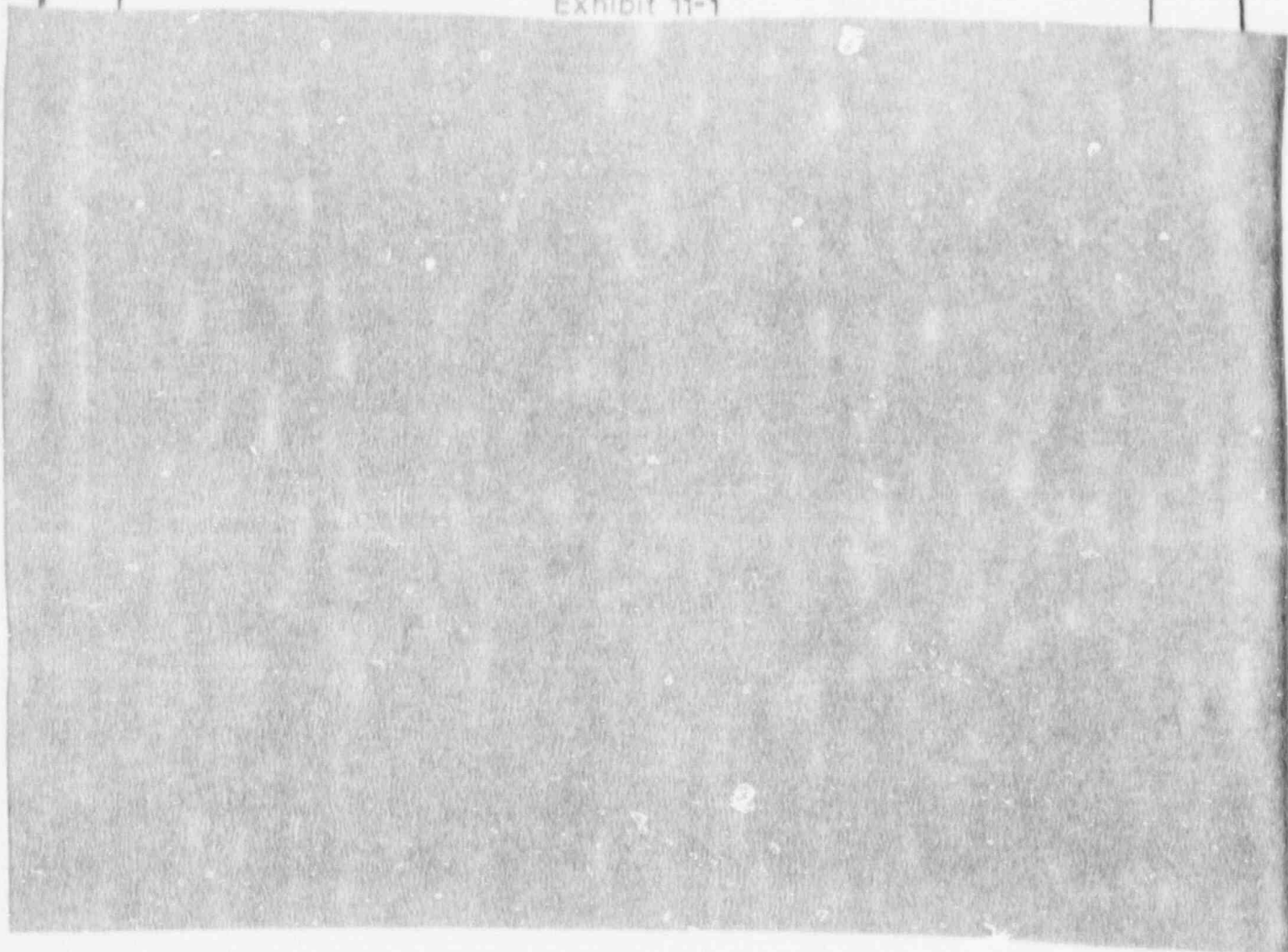
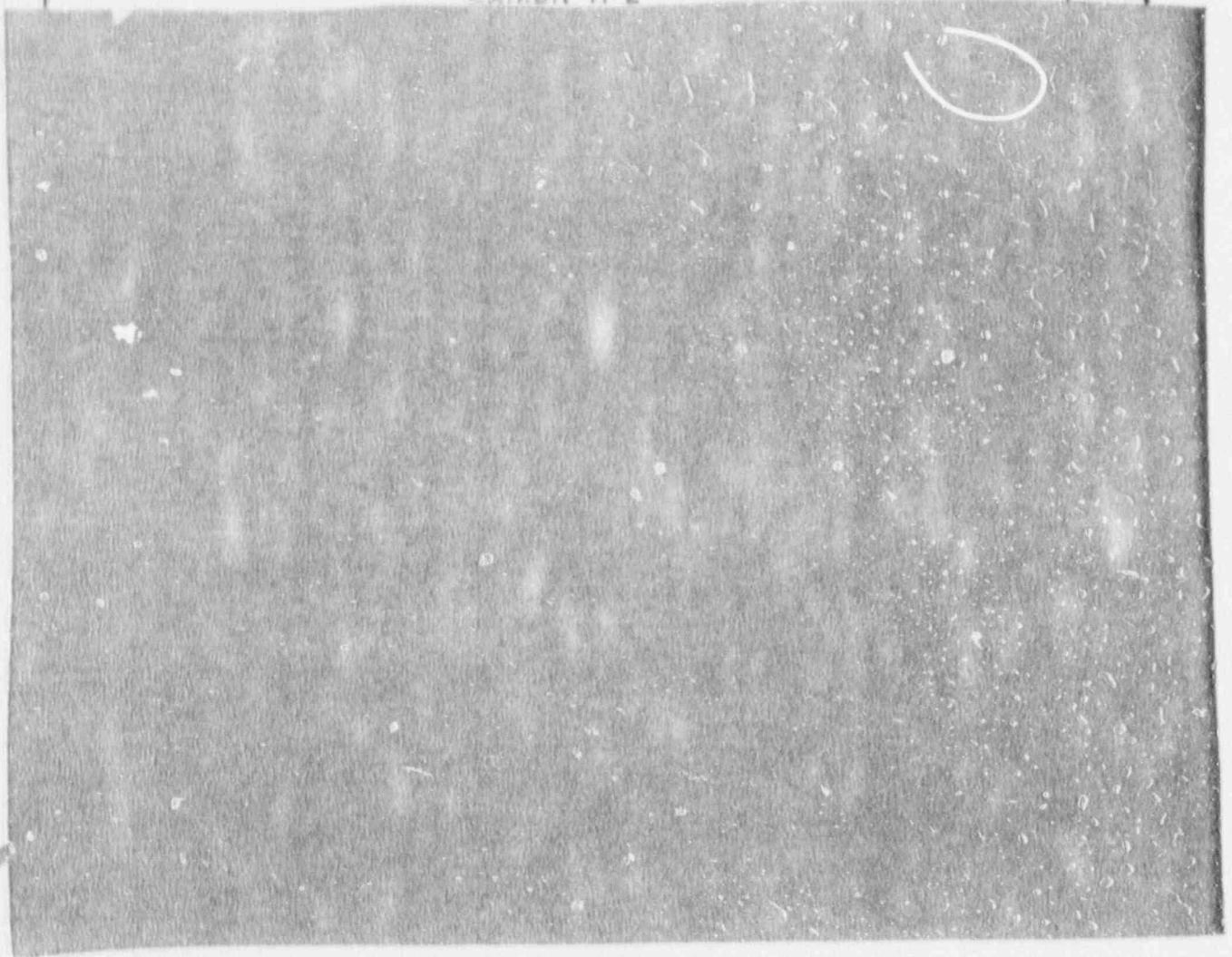
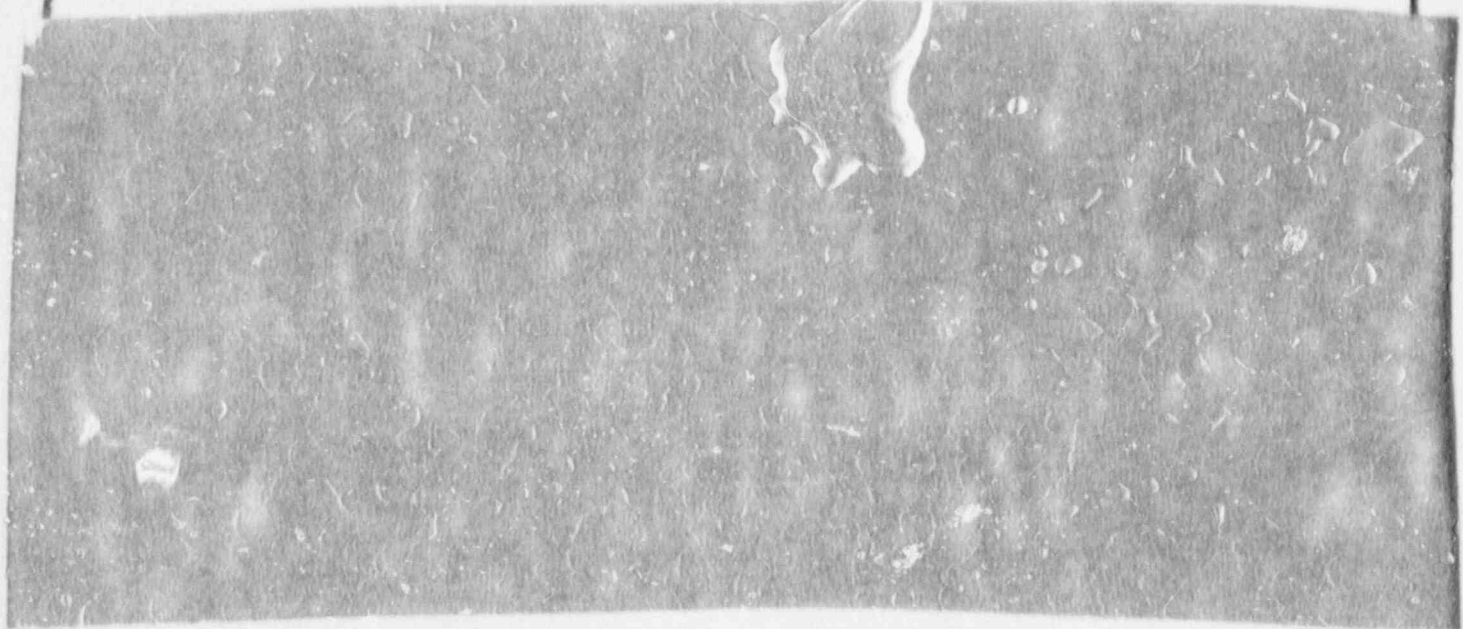


Exhibit 11-2



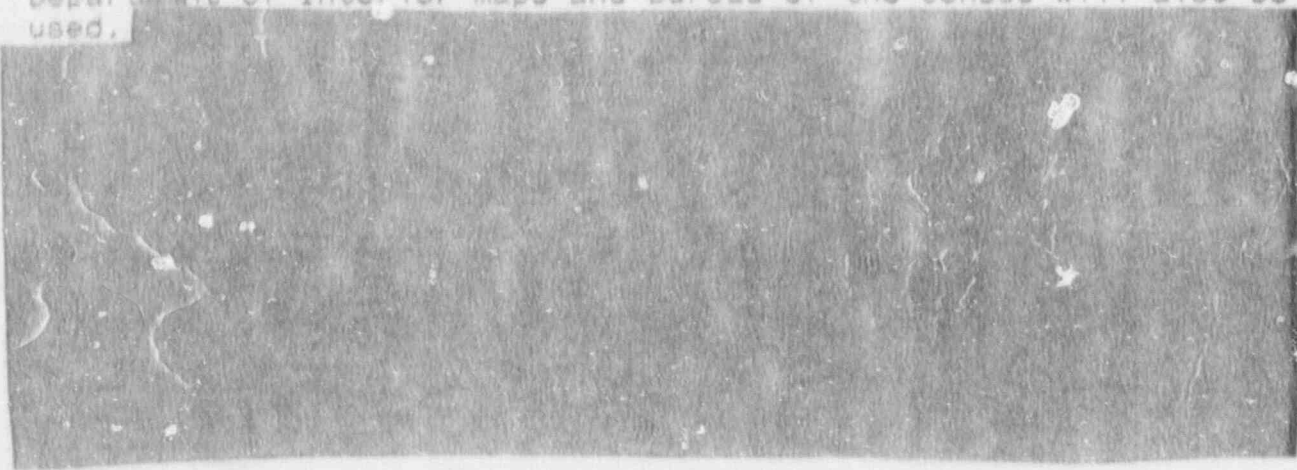
12. Question 12 - Specify what is intended by the proposed statistical distributions, for example are these simply histograms or are they a rigorous distributions, such as a log-normal distribution? (p.2-9)



3. Question 13 - Discuss the methodology for determining the demographics for Task 1 (p.2-22)

Three basic sources of information will be used to define the demographics in the vicinity of waste processing and disposal facilities: (1) survey information for Subtitle D facilities compiled by the EPA, (2) Part B information for exposure assessment for RCRA permit applications for Subtitle C facilities, and (3) the SECPOP database. These information sources are described in more detail in our response to Question 1, and can provide the basis for identifying maximum exposed individuals as well as provide information necessary for population exposure assessment. ERG and SC&A personnel have extensive experience in working with the Agency in the radiation and solid waste offices.

In addition to the above sources, data available from the Department of Interior maps and Bureau of the Census will also be used.



14. Question 14 - What would the expected cumulative probability distribution curve described in subtask 2.1.2.3 look like? In that subtask, is it volume or total effective dose equivalent that is the end point of interest? That notwithstanding, how does one get volume from such a curve (subtask 2.1.3.3) and how will the volume be used?

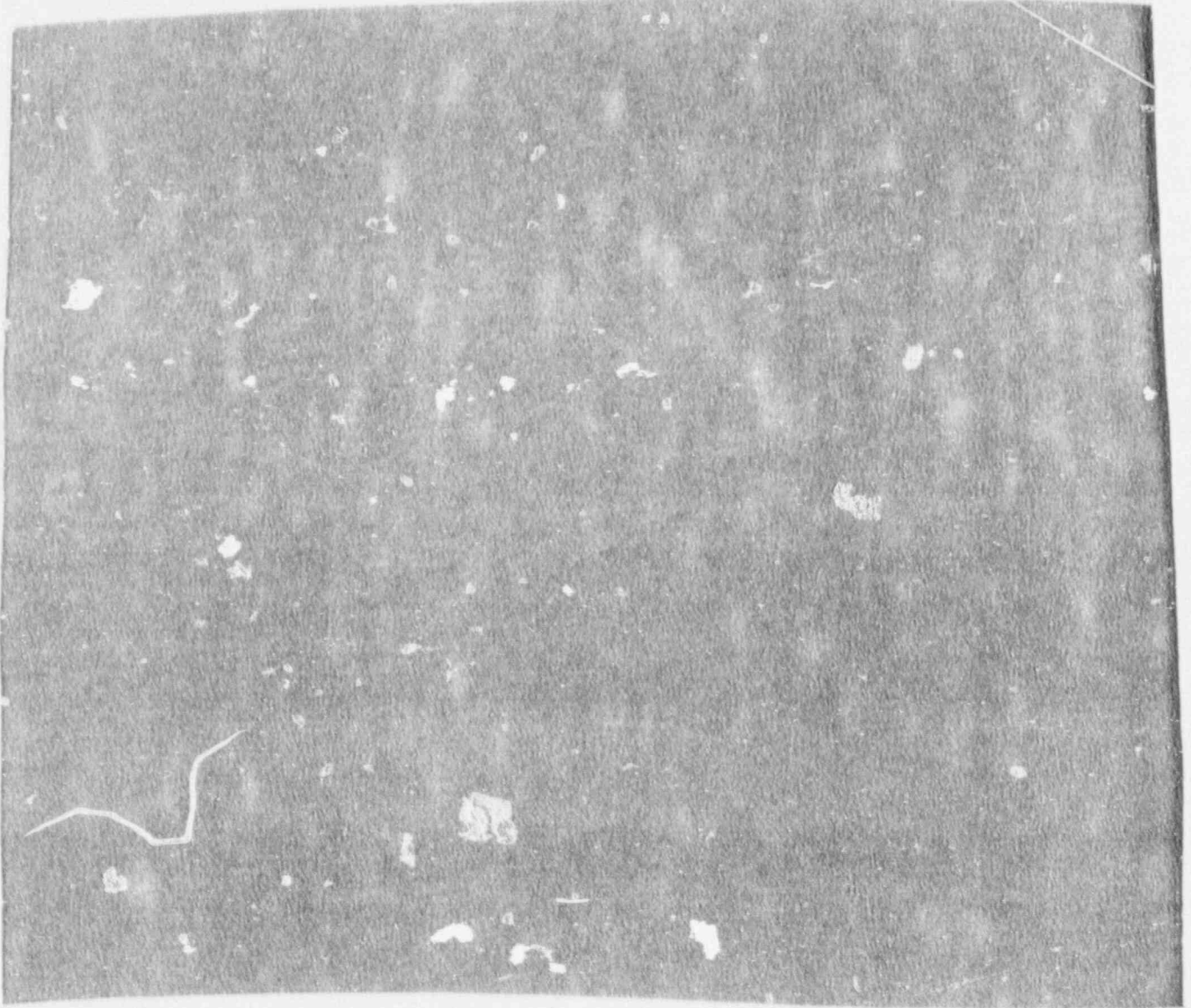


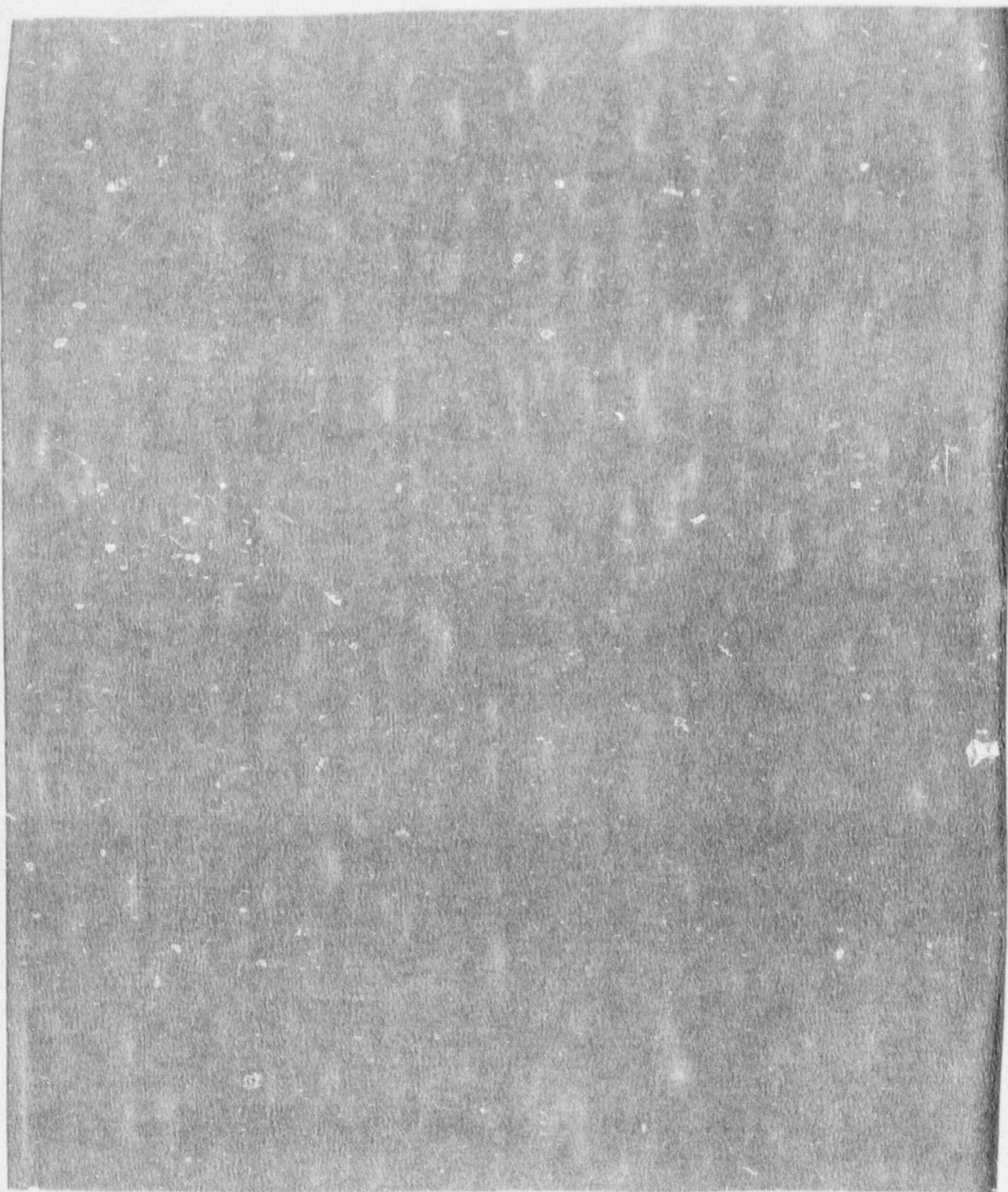
Exhibit 14-1

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EXHIBIT 14-2

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15. Question 15 - Provide a description of management experience by task.



16. Question 16 - Elaborate on the description of the earned value system (p. 4-1). How could the NRC project manager use the earned value system to track progress? Do you intend to use any other tracking system to monitor progress?

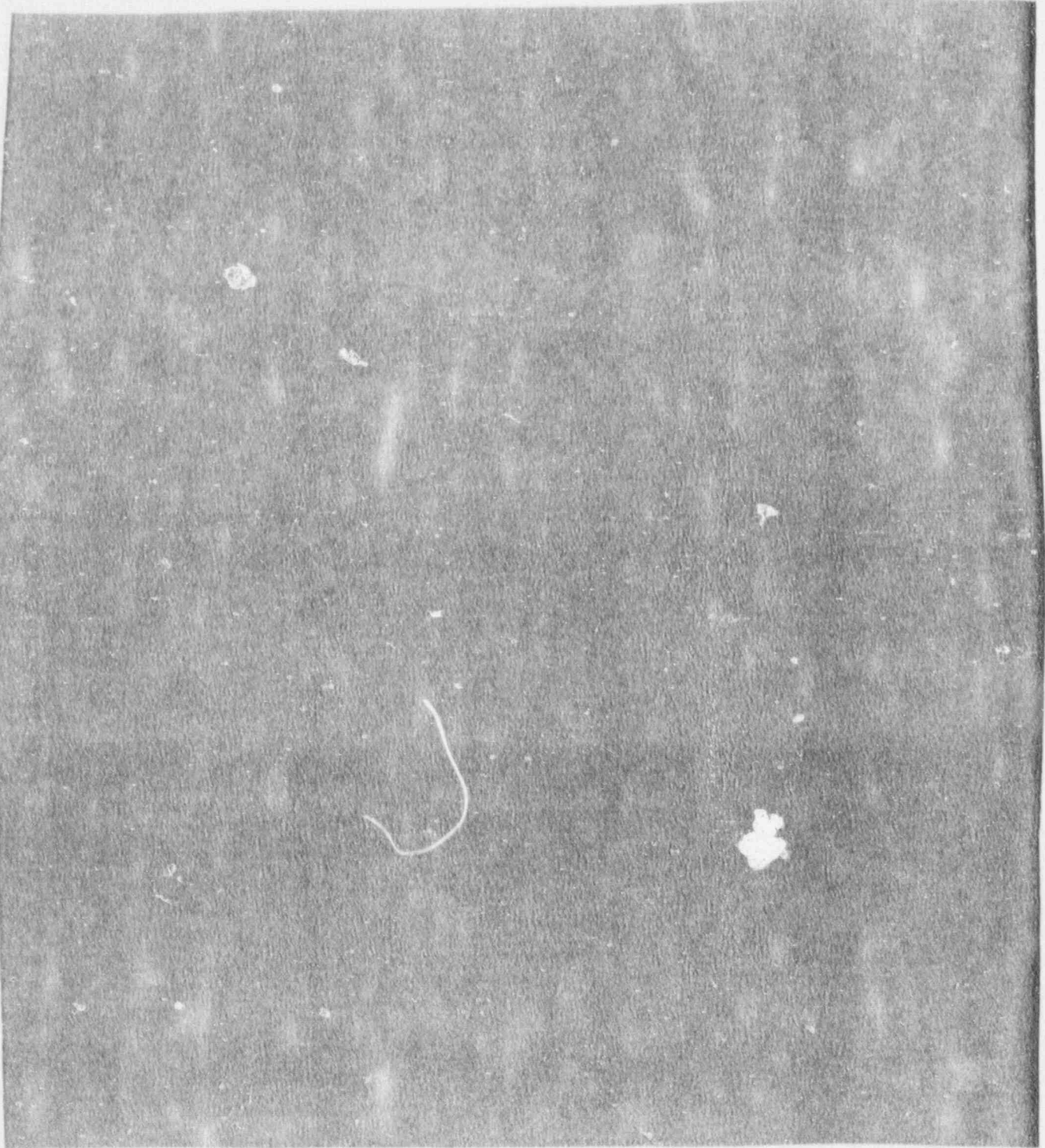


EXHIBIT 16-1

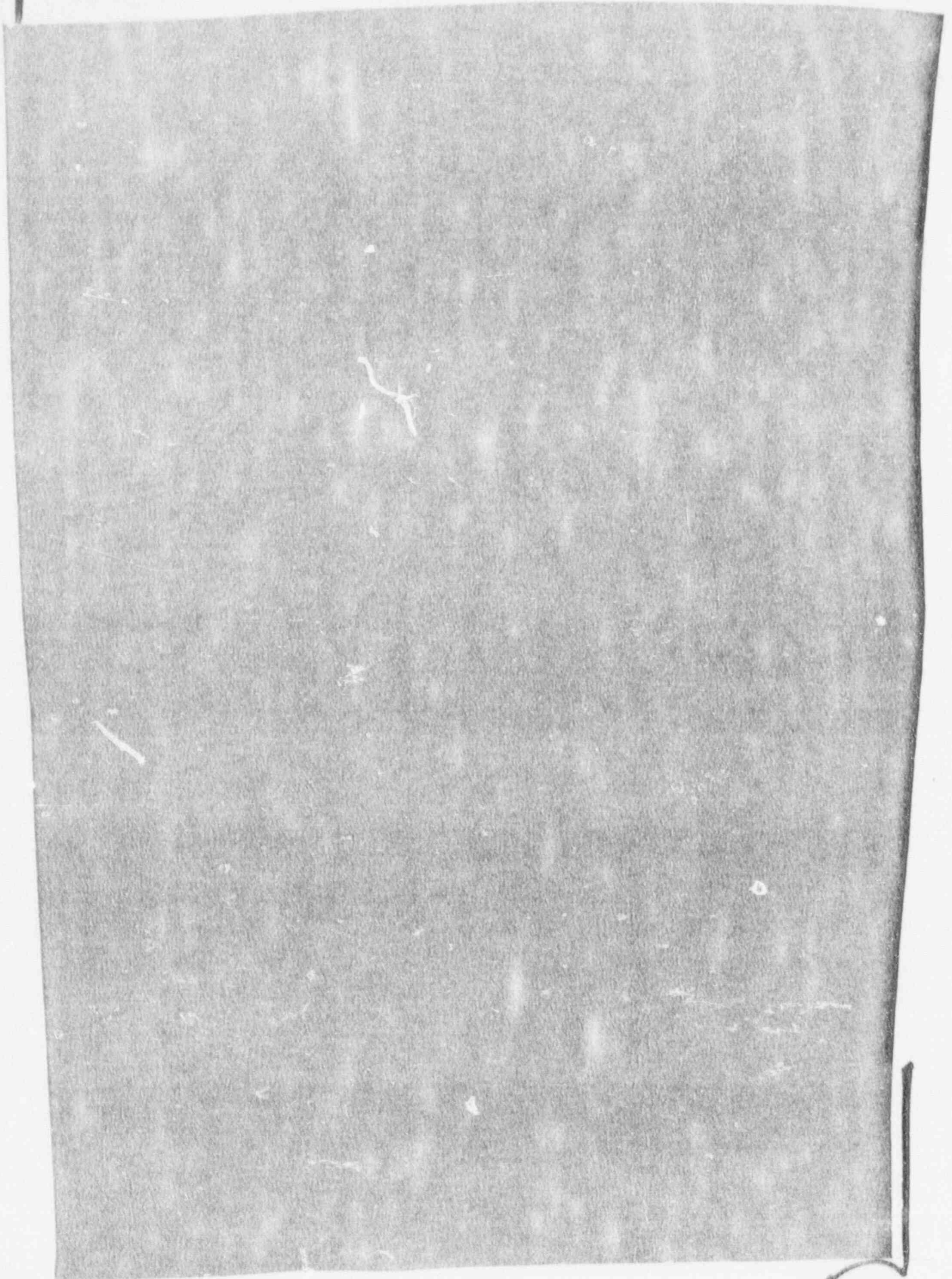
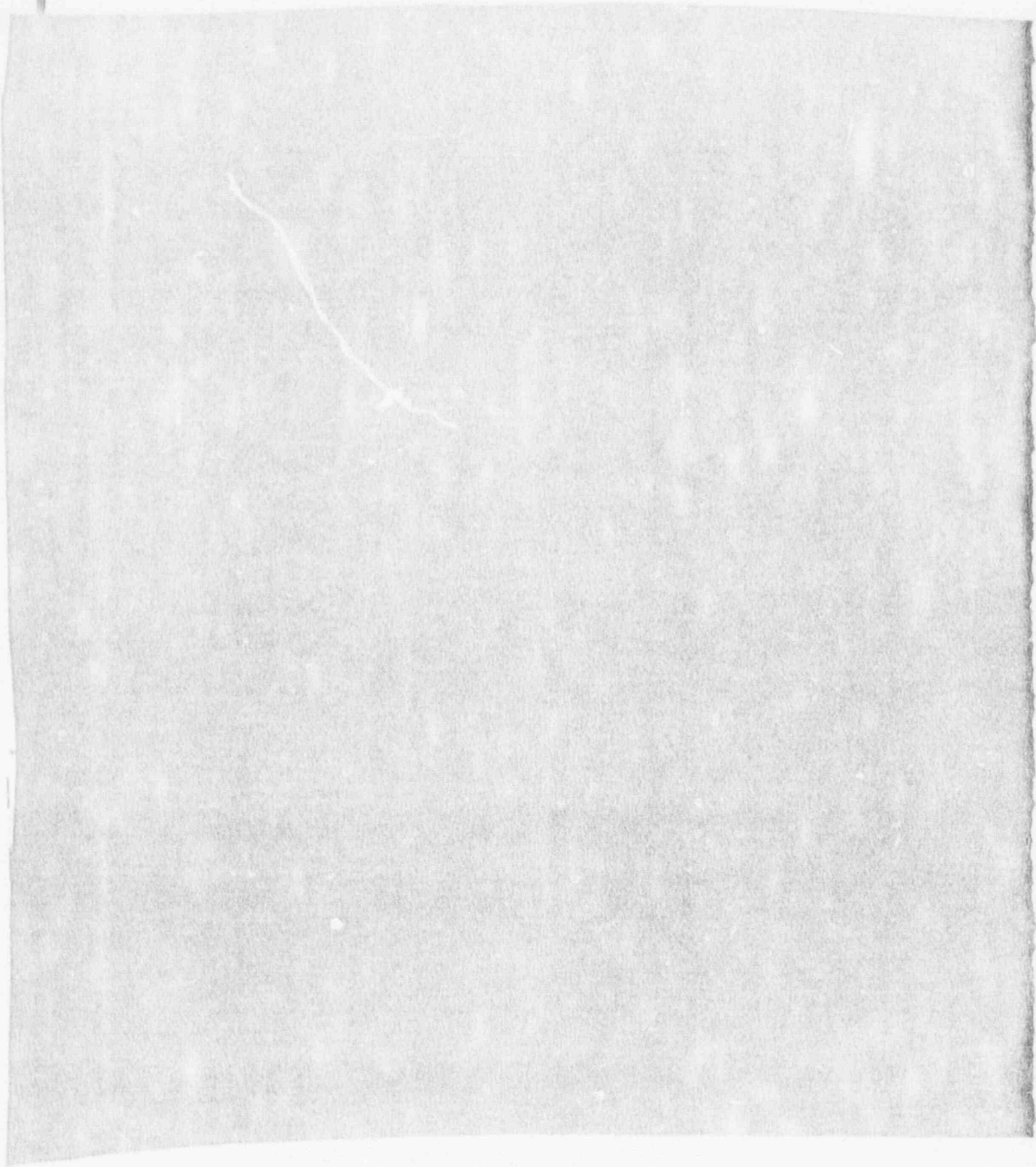


Figure 16-2



17. Question 17 - What are the critical milestones within the tasks?

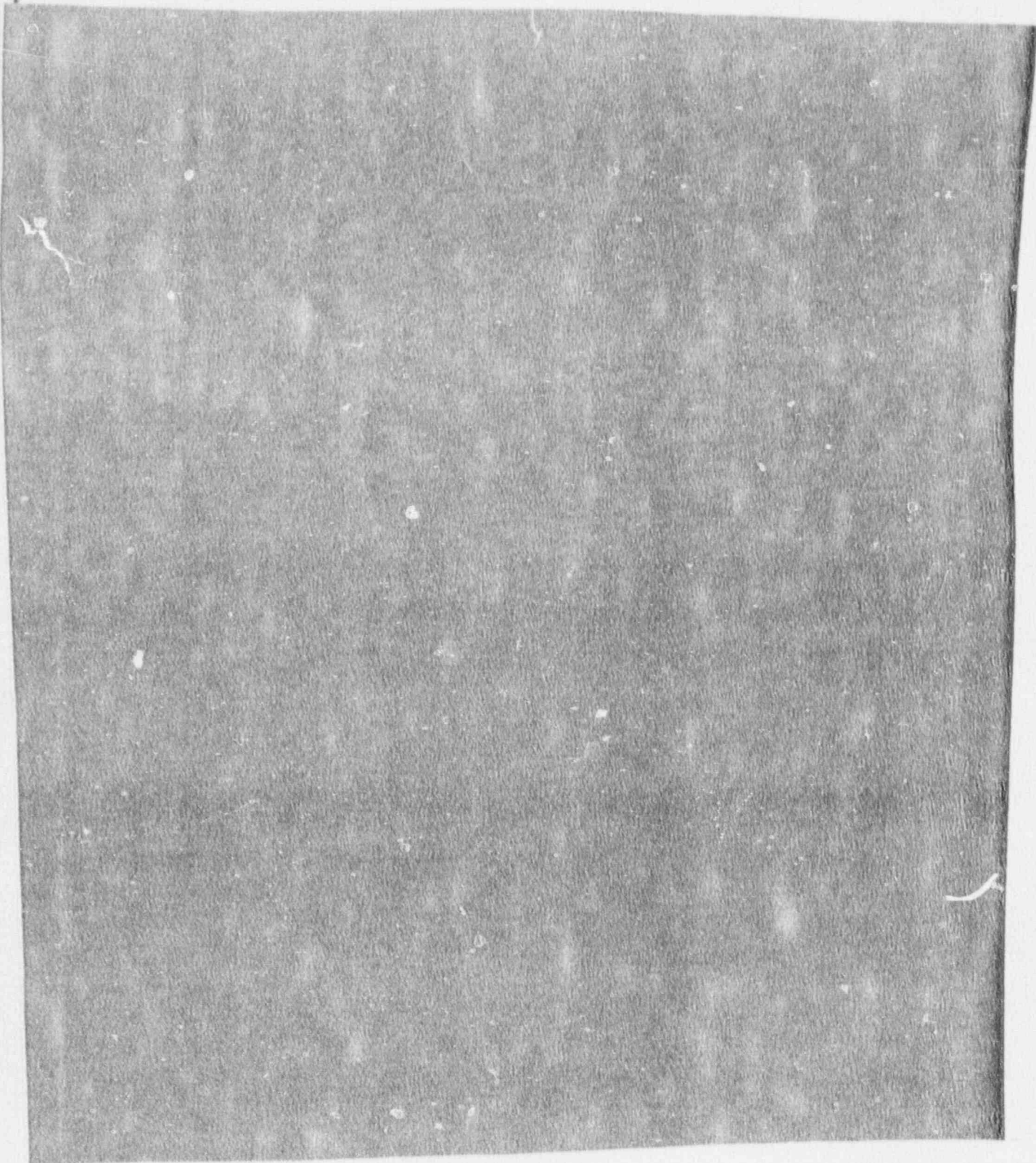
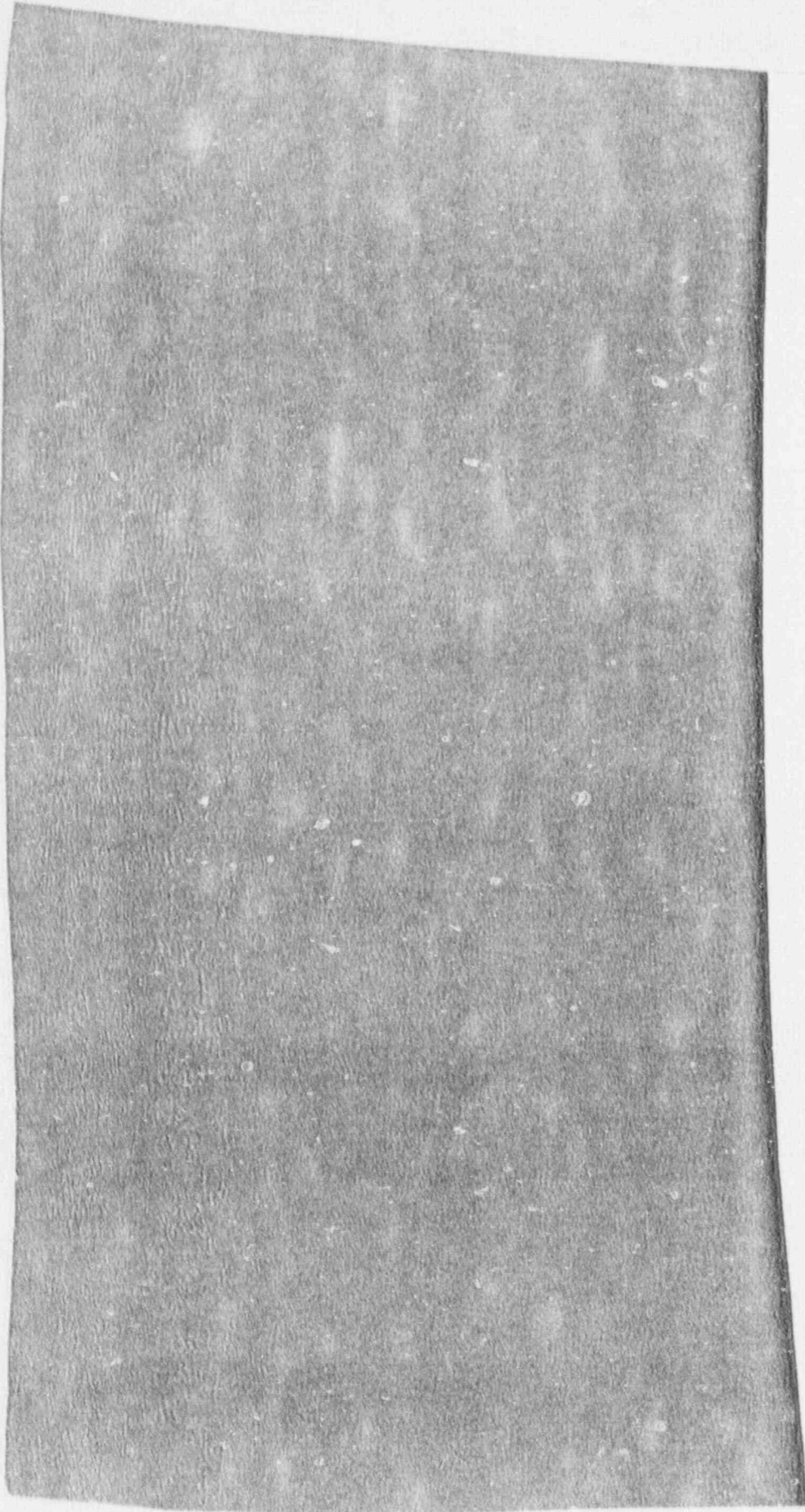
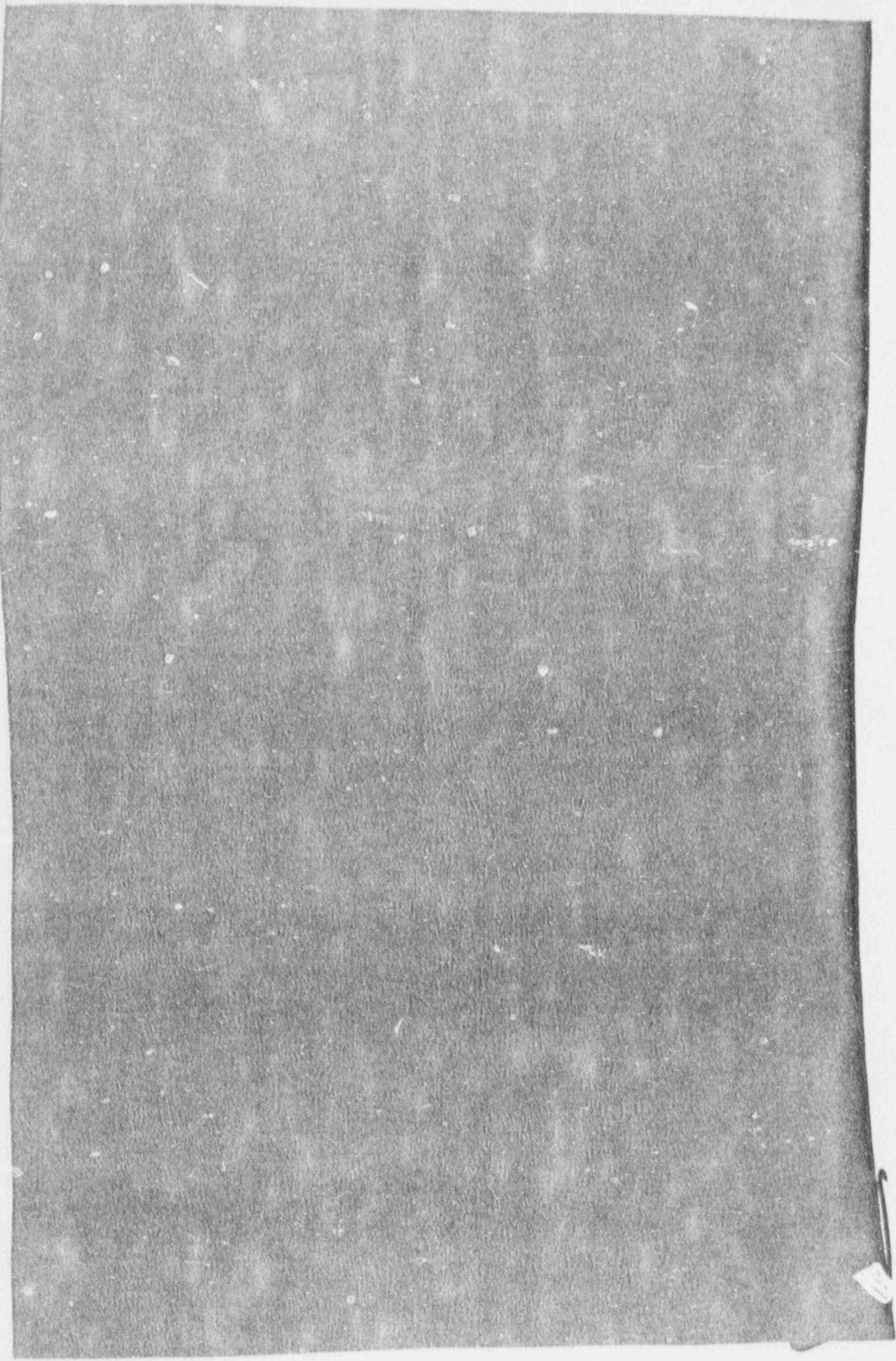


Exhibit 17-1



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Exhibit 17-2



17

18. Question 18 - For your information, a copy of the recently published NUREG-1351 is provided.

No response required.

19. Question 19 - As the acceptance period of your proposal has expired, please extend the proposal acceptance period of your proposal through June 30, 1990. Any revision to your proposal shall be made in your best and final proposal. Also review your Representations and Certifications (Section K of the solicitation) for any revisions you may want to make.

Our enclosed Best and Final Offer is effective through June 30, 1990. Our Representations and Certifications remain unchanged except for a change in our office location and the deletion of Wayne Britz from the list of former NRC employees.

20. Question 20 - Have your proposed labor rates, yearly escalation factors and the labor overhead rates been accepted by your cognizant Federal Audit Office? Provide the name, full address and telephone number of your cognizant Federal auditor as well as those auditors for your subcontractors. When submitting your best and final proposal to the NRC, also submit one copy of your best and final proposal directly to your auditor, referring to this solicitation number (RS-RES89-052) for the US Nuclear Regulatory Commission and providing them with my name, address and telephone number.

All cost information is provided in our Best and Final Offer provided under separate cover. A copy will be submitted to Levada De Nap of DCAA, who performed a pre-award audit on April 17, 1990.

21. Question 21 - A copy of Amendment No. One to the solicitation is provided for your review and acknowledgement in your Best and Final Proposal. This amendment reflects updated clauses and provisions to the solicitation.

SC&A acknowledges receipt of Amendment No. One.

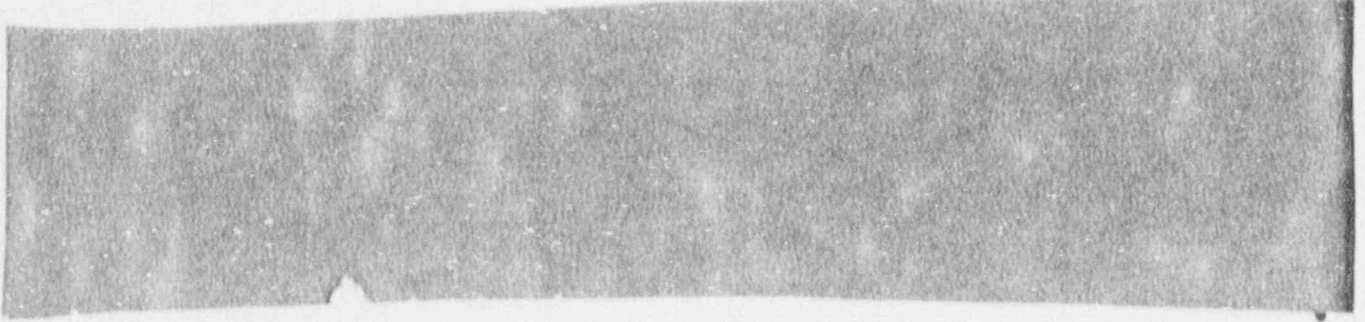
22. Question 22 - Submit your subcontracting plan in your Best and Final Proposal Refer to Section 1, Clause No. 52.219-9 (APR 1984), "Small Business and Small Disadvantaged Business Subcontracting Plan."

SC&A and all of its subcontractors on this project are small businesses and are thereby exempt from the requirements of this clause.

23. Question 23 - Refer to Section K.16, "Current/Former Agency Employee Involvement." For those person(s) who will be involved directly or indirectly in any capacity with this procurement, identify current/former NRC employees not only within your organization but also any proposed consultants and subcontractors.



24. Question 24 - On your Standard Form 1411 of the cost proposal, you indicated in Block No. 11A that you require government contract financing to perform the proposed cost-plus-fixed-fee work, as well as, in Block No. 11B that you require progress payments. Are you aware that in accordance with the billing instructions submitted with the solicitation, that payments will be made on a monthly basis? Be prepared to discuss this issue.



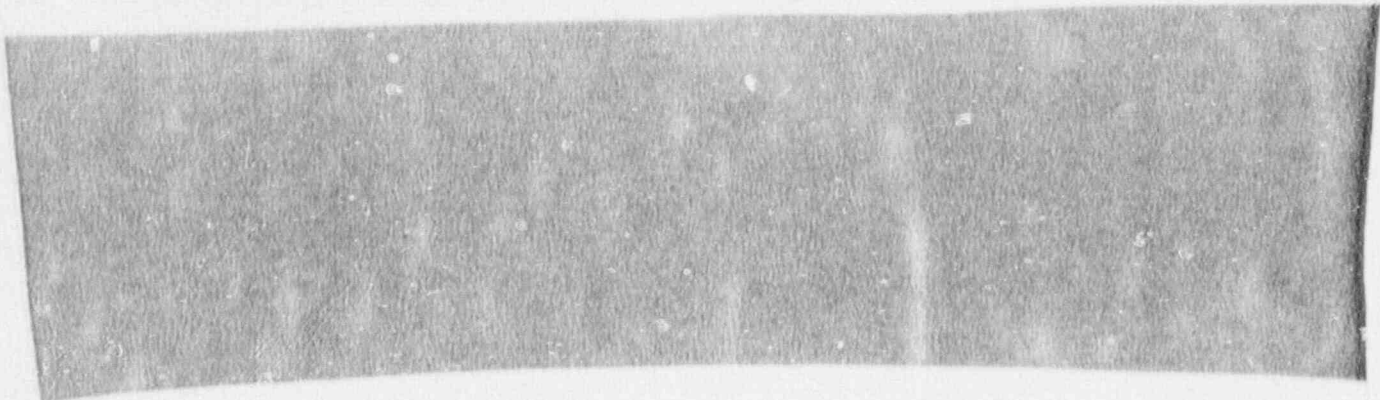
25. Question 25 - Your proposed quantity of trips is not in accordance with the trips delineated in Section C of the solicitation. Be prepared to explain your travel requirements for successful performance of the work. Specifically, the solicitation requires the Contractor to plan for the following trips during the three-year period of performance:



26. Question 26 - Be more specific about your proposed travel costs: Location of travel (from where to where,); number of persons travelling; number of days per trip; the per diem rate; transportation cost breakdown (air, train, taxi, rental car, etc.); and any other travel costs.



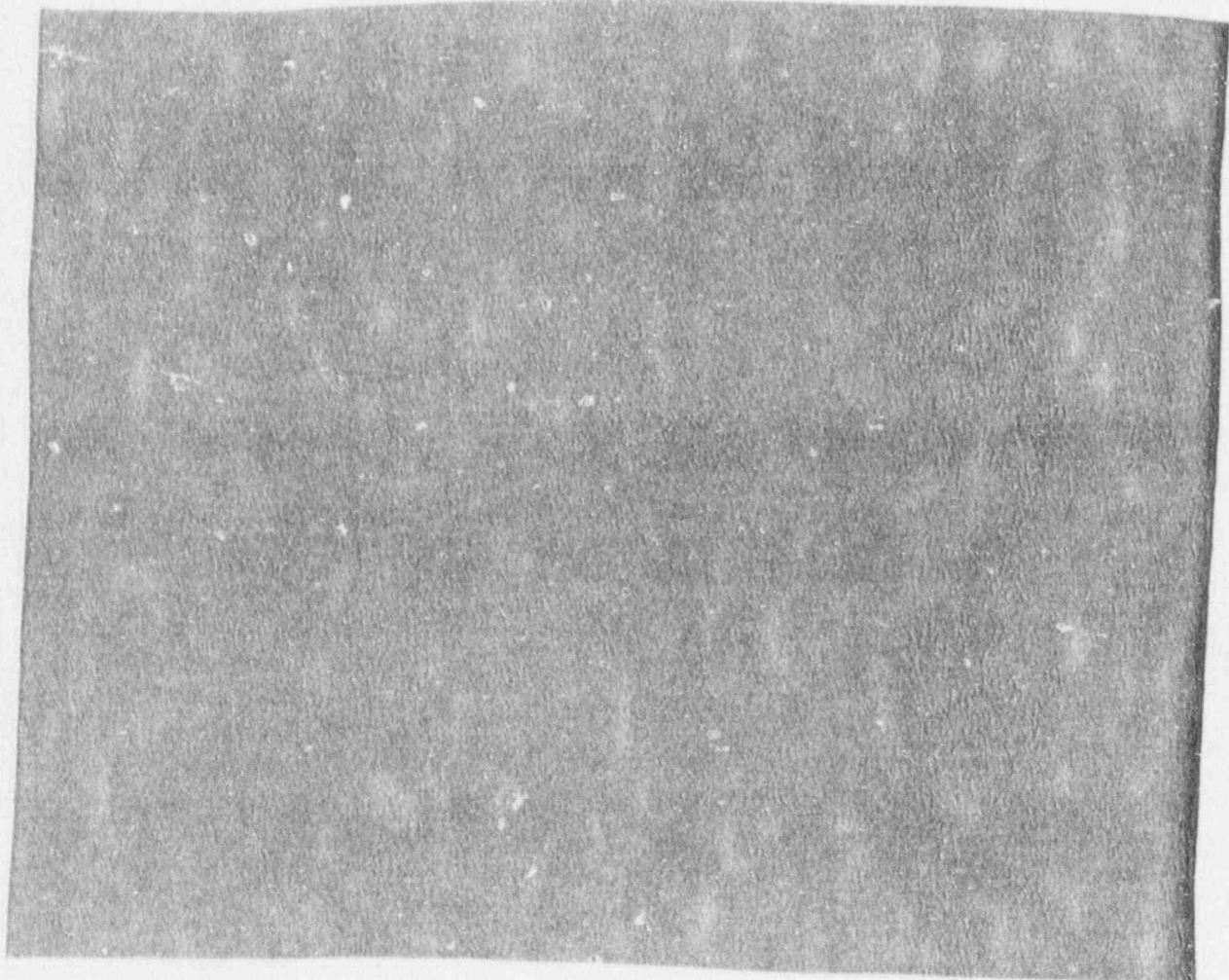
27. Question 27 - Your proposed hotel and meal costs (Per Diem) are not in accordance with the limits as set forth in the Federal Travel Regulations.



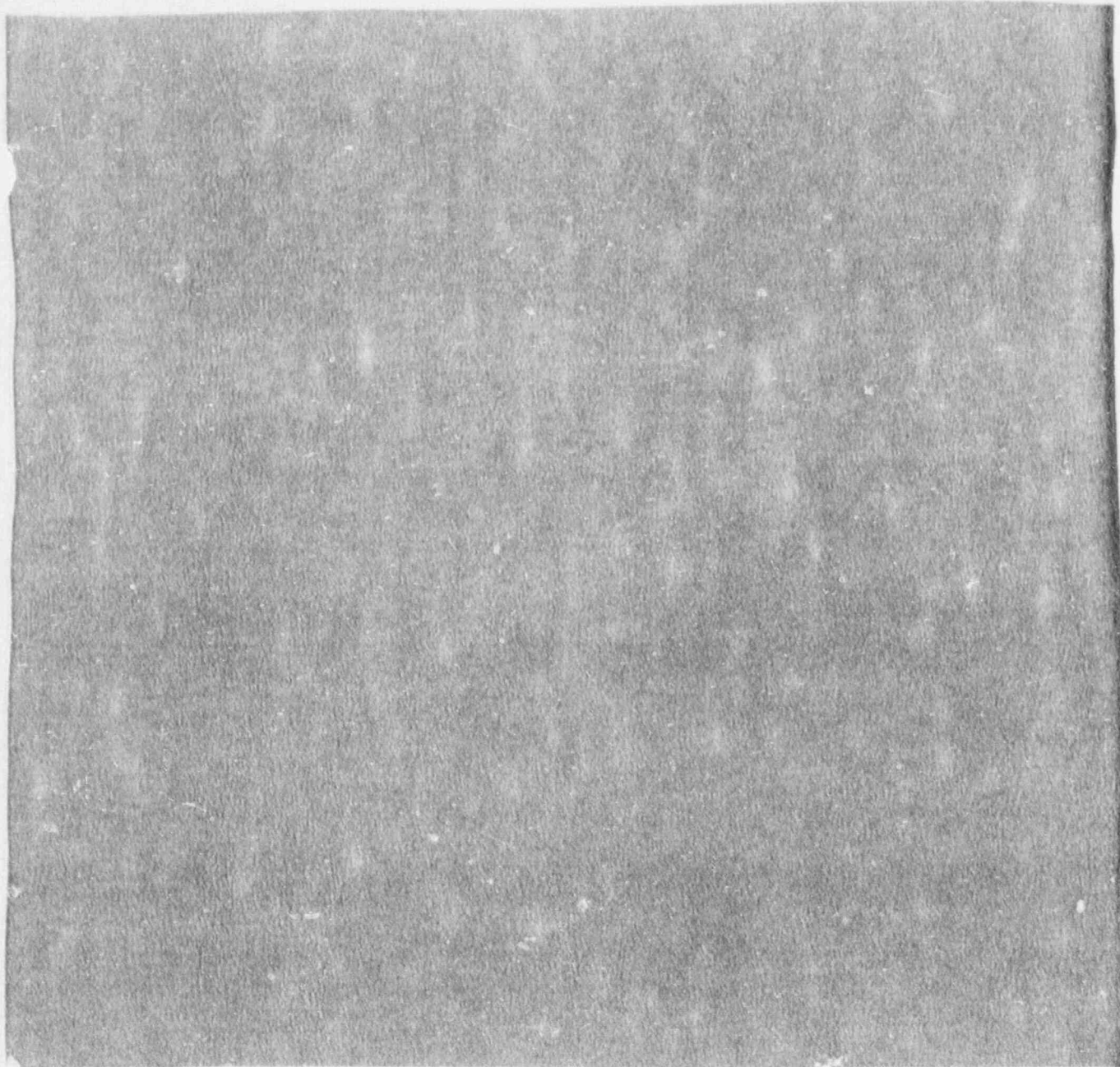
28. Question 28 - Regarding your two proposed subcontractor's cost proposals:

a. HydroGeologic, Inc.

1. Have the proposed labor and overhead rates been accepted by your subcontractors cognizant Federal Audit Office? Refer to question 2 above regarding submittal of their cost proposal to their auditor.
2. Provide details on what is involved in their proposed computer, phone, express mail and miscellaneous costs. Why would express mail services be necessary?
3. Refer to question 6 above regarding travel requirements and explain the need for the subcontractor's proposed travel plans, including the 33 local trips.
4. Clarify what the proposed fee is based on. The proposal states that it is based on labor but the figure appears to be based on both labor and overhead.



29. Question 29 - Provide details as to what is involved in your proposed costs for communications, postage and deliveries, reproduction, literature and computer.



30. Question 30 - Update your source of personnel required for performance of each task including those not presently employed by your organization. If any of the personnel are under commitment, describe the terms of the commitment(s). Note specifically the personnel that will be employed at time of contract award.

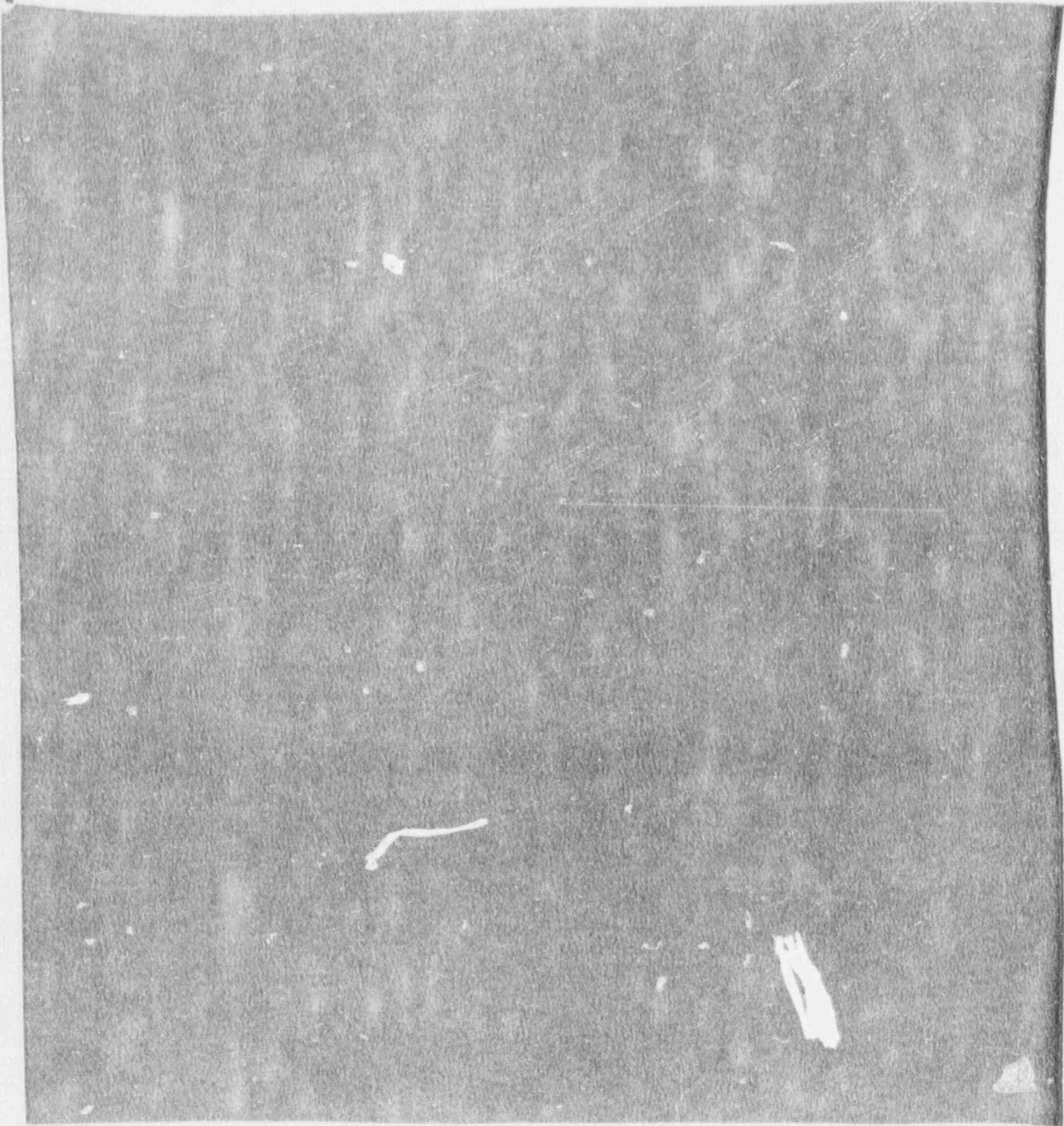


Exhibit 30-1

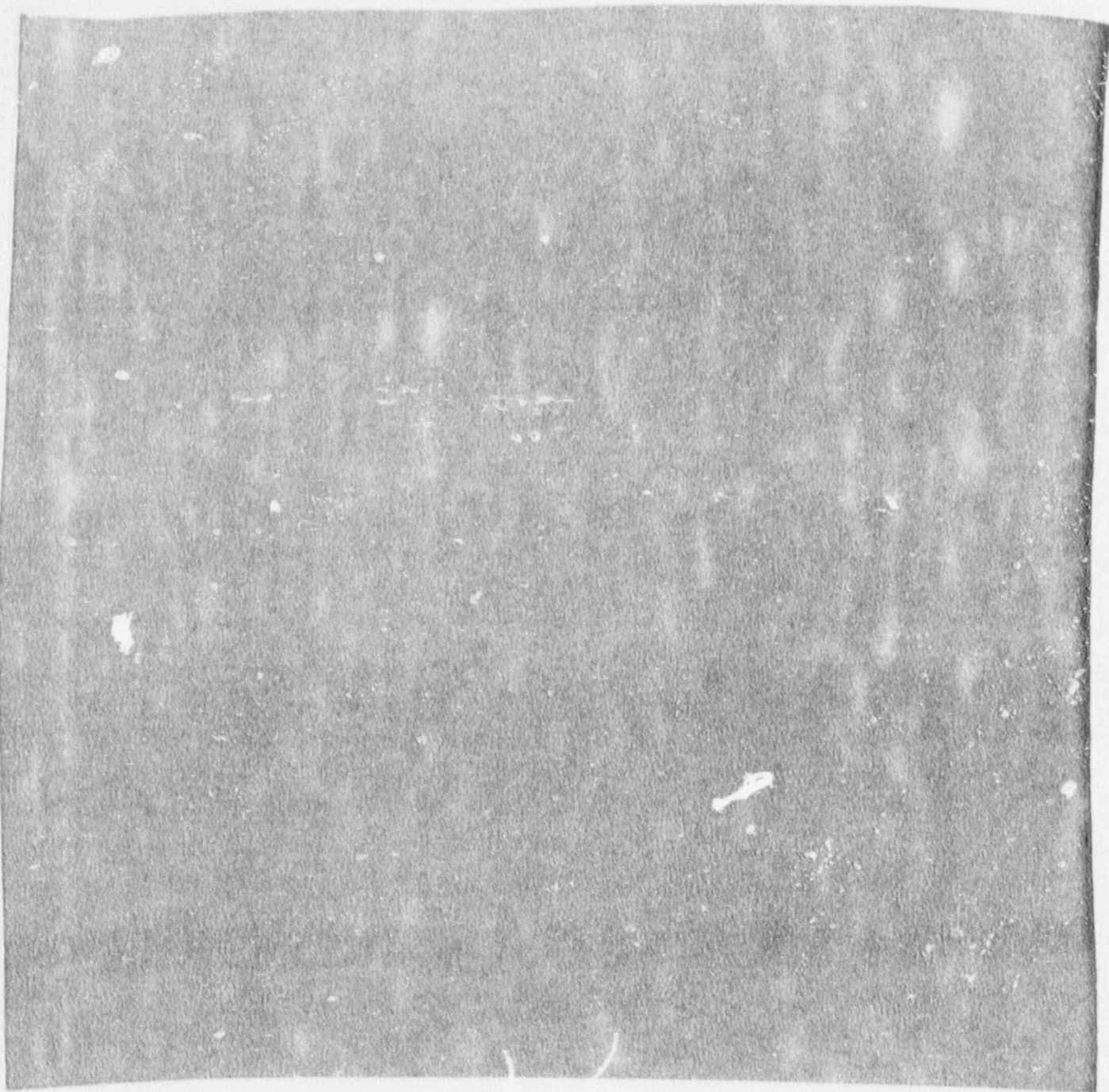


EXHIBIT 30-2



30-4



EXHIBIT 30-2 CONT'D



