

MAY 31 1994

License No: 20-28598-01
Docket No: 030-32013
Control No: 115812

The Du Pont Merck Pharmaceutical Company
ATTN: Roger C. Heiser
Executive Director, Operations
Radiopharmaceutical Division
331 Treble Cove Road
North Billerica, Massachusetts 01862

Dear Mr. Heiser:

Subject: Financial Assurance for Decommissioning

This is in reference to your various submittals dated September 19, 1990, December 13, 1993, and April 29, 1994 to provide financial assurance for License No. 20-28598-01. We have reviewed these documents and have no further questions at this time.

Based on the information provided in the above referenced documents, you are presently in compliance with the financial assurance requirements outlined in the decommissioning rule in 10 CFR 30.35.

Please note that an updated decommissioning funding plan, including an actual cost estimate must be submitted along with any application for license renewal, is due on or before November 30, 1996.

If you have any questions, please contact Anthony Dimitriadis, of my staff, at (610) 337-6953.

Your cooperation with us is appreciated.

Sincerely,

Original Signed By:
Mohamed M. Shanbaky

Mohamed M. Shanbaky, Chief
Research and Development Section
Division of Radiation Safety
and Safeguards

OFFICIAL RECORD COPY - C:\BACKUP.P1\DUPMERC2.FA - 05/05/94

9406230165 940531
PDR ADOCK 03032013
B PDR

ML 10

cc:
D^uPont Merck Pharmaceutical Company
ATTN: Dennis Dumas, Manager
Safety and Environmental Engineering
331 Treble Cove Road
North Billerica, Massachusetts 01862

bcc:
M. Shanbaky, RI
A. Dimitriadis, RI

DRSS:RI
Dimitriadis

05/15/94

DRSS:RI
Shanbaky

05/27/94

NOTE TO DMB:

THE ATTACHED DOCUMENTS ARE TO BE PROCESSED AS ONE FINANCIAL ASSURANCE FOR DECOMMISSIONING PACKAGE.

LICENSE NUMBER: 20-28598-01

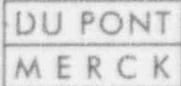
DOCKET NUMBER: 030-32013

CONTROL NUMBER: 115812

THIS SHEET MAY BE DISCARDED AFTER PROCESSING.

THANK YOU!

200071



FINANCE DEPARTMENT

Barley Mill Plaza
4301 Lancaster Pike
Wilmington, DE 19880-0024
Fax (302) 892-1843

April 29, 1994

Mr. Anthony Dimitriadis
U.S. Nuclear Regulatory Commission Region 1
476 Allendale Road
King of Prussia, PA 19406-1415

Re: L/C#NY-08810-300-14149

Please find enclosed the original Standby Trust Agreement for the letter of credit number listed above per your request to the Billerica site.

If there are further questions or information needed, please feel free to advise me on 302-892-8448.

Thank you,

A handwritten signature in cursive script that reads "Cheryl Vaughan Thornton".

Cheryl Vaughan Thornton
Sr. Financial Analyst
DuPont Merck Pharmaceutical Company

MAY - 2 1994

OFFICIAL RECORD COPY ML 10

JL052

Rev 2-93

Issuer
Services


Citibank, N.A.
120 Wall Street
13th Floor
New York, NY
10043

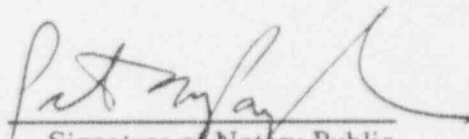
CITIBANK 

ACKNOWLEDGMENT

STATE OF New York, County of New York, City of New York

On this 27 day of December, before me, a notary public in and for the city and State aforesaid, personally appeared Bryan Gartenberg, and he did depose and say that he is the Assistant Vice President of Citibank, N. A., national banking association, Trustee, which executed the above instrument, the he knows the seal of said association; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the association; and that he signed his name thereto by like order.





Signature of Notary Public

PETER M. PAMLYSHIN

Notary Public, State of New York

No. 41-4991297

Qualified in Queens County

Certificate Filed in New York County

Commission Expires January 27, 1994

My Commission Expires:

STANDBY TRUST AGREEMENT

TRUST AGREEMENT, the Agreement entered into as of August 15, 1991, by and between The Du Pont Merck Pharmaceutical Company (Du Pont Merck), Glenolden Site, herein referred to as the "Grantor," and Citibank, N. A., the "Trustee."

WHEREAS, the U.S. Nuclear Regulatory Commission (NRC), and agency of the U.S. Government, pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, has promulgated regulations in Title 10, Chapter I of the Code of Federal Regulations, Part 30. These regulations, applicable to the Grantor, require that a holder of, or an applicant for, a Part 30, license provided assurance that funds will be available when needed for required decommissioning activities.

WHEREAS, the Grantor has elected to use a Standby Letter of Credit to provide all of such financial assurance for the facilities identified herein; and

WHEREAS, when payment is made under a Standby Letter of Credit, this standby trust shall be used for the receipt of such payment; and

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee,

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

- (a) The term "Grantor" means the NRC licensee who enters into this Agreement and any successors or assigns of the Grantor.
- (b) The term "Trustee" means the trustee who enters into this Agreement and any successor Trustee.

Section 2. Cost of Decommissioning. This Agreement pertains to the costs of decommissioning the materials and activities identified in License Number 37-28764-02 and 20-285980-01 issued pursuant to 10 CFR Part 30 as shown in Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a standby trust fund (the Fund) for the benefit of the NRC. The Grantor and the Trustee intend that no third party have access to the Fund except as provided herein.

Section 4. Payments Constituting the Fund. Payments made to the Trustee for the Fund shall consist of cash, securities, or other liquid assets acceptable to the Trustee. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently

transferred to the Trustee are referred to as the "Fund," together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount of, or adequacy of the Fund, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the NRC.

Section 5. Payment for Required Activities Specified in the Plan. The Trustee shall make payments from the Fund to the Grantor upon presentation to the Trustee of the following:

- a. A certificate duly executed by the Secretary of the Depositor attesting to the occurrence of the events, and in the form set forth in the attached Specimen Certificate, and
 - (1) that decommissioning is proceeding pursuant to an NRC-approved plan,
 - (2) that the funds withdrawn will be expended for activities undertaken pursuant to that Plan, and
 - (3) that the NRC has been given 30 days' prior notice of Du Pont Merck's intent to withdraw funds from the escrow fund.

No withdrawal from the fund can exceed ten percent (10%) of the outstanding balance of the Fund or Fifteen Thousand Dollars (\$15,000), whichever is greater, unless NRC approval is attached.

In the event of the Grantor's default or inability to direct decommissioning activities, the Trustee shall make payments from the Fund as the NRC shall direct, in writing, to provide for the payment of the costs of required activities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the NRC from the Fund for expenditures for required activities in such amounts as the NRC shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the NRC specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 6. Trust Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee shall discharge its duties with respect to the Fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons

of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

- (a) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended (15 U.S.C. 80a-2(a)), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;
- (b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal Government; and
- (c) For a reasonable time, not to exceed 60 days, the Trustee is authorized to hold uninvested cash, awaiting investment or distribution, without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

- (a) To transfer from time to time any or all of the assets of the fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and
- (b) To purchase shares in any investment company registered under the Investment Company Act of 1940 (15 U.S.C. 80a-1 et seq.), including one that may be created, managed, underwritten, or to which investment advice is rendered, or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretion conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

- (a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale, as necessary for prudent management of the Fund;
- (b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;
- (c) To register any securities held in the Fund in its own name, or in the name of a nominee, and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, to reinvest interest payments and funds from matured and redeemed instruments, to file proper forms concerning securities held

in the Fund in a timely fashion with appropriate government agencies, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee or such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the U.S. Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

- (d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal government; and
- (e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. After payment has been made into this standby trust fund, the Trustee shall annually, at least 30 days before the anniversary date of receipt of payment into the standby trust fund, furnish to the Grantor and to the NRC a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days before the anniversary date of the establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the NRC shall constitute a conclusively binding assent by the Grantor, barring the grantor from asserting any claim or liability against the Trustee with respect to the matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting on the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing with the Grantor. (See Schedule C.)

Section 13. Successor Trustee. Upon 90 days notice to the NRC, the Trustee may resign; upon 90 days notice to NRC and the Trustee, the Grantor may replace the Trustee; but such resignation or replacement shall not be effective until the Grantor has appointed a successor Trustee and his successor accepts the appointment. The successor Trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor Trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor Trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the NRC and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this section shall be paid as provided in Section 9.

Section 15. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee and the NRC, or by the Trustee and the NRC, if the Grantor ceases to exist.


Section 16. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 15, this trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the NRC or State agency, or by the Trustee and the trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor or its successor.

Section 17. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this trust, or in carrying out any directions by the Grantor or the NRC issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the trust fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.


Section 18. This Agreement shall be administered, construed, and enforced according to the laws of the State of New York.

Section 19. Interpretation and Severability. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement. If any part of this agreement is invalid, it shall not affect the remaining provisions which will remain valid and enforceable.

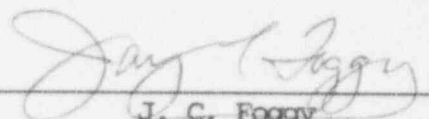
IN WITNESS THEREOF the parties have caused this Agreement to be executed by the respective officers duly authorized and the incorporate seals to be hereunto affixed and attested as of the date first written above.



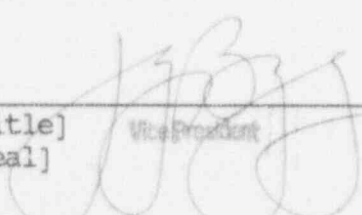
R. L. Dunning
Senior Vice President
and Chief Financial Officer

ATTEST:


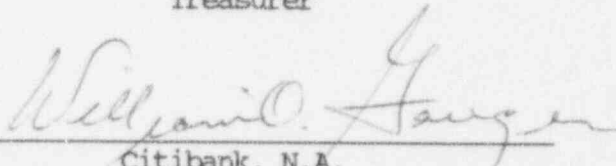
T. J. Bucknum
Secretary



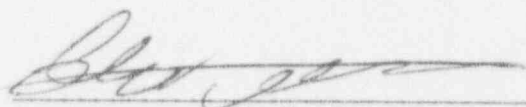
J. C. Foggy
Treasurer

ATTEST:


[Title] Vice President
[Seal]



Citibank, N.A.
WILLIAM O. GAUGER
Vice President



Citibank, N.A.
BRYAN GARTENBERG
Assistant Vice President

TRUST AGREEMENT SCHEDULE

SCHEDULE A

This agreement demonstrating financial assurance for the following cost estimates for the following licensed activities:

<u>U.S. Nuclear Regulatory Commission License Number</u>	<u>Name and address of Licensee</u>	<u>Address of Licensed Activity</u>	<u>Cost Estimates for Regulatory Assurances Demonstrated by this Agreement</u>
#37-28764-02	The DuPont Merck Pharmaceutical Co.	Glenolden Site Glenolden, PA	\$ 150,000
#20-28598-01	The DuPont Merck Pharmaceutical Co.	Billerica Site Billerica, MA	\$9,600,000

TRUST AGREEMENT SCHEDULE

SCHEDULE B

AMOUNT \$150,000

AS EVIDENCED BY Standby L/C #NY-00881-3000-9428

AMOUNT \$9,600,000

AS EVIDENCED BY Standby L/C #NY-08810-300-14149

CONVERSATION RECORD

TIME

2:49 pm.

DATE

4/23/94

TYPE

 VISIT CONFERENCE TELEPHONE INCOMING OUTGOING

ROUTING

NAME/SYMBOL INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Dennis Dumas, Manager

ORGANIZATION (Office, dept., bureau, etc.)

DuPont Merck

TELEPHONE NO.

508-671-8669

SUBJECT

Financial Assurance for Decommissioning

SUMMARY

I left a voice mail that we still are waiting for a Standby Trust Agreement for Letter of Credit No. 00881-30014149.
Please call back.

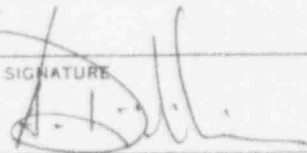
ACTION REQUIRED

Standby Trust Agreement

NAME OF PERSON DOCUMENTING CONVERSATION

DIMIRIADIS

SIGNATURE



DATE

4/23/94

ACTION TAKEN

SIGNATURE

TITLE

DATE



FINANCE DEPARTMENT

Barley Mill Plaza
4301 Lancaster Pike
Wilmington, DE 19880-0024
Fax (302) 892-1843

December 17, 1993

Ms. Demetra T. Doscas
Citibank, N.A.
399 Park Avenue
New York, NY 10043

Dear Ms. Doscas:

The Nuclear Regulatory Commission has contacted us to request that Citibank provide an original signed duplicate of the letters of credit for the Glenolden, PA and Billerica, MA sites. The referenced letters of credit are respectively #NY-00881-30009428 and #NY08810-30014149. You may send the documents to the attention of Mr. Anthony Dimitriadis at the following address:

Mr. Anthony Dimitriadis
U.S. Nuclear Regulatory Commission
Region 1
476 Allendale Road
King of Prussia, PA 19406-1415

Thank you in advance for your attention to this matter. If you have any questions, please do not hesitate to contact Ann Anthony at (302) 892-8448.

Sincerely,

Michael R. Miller
Executive Director, Finance

212-559-3173
Ms. DOSCAS.

Mike: 12/15/93

Please control
this.

Thanks.

(I am waiting for
originally signed
documents.)

10/24.

~~212-559-9179~~

CITIBANK:
800-285-3000

Bryan Gartenberg
Asst. V.P.

212-412-6257

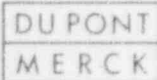
Ann Anthony: 302-892-8448

MS 16
K-8

December 13, 1993

United States Nuclear Regulatory Commission
Region I
Attn.: Mohamed M. Shanbaky, Chief
Research And Development Section
Division of Radiation Safety and Safeguards
475 Allendale Road
King of Prussia, PA 19406-1415

~~20-00320-21~~
20-28598-01



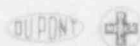
Reference: Mail Control #113360 and #115812

Dear Dr. Shanbaky:

This is written in response to your request for additional information letter dated October 27, 1993 concerning our Financial Assurance for Decommissioning.

I can provide the information in the order in which your questions appear on your letter.

1. A Letter of Credit has been secured for the Materials License #20-28598-01 in the amount of \$9.6MM. This Letter of Credit was obtained from Citibank by our corporate Financial group in Wilmington Delaware. The actual Letter of Credit was sent on October 28, 1993 by courier to the NRC Region I office to the attention of Mr. Eric H. Reber.
2. With regards to the Standby Trust Agreement, Ann Anthony of our corporate Finance office spoke to Anthony Dimitriadis of NRC Region I and determined that it was appropriate to have the existing Trust Agreement amended to include both the DuPont Merck Billerica Site and the Glenolden Site. Thus attached for your information is a letter dated November 18, 1993 from the DuPont Merck Finance Department to Citibank requesting the existing Standby Trust Agreement be amended to include the new Letter of Credit. The amended Agreement will be forwarded to your office as soon as it is processed by Citibank.
3. As you know Materials License #20-00320-21 is assigned to the DuPont operations of Boston, Massachusetts. The Radiation Safety Officer, Leonard R. Smith, and the DuPont Finance representative Jacinta M. Thomas have been in contact with Mr. Dimitriadis. The DuPont Standby Trust Agreement for DuPont's license will be handled by a separate communication from the DuPont Radiation Safety Officer.
4. The DuPont Radiation Radiation Safety Officer will provide the necessary evidence of signatory authorization with their own separate communication to your office. However, for the DuPont Merck Standby Trust Agreement please be advised that the attached letter to Citibank also requests a letter of acknowledgment to certify the Trustee's signature and signing authority. This will be sent to your office along with the amended Standby Trust Agreement.
5. This is written confirmation that there is no credit for salvage value included in the decommissioning cost estimates. The contractor that prepared the Plan in 1990 made a speculative statement that was unrelated to the execution of the Decommissioning Funding Plan.



OFFICIAL RECORD COPY

ML 10

113360/115812

DEC 15 1993

6. The DuPont Merck Billerica Site's Decommissioning Funding Plan will be reviewed in detail at the time of each license renewal. Prior to the actual submittal of the license renewal application, decommissioning cost estimates will be adjusted wherever appropriate and associated funding levels will be either increased or decreased based on the review of the Plan. As recommended in Regulatory Guide 3.66 these adjustments will be made to account for inflation, for changes in goods and services, for changes in facility conditions and for changes in expected decommissioning procedures.

With established operations for the manufacturing of radiopharmaceuticals for medicine and radioisotopes for research, a review and modification as appropriate of the Decommissioning Funding Plan at each time of license renewal will ensure valid financial assurance for decommissioning over the life of our facilities.

7. The statement quoted from our Plan, "The cost analysis does not factor in contingencies", seems to have been taken out of context. The contractor made this statement without regard to NUREG/CR-1754 and appears to be generalizing about how any business normally handles a contract for major projects.

We agree that a contingency factor in the decommissioning cost estimate is necessary to prepare for unexpected circumstances that could raise decommissioning costs. When it was necessary to decide on the amount for the Letter of Credit we determined that the existing amount, \$9.6MM, for the Billerica Site was more than adequate to cover any decommissioning costs plus any unexpected costs up to the time of the renewal of our license, expiration date November 30, 1996. At that time we intend to, as committed in item #6 in this letter, to again review the Decommissioning Funding Plan in detail and increase or decrease the cost estimates as appropriate. For this year 1993, and into 1994, we estimate the decommissioning cost estimates for the Billerica site incorporate approximately 13% overage for unexpected costs. In 1996, during the next license renewal process, we will ensure the same overage in the cost estimate is maintained. The six reference laboratories in NUREG/CR-1754 do not apply to the operation of a manufacturing facility with a Type A Broad Scope license. With regards to radiological decommissioning, the only unexpected costs in this type of operation is primarily related to the volatile issue of radioactive waste disposal.

As you know the costs for radioactive disposal has increased significantly. In 1990 when the original Decommissioning Plan was compiled by our contractor the waste cost was approximately \$88 per cu. ft. for shipments to the repository in Richland, Washington. In 1993 we as an NRC licensee in Massachusetts only have access to the repository in Barnwell, South Carolina. In 1993 the waste cost is \$62 per cu. ft plus a surcharge of \$220 per cu. ft, for a total waste cost by volume shipped to the repository of \$282 per cu. ft. We just recently were informed that the waste charge for shipments to the Barnwell repository will be increased to \$74 per cu. ft. for a total of \$294 per cu. ft. in 1994. However, as you know, licensees such as ourselves in a non-compact state will be banned from the Barnwell SC repository by July 1994. In this situation, the issue of the cost of waste disposal changes to that of licensed storage at our facility.

The total 1990 radioactive waste disposal costs estimated in the Decommissioning Funding Plan is approximately \$2.2MM for a total volume of 25,315 cu ft. Based on the above waste disposal costs for 1993 and starting January 1, 1994 the current costs for disposal could amount to approximately \$7.1MM and \$7.4MM respectively. However, the current technology in waste reduction has shown that the volume of waste from any decommissioning effort on our site can be dramatically reduced as compared to the estimates made in 1990. As part of our routine radioactive waste

handling program we utilize technologies such as supercompaction, incineration and monitoring/decontamination methods to reduce waste volumes and minimize costs of disposal.

With regards to the waste disposal cost estimates for the existing Decommissioning Funding Plan we have estimated that with supercompaction the volume of structural material waste can be reduced by at least a factor of two, and through analytical monitoring techniques and decontamination the total volume of installed components for waste disposal could be reduced by 50%. This reduces the total estimates of waste volume to 12,657 cu. ft. for a total waste disposal charge of approximately \$3.7MM after January 1, 1994.

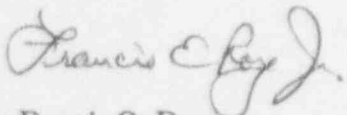
The estimated cost for the physical decommissioning without waste disposal costs was approximately \$7.3MM. Based on our understanding of the actual costs versus the estimated costs for a major decommissioning project at the DuPont site and due to our knowledge of the status of many of the building areas on our site that contain no radioactive material; such as Buildings #110, #350, #375 and #600; we are confident that the existing cost estimates are very conservative.

More specifically, an adjustment that could be made concerns the regulation of byproduct material and NARM, Naturally Occurring and Accelerator Produced Radioactive Material. The Decommissioning Funding Plan as written incorporates the total cost of decommissioning areas that handled byproduct material with areas that handle accelerator produced radioactive material. We estimate that approximately 1/2 of the areas in Building #200 are dedicated to strictly operations involving accelerator produced radioactive material, i.e. the radiopharmaceuticals thallium-201 and gallium-67. In Building #250 we estimate that approximately 1/3 of this facility is dedicated to operations involving strictly the accelerator produced radioactive material, thallium-201 and gallium-67. The bulk of these areas is made up of the six cyclotrons operating in this facility which are included in the Decommissioning Funding Plan. The 1990 decommissioning cost estimate excluding waste at \$7.3MM can be reduced by approximately \$2.6MM for costs pertaining just to the decommissioning of the areas with the short-lived accelerator produced isotopes Tl-201 and Ga-67. The cost for decommissioning excluding waste is then approximately \$4.8MM for the site based on the Plan.

The total cost of decommissioning our site is estimated to be no more than \$8.5MM. Thus, we believe the existing Letter of Credit amount, \$9.6MM, adequately covers any costs for the complete decommissioning of our facilities pursuant to the regulatory requirements of Title 10 CFR Part 30, §30.35.

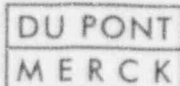
Please contact me if you require any additional information.

Sincerely,



for Dennis O. Dumas
Manager, Safety and Environmental Engineering

Telephone: 508-671-8669



FINANCE DEPARTMENT

Barley Mill Plaza
4301 Lancaster Pike
Wilmington, DE 19880-0024
Fax (302) 892-1843

November 18, 1993

Ms. Demetra T. Doscas
Citibank, N.A.
399 Park Avenue
New York, NY 10043

RE: Nuclear Regulatory Commission Billerica Site Letter of Credit #NY-08810-30014149

Dear Ms. Doscas:

Please amend Section 2 of the Standby Trust Agreement, Account #793822 to include the above listed letter of credit. After this amendment, the Standby Trust Agreement should reference both letters of credit listed below:

Billerica Site Letter of Credit #NY-08810-30014149
Glenolden Site Letter of Credit #NY-08810-30009428

When this amendment is complete, please send an updated copy of the Standby Trust Agreement to Ann Anthony and to the NRC. You may send the NRC copy to the following address:

Mr. Anthony Dimitriadis
U.S. Nuclear Regulatory Commission
Region 1
476 Allendale Road
King of Prussia, PA 19406-1415

In addition, please include a letter of acknowledgement with the Standby Trust Agreement when it is submitted to the NRC. The acknowledgement is needed to verify the execution of the Standby Trust Agreement and to certify the Trustee's signature and authority to enter into the agreement. A copy of the suggested wording is enclosed.

Thank you in advance for your attention to this matter. If you have any questions, please do not hesitate to contact Ann Anthony at (302) 892-8448.

Sincerely,

Karen M. Spofford
Manager, Cash & Financial Markets

4.3.4 Sample of Acknowledgement

ACKNOWLEDGEMENT

[The following is an example of the acknowledgement that must accompany the trust agreement for a standby trust fund or trust fund.]

STATE OF _____

To Wit: _____

CITY OF _____

On this _____ day of _____, before me, a notary public in and for the city and State aforesaid, personally appeared _____, and she/he did depose and say that she/he is the [title], of [_____], national banking association, Trustee, which executed the above instrument, that she/he knows the seal of said association; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the association; and that she/he signed her/his name thereto by like order.

[Signature of notary public]

My Commission Expires: _____

[Date]

Citibank, N.A.
120 Wall Street
13th Floor
New York, NY 10043

ATTN: Trust Division

Gentlemen:

In accordance with the terms of the Agreement with you dated August 15, 1991, I, Thomas J. Bucknum, Secretary of The DuPont Merck Pharmaceutical Company, hereby certify that the following events have occurred:

1. The DuPont Merck Pharmaceutical Company is required to commence the decommissioning of its facility located at the Billerica Site (hereinafter called the decommissioning).
2. The plans and procedures for the commencement and conduct of the decommissioning have been approved by the United States Nuclear Regulatory Commission, or its successor, on _____ (Copy of approval attached).
3. The Board of Directors of The DuPont Merck Pharmaceutical Company has adopted the attached resolution authorizing the commencement of the decommissioning.

T. J. Bucknum - Secretary, The DuPont
Merck Pharmaceutical Company

Date

I, Thomas J. Bucknum, do hereby certify that I am Secretary of The DuPont Merck Pharmaceutical Company, a Delaware Partnership, and that the resolution listed below was duly adopted at a meeting of this Partnership's Board of Directors on _____, 19____.

IN WITNESS WHEREOF, I have hereunto signed my name and affixed the seal of this Partnership this _____ day of _____, 19____.

T. J. Bucknum - Secretary, The DuPont
Merck Pharmaceutical Company

RESOLVED, that this Board of Directors hereby authorizes the Chief Executive Officer, or such other employee of the Company as he/she may designate, to commence decommissioning activities at the Glenolden Site in accordance with the terms and conditions described to this Board of Directors at this meeting and with such other terms and conditions as the Chief Executive Officer shall approve with and upon the advice of Counsel.

20-28548-01

NORTH AMERICAN TRADE FINANCE

OCTOBER 28, 1993

Daneta Dasca
212-~~559~~-3173

U.S. NUCLEAR REGULATORY COMMISSION
REGION 1
ATTN: ERIC REBER
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

REF: IRREVOCABLE LETTER OF CREDIT NO. NY-00881-30014149

GENTLEMEN:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO NY-00881-30014149 IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF THE DUPONT MERCK PHARMACEUTICAL COMPANY, BILLERICA SITE, UP TO THE AGGREGATE AMOUNT OF NINE MILLION SIX HUNDRED THOUSAND U.S. DOLLARS (US\$9,600,000.00) AVAILABLE UPON PRESENTATION OF:

- (1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS LETTER OF CREDIT NO. NY-00881-30014149, AND
- (2) YOUR SIGNED STATEMENT READING AS FOLLOWS: "I CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO REGULATIONS ISSUED UNDER AUTHORITY OF U.S. NUCLEAR REGULATORY COMMISSION."

THIS LETTER OF CREDIT IS ISSUED IN ACCORDANCE WITH REGULATIONS ISSUED UNDER THE AUTHORITY OF THE U.S. NUCLEAR REGULATORY COMMISSION (NRC), AN AGENCY OF THE U.S. GOVERNMENT, PURSUANT TO THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, AND THE ENERGY REORGANIZATION ACT OF 1974. THE NRC HAS PROMULGATED REGULATIONS IN TITLE 10, CHAPTER 1 OF THE CODE OF FEDERAL REGULATIONS, PART 30, WHICH REQUIRE THAT A HOLDER OF, OR AN APPLICANT FOR, A LICENSE ISSUED UNDER 10 CFR PART 30 PROVIDE ASSURANCE THAT FUNDS WILL BE AVAILABLE WHEN NEEDED FOR DECOMMISSIONING.

THIS LETTER OF CREDIT IS EFFECTIVE AS OF OCTOBER 28, 1993 AND SHALL EXPIRE ON JULY 30, 1994, BUT SUCH EXPIRATION DATE SHALL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF AT LEAST ONE YEAR ON JULY 30, 1994 AND ON EACH SUCCESSIVE EXPIRATION DATE, UNLESS, AT LEAST 90 DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH YOU AND THE DUPONT MERCK PHARMACEUTICAL COMPANY BY CERTIFIED MAIL, AS SHOWN ON THE SIGNED RETURN RECEIPTS. IF THE DUPONT MERCK PHARMACEUTICAL COMPANY IS UNABLE TO SECURE ALTERNATIVE FINANCIAL ASSURANCE TO REPLACE THE LETTER OF CREDIT WITHIN 30 DAYS OF NOTIFICATION OF CANCELLATION THE NRC MAY DRAW UPON THE FULL VALUE OF THIS LETTER OF CREDIT PRIOR TO CANCELLATION. THE BANK SHALL GIVE IMMEDIATE NOTICE TO THE APPLICANT AND THE NRC OF ANY NOTICE RECEIVED OR ACTION FILED ALLEGING (1)

115812

THE INSOLVENCY OR BANKRUPTCY OF THE FINANCIAL INSTITUTION OR (2) ANY VIOLATIONS OF REGULATORY REQUIREMENTS THAT COULD RESULT IN SUSPENSION OR REVOCATION OF THE BANK'S CHARTER LICENSE TO DO BUSINESS, THE FINANCIAL INSTITUTION ALSO SHALL GIVE IMMEDIATE NOTICE IF THE BANK, FOR ANY REASON, BECOMES UNABLE TO FULFILL ITS OBLIGATIONS UNDER THE LETTER OF CREDIT.

WHENEVER THIS LETTER OF CREDIT IS DRAWN ON AND IN COMPLIANCE WITH THE TERMS OF THIS LETTER OF CREDIT, WE SHALL DULY HONOR SUCH DRAFT UPON ITS PRESENTATION TO US WITHIN 30 DAYS, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTLY INTO THE STANDBY TRUST FUND OF THE DUPONT MERCH PHARMACEUTICAL COMPANY IN ACCORDANCE WITH YOUR INSTRUCTIONS.

EACH DRAFT MUST BEAR ON ITS FACE THE CLAUSE: "DRAWN UNDER LETTER OF CREDIT NO. NY-00881-30014149, DATED OCTOBER 28, 1993, AND THE TOTAL OF THIS DRAFT AND ALL OTHER DRAFTS PREVIOUSLY DRAWN UNDER THIS LETTER OF CREDIT DOES NOT EXCEED NINE MILLION SIX HUNDRED THOUSAND U.S. DOLLARS (US\$9,600,000.00).

THIS LETTER OF CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (1983 REVISION) INTERNATIONAL CHAMBER OF COMMERCE BROCHURE #400, SHALL BE DEEMED TO BE A CONTRACT MADE UNDER, AND AS TO MATTERS NOT GOVERNED BY THE UCP, SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK AND APPLICABLE U.S. FEDERAL LAW.

CITIBANK N.A.

Bernadette M. Mormilo

AUTHORIZED SIGNATURE.

BERNADETTE M. MORMILO
Service Officer
North American Trade Services
111 Wall St./16th Fl.
(212) 657-7367

OCT 27 1993

License Nos. 20-00320-21
20-28598-01
Docket Nos. 030-28902
030-32013
Control Nos. 113360
115812

DuPont Merck Pharmaceutical Co.
ATTN: Dennis Dumas, Manager
Safety and Environmental Engineering
331 Treble Cove Road
North Billerica, Massachusetts 01862

Dear Mr. Dumas:

Subject: Financial Assurance for Decommissioning

This is in reference to your submittals dated July 30, 1990 and September 19, 1990 to provide financial assurance for License Nos. 20-00320-21 and 20-28598-01. These included Decommissioning Funding Plans (DFP) and cost estimates for two facilities and a Letter of Credit. We have reviewed your submission and request that you modify the appropriate documents to address the specific issues listed below:

1. **Submit a Letter of Credit for License No. 20-28598-01.**

The Letter of Credit in the amount of \$12,000,000 references only the Boston facility, License No. 20-00320-21. Based on the cost estimates, it is not clear if you intended to include in this amount the cost for both the Boston and the North Billerica facilities, or if you intended to have the Letter of Credit reference only the North Billerica facility, in the amount of \$9,586,593.00 with a 25% contingency factor. The Letter of Credit must specify all of the License Numbers and facilities for which it is intended. Modify this Letter of Credit or submit a separate Letter of Credit for License No. 20-28598-01.

2. **Submit a Standby Trust Agreement and related documentation for License No. 20-28598-01.**

Under 10 CFR 30.35(f)(2)(ii), a surety method of assurance, such as a Letter of Credit, "must be payable to a trust established for decommissioning costs." In the event the licensee defaults on its decommissioning obligations, the guarantor (Trustee), under the terms of the Agreement, Section 5, must make funds available in a trust fund to allow for payment for these activities.

A trust fund must be established because funds paid directly to the NRC must be deposited into the U.S. Treasury and would not be available for decommissioning costs. To avoid the possibility that a trust fund would not be readily available if and when needed, Regulatory Guide 3.66, page 3-2, states that a standby trust fund be established if a Letter of Credit is used as a financial instrument. Please submit a Standby Trust Agreement for License No. 20-28598-01. Submit completely executed, originally signed documents.

3. **Submit originally signed duplicates of the Standby Trust Agreement for License No. 20-00320-21.**

You submitted copies of the Standby Trust Agreement for the Boston facility, License No. 20-00320-21. Please submit completely executed, originally signed duplicates of this Agreement.

4. **Submit evidence indicating that the party signing the Standby Trust Agreement for E. I. duPont de Nemours & Company is authorized to represent the company.**

The submission does not provide sufficient evidence indicating that the party signing the mechanism is authorized to enter into a Standby Trust Agreement for the company, as recommended in Regulatory Guide 3.66, page 3-14. Evidence of authority to represent the licensee is necessary to ensure the validity and enforceability of the mechanism. Therefore, please submit a copy of the corporate by-laws or other evidence indicating that the party signing the Standby Trust Agreement is authorized to do so.

5. **Confirm that no credit is taken for salvage value in the DFP's for the North Billerica and Boston facilities.**

You make conflicting statements about credit for salvage value in your DFP's. For example, on page 19 of your decommissioning funding plan for the North Billerica facility, (page 20 for the Boston facility), you state:

"DuPont and DuPont Merck Pharmaceuticals could potentially offset a portion of the decommissioning cost through the salvage of clean, usable installed components."

But on page 2 of these same documents you state:

"However this cost estimate does not take into account any value that may be realized from the salvage of these components."

Confirm that you have not included in the cost estimates credit for any salvage value that may be realized from the sale of potential assets after decommissioning.

6. Describe the means to be used for adjusting cost estimates and associated funding levels over the life of the facilities.

Under 10 CFR 30.35(e) you are required to describe the means you will use to adjust decommissioning cost estimates and associated funding levels over the life of the facility. You did not provide such a description in the decommissioning funding plan. Please provide one. Regulatory Guide 3.66 provides a method for adjusting the cost estimates and suggests that adjustments be made for inflation for site-specific factors at the time of license renewal, or when the amounts/types of material at the facility change. Adjustments should be made to account for inflation, for changes in prices of goods and services, for changes in facility conditions, and for changes in expected decommissioning procedures.

7. Incorporate a contingency factor into each of the total decommissioning cost estimates.

On page 27 of your DFP's you state:

"The cost analysis does not factor in contingencies..."

Incorporating a contingency factor in the cost estimate helps to ensure that licensees are prepared for unexpected circumstances that could raise decommissioning costs. NUREG/CR-1754 (copy enclosed) uses a contingency factor of 25 percent in its cost estimates for each of six reference laboratories. Please incorporate a contingency factor of 25 percent into the decommissioning cost estimate. You may choose to use a lower contingency factor if you can show why a lower factor is appropriate. Also, please modify your estimates for radioactive waste disposal to coincide with current, October 1993, waste disposal costs.

Satisfactory financial assurance is required for your license. Therefore, we request that you respond within 30 calendar days of the date of this letter. Please reply in duplicate to my attention and at the Region I office and refer to Mail Control Nos. 113360 and 115812.

If you have any questions regarding this letter, please contact Anthony Dimitriadis of my staff at (215) 337-6953.

Sincerely,

Original Signed By:
Mohamed M. Shanbaky

Mohamed M. Shanbaky, Chief
Research and Development Section
Division of Radiation Safety
and Safeguards

Enclosures:

1. Regulatory Guide 3.66
2. NUREG/CR-1754
3. NUREG/CR-1754, Addendum 1

cc (w/o enclosures):

E.I. duPont de Nemours & Company, Inc.

Medical Products/Imaging Systems

NEN Products

ATTN: Michael Jackson

Operations Manager

549 Albany Street

Boston, Massachusetts 02118

bcc:

M. Shanbaky, RI

A. Dimitriadis, RI

DRSS:RI
Dimitriadis/gc

10/21/93

DRSS:RI
Shanbaky

MS
10/27/93

DATE 4/30/92
TIME 10:00 A.M. P.M.

TELEPHONE OR VERBAL CONVERSATION RECORD

INCOMING CALL OUTGOING CALL VISIT

PERSON CALLING: Eric H. Reber
OFFICE/ADDRESS: Region I
PHONE NUMBER | EXTENSION: (215) 337-5276

PERSON CALLED: Francis E. Roy Jr.
OFFICE/ADDRESS: [blank]
PHONE NUMBER | EXTENSION: (508) 671-8242

CONVERSATION

SUBJECT: Financial Assurance for DuPont Merck

SUMMARY: Pharmaceuticals 20-00320-21(dP) + 20-28598-01 (dPM)
1. If you intend that LOC# NY-0881-30007170 (over 20-28598-01 (dPM)) and associated Standby Trust Fund, these documents should be amended to reference the Billerica site license#
2. For Boston site you estimate \$ 5.8 million for Billerica you estimate \$ 9.5 million for a total of \$15.4 million - we suggest a contingency of 25% for a total of \$19.3 million.
He is considering options and will send a response

REFERRED TO:

ADVISE ME OF ACTION TAKEN.

ACTION REQUESTED

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE

LIST OF INSTRUCTIONS

E.I. DU PONT DE NEMOURS AND COMPANY

In reviewing the comments the reviewer will note that there will be some overlap between ICF and OGC comments. The following comments should be included in the basis for the deficiency letter:

1. ICF comments 1 through 5 plus last paragraph.
2. All OGC comments.

All other comments and discussions are for reviewer information.

From: Mike Finkelstein

Re: Review Of ICF Comments from the Seventh Group

E. I. Du Pont de Nemours & Company (Letter of Credit)

All ICF recommendations should be implemented because the analysis is correct. Two letters of credit should be included in this submittal. No further comments are submitted for this licensee's submittal.

Ignore stuff for -02
License. (per E. Reber)



ICF INCORPORATED

January 31, 1991

To: Dr. Lou Bykoski, NMSS/NRC

From: David Mitamura, John Collier, and Craig Dean, ICF Incorporated

Subject: Review of Letter of Credit Submitted by E.I. Du Pont de Nemours & Company

E.I. Du Pont de Nemours & Company submitted a letter of credit in the amount of \$12,000,000, and a standby trust agreement to assure decommissioning costs for license 20-00320-21 issued under 10 CFR Part 30. Du Pont also submitted a standby trust agreement for license 07-00455-02 (apparently issued under 10 CFR Part 30), but did not include a corresponding letter of credit.¹ Upon review of the submission, ICF recommends that NRC Region I require the licensee to modify the submission in the following ways:

- (1) Submit a decommissioning cost estimate for license 20-00320-21;
- (2) Submit a certification statement for license 07-00455-02;
- (3) Submit a letter of credit for license 07-00455-02 ← see MC# 113068
- (4) Submit evidence that the party signing the standby trust agreements for the licensee is authorized to represent the company; and
- (5) Submit specimen certificates of resolution with both standby trust agreements.

These recommendations and other issues are discussed below.

(1) **Submit a Decommissioning Cost Estimate for License 20-00320-21**

The submission states that the licensee is having a decommissioning funding plan (DFP) for license 20-00320-21 prepared by an outside contractor; the submission itself, however, provides no supporting documentation for the initial \$12,000,000 cost estimate, nor any description of the facilities. Therefore, ICF cannot evaluate whether the licensee included reasonable costs

¹ Documentation for the second trust fund suggests that a letter of credit in the amount of \$750,000 should have been submitted for license 07-00455-02. See Recommendation 3.

estimates for all major decommissioning activities in its overall decommissioning cost estimate.

ICF recommends that the NRC require the licensee to use or adapt the "Cost Estimating Tables" in Appendix F of the draft *Regulatory Guide "Standard Format and Content of Financial Assurance Mechanisms Required for Decommissioning Under 10 CFR Parts 30, 40, 70, and 72,"* January 1990, to demonstrate that it has provided reasonable cost estimates for all major decommissioning activities. In addition, the licensee should also incorporate a contingency factor of 25 percent into its estimate², and should clarify that it has not included in its cost estimate credit for any salvage value that may be realized with the sale of potential assets after decommissioning (see page 1-13 of the draft *Regulatory Guide*). Finally, as required under 10 CFR 30.35(e), the licensee should describe the means it will use to adjust its decommissioning cost estimate and associated funding level over the life of the facility. Adjustments should be made to account for inflation, for other changes in prices of specific goods and services, for changes in facility conditions, and for changes in expected decommissioning procedures.

(2) Submit a Certification Statement for License 07-00455-02

The licensee's submission does not include either a decommissioning cost estimate or a certification statement for license 07-00455-02. Based upon the \$750,000 of assurance specified in the standby trust agreement, it appears that a certification statement should have been included for this license. The statement of certification, in addition to providing license numbers and other information that would allow NRC to verify the certification amount (e.g., review the names and locations of the facilities for which financial assurance is provided, and the amount and types of materials handled), officially certifies that the licensee is in compliance with the appropriate requirements. ICF recommends that NRC require the licensee to submit a statement of certification, as recommended in NRC's draft *Regulatory Guide*, page 1-7.

(3) Submit a Letter of Credit for License 07-00455-02

Although the licensee submitted a standby trust agreement for license 07-00455-02 that references a letter of credit, no letter of credit for this license was submitted. NRC regulations (e.g., 10 CFR 30.35) require licensees to submit a copy of their financial assurance mechanism. ICF recommends that NRC require the licensee to submit the letter of credit so that the licensee's demonstration of financial assurance for this license may be evaluated. NRC will also need an original copy of the letter of credit in order to draw on the mechanism.

² Use of a contingency factor of 25 percent is consistent with the cost estimates for each of six reference laboratories included in NUREG/CR-1754, Addendum 1, Technology, Safety and Costs of Decommissioning Reference Non-Fuel-Cycle Nuclear Facilities: Compendium of Current Information, Pacific Northwest Laboratory, October 1989.

(4) Submit Evidence Indicating that the Party Signing the Standby Trust Agreements for the Licensee is Authorized to Represent the Company

The submission does not provide sufficient evidence³ to show that the party signing the two standby trust agreements is authorized to represent the licensee in entering the agreements, as recommended in the draft *Regulatory Guide*. ICF recommends that NRC require the licensee to submit a copy of the corporate by-laws or other evidence demonstrating this authority in order to ensure that the financial mechanisms are valid and enforceable.

(5) Submit Specimen Certificates of Resolution with Both Standby Trust Agreements

Both of the standby trust agreements submitted by the licensee refer to a specimen certificate of events, which was included with each agreement. Each specimen certificate of events, however, requires submission of a specimen certificate of resolution authorizing the commencement of decommissioning. The licensee did not submit a specimen certificate of resolution for either standby trust agreement.⁴ The specimen certificates provide the required format for instructing the trustee to release decommissioning funds from the trust. ICF recommends that NRC require the licensee to submit a specimen certificate of resolution worded similarly to the one on page 4-25 of the draft *Regulatory Guide*.

Other Issues

The submission differs from the recommendations in the draft *Regulatory Guide* in a few other ways which do not decrease the protection provided by the mechanisms. Apart from editorial and non-substantive changes and typographical errors, the following modification is noteworthy:

- The submission includes a letter of acknowledgement for each standby trust agreement, although the wording of the letters is significantly different from that recommended by the draft *Regulatory Guide* on page 4-27. Nevertheless, the letters are notarized and they demonstrate that the trustee has "acknowledged" the agreements.

Finally, the Region should ensure that documents submitted by the licensee are originally signed duplicates, as recommended in the draft

³ The submission does include a "certificate of resolution," which is very different from the specimen certificate of resolution described in the draft *Regulatory Guide*. The submitted certificate is labeled "Instructions to the Grantor" and states that orders and instructions to the trustee must be signed by persons authorized under certain corporate resolutions. The certificate does not, however, state who is authorized, and it is not signed.

⁴ The submission includes a "certificate of resolution," described earlier, that does not seem related to the "specimen certificate of resolution" required in the draft *Regulatory Guide*, page 4-25.

Regulatory Guide. Unless the documents have been properly signed, NRC cannot be certain that the financial assurance mechanisms are enforceable. Because ICF does not possess the original submissions, we cannot verify compliance with these requirements.

attachments

**APPENDIX A
CHECKLIST FOR DECOMMISSIONING FINANCIAL ASSURANCE**

NAME OF LICENSEE OR APPLICANT

D. Kent Medical Products Dept

E I de Post de Nemours & Co

MAILING ADDRESS

331 Trestle Cove Road,

Experimental Station site, & Greater Boston Area Site

N. Billerica, MA 01862

Wilmington, DE

A. Licensee Part (check one of the following):

- Part 30 Licensee or Applicant _____ Part 70 Licensee or Applicant
 _____ Part 40 Licensee or Applicant _____ Part 72 Licensee or Applicant

B. Check appropriate item in each category (if applicable)

1. 7/27/90 Date of Financial Assurance Submission Eff. 7/27/90

2. _____ Public Entity

Exp 7/27/91

Private Entity

2 Facilities →

3. Certification of Financial Assurance = 750,000

No Cert. Statement

Decommissioning Funding Plan

No DFP

4. (a) _____ Prepayment Option (See Appendix B)

- _____ Trust Fund
 _____ Escrow Account
 _____ Certificate of Deposit
 _____ Government Fund
 _____ Deposit of Government Securities

(b) Surety/Insurance/Other Guarantee (See Appendix C)

- _____ Surety bond
 Letter of Credit \$120.00 To Set Up
 _____ Line of Credit
 _____ Parent Company Guarantee/Financial Test*

(c) _____ External Sinking Fund, Sinking Account and Surety/Insurance (See Appendix D)

- _____ Trust Fund
 _____ Escrow Account
 _____ Certificate of Deposit
 _____ Government Fund
 _____ Deposit of Government Securities
 _____ Surety Bond
 _____ Letter of Credit
 _____ Line of Credit

(d) _____ Statement of Intent (public entities only)

*May not be used in combination with any other instrument.

APPENDIX C

CHECKLIST FOR SUBMISSION OF SURETY/INSURANCE/PARENT COMPANY GUARANTEE

A. Check Appropriate Form of Surety/Insurance/Guarantee

- Surety Bond
- Letter of Credit
- Line of Credit
- Parent Company Guarantee/Financial Test*
- Insurance

B. Check Documents Submitted for Surety/Insurance/Guarantee

1. Surety Bond
 - Surety Bond
 - Standby Trust Agreement
 - Acknowledgement
2. Letter of Credit

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Letter of Credit → Same <input checked="" type="checkbox"/> Standby Trust Agreement → Very close <input checked="" type="checkbox"/> Acknowledgement → not submitted 	<p>For license 20-00320-21</p> <p>For license 07-00455-02</p> <p>No letter of credit</p> <p>sta very close</p> <p>D. Herent</p>
---	--
3. Line of Credit
 - Verification
 - Standby Trust Agreement
 - Acknowledgement
4. Parent Company Guarantee
 - Letter from Chief Executive Officer of Applicant or Licensee
 - Letter from Chief Financial Officer of Parent Company
 - Financial Test: Alternative [I or II]
 - Auditor's Special Report and Attached Schedule
 - Corporate Guarantee
 - Standby Trust Agreement
 - Acknowledgement
5. Insurance
 - Certificate of Insurance
 - Standby Trust Agreement
 - Acknowledgement

May not be used in combination with any other instrument.

None submitted for
license 07-00455-02

CHECKLIST OF CRITERIA FOR REVIEW OF LETTERS OF CREDIT

- n/a

• Copy of corporate by-laws or other evidence indicating that parties signing the financial instrument (for the applicant) are authorized to represent the organization in the transaction.
- To be verified by Region


• Evidence that the financial instrument is an originally signed duplicate (e.g., an executed copy of the instrument).
- yes ✓

• Evidence that the financial institution is regulated by Federal or State agency (e.g., member of FDIC, Federal Reserve System, etc.). Citi bank, NA
- Yes

• The instrument must be entitled ^{an irrevocable} letter of credit.
- yes

• The letter should be limited in amount.
- Yes

• The letter of credit must contain a specified expiration date or be written for a definite term. *(open ended or automatically renewable)*
- Yes

• The issuer's obligation to pay the beneficiary should arise only upon presentation of a draft or other documents specified in the letter of credit.
-  implied

• The bank must not be called upon to determine a question of fact or law at issue between the licensee and the Commission or State regulatory agency.
- OK

• The licensee should have an unqualified obligation to reimburse the issuer for payments made under the letter of credit.
- Yes

• The letter of credit must be made payable to a standby trust

EXHIBIT 3-5

Standby

CHECKLIST OF CRITERIA FOR REVIEW OF TRUST AGREEMENTS^a

No

- Copy of corporate by-laws or other evidence indicating that parties signing the financial instrument (for the applicant) are authorized to represent the organization in the transaction.

To be verified by Region

- Evidence that the financial instrument is an originally signed duplicate (e.g., an executed copy of the instrument).

- Evidence that the financial institution has authority to act as a trustee *Citibank, NA See Directory of Trust Institutions*

- Purpose of trust ("whereas" clauses).

1. Description

- Grantor or grantors (introductory paragraph).

1. Names

2. Addresses

- Trustee or trustees.

1. Names and addresses *No address in intro TP, but included on cert of Events*

2. Bank or corporate trustee (introductory paragraph)

- Identification of facilities and cost estimates (Section 2).^b

^aAdapted from 17A Am Jur Legal Forms 2d (Rev) §251.94.

^bReferences are to recommended wording for trust agreements provided in Section 4.

EXHIBIT 3-5 (continued)

- Words of transfer, conveyance, and delivery in trust (Section 3).
- Payments constituting the trust fund (Section 4).
- Duration of trust. *until terminated*
- Description of trust property.
 1. Property described in attached schedule (Schedule B) *Does not specify L/C #*
 2. Cash
 3. Stock and other securities
- Additions to trust.
- Distribution of trust principal (Section 5).
 1. Disbursement to licensee upon proper certification
 2. Payment for activities at NRC's direction in writing
 3. Refund to grantor at NRC's specification in writing after completion of decommissioning activities
 4. *No withdrawal may exceed 10%*
- Trust management (Sections 6-8).
 1. Discretionary powers
 2. Fiduciary duty
 3. Commingling and investment
 4. Sale or exchange of trust property
 5. Scope of investments
 6. Express powers of trustee
 7. Borrowing money and encumbering trust assets
- (Optional provisions)

EXHIBIT 3-5 (continued)

- 8. Insurance
- 9. Operation of business
- 10. Compromise of claims

✓ Taxes and expenses (Section 9).

✓ Annual valuation (Section 10).

✓ Advice of counsel (Section 11).

• Authority, compensation, and tenure of trustees (Sections 12-14).

- 1. Trustee compensation
- 2. Successor trustee
- 3. Instructions to trustee

✓ Amendment of agreement (Section 15).

✓ Irrevocability and termination (Section 16).

✓ Immunity and indemnification (Section 17).

✓ Law to govern construction and operation of trust (Section 18).

• Interpretation and severability (Section 19).

• Date (signature block). *no date of signature, but in IP 1*

✓ Signatures (signature block).

✓ Acknowledgements, seals or attestations, if necessary or desired (witness by notary public).

• Acceptance of trust by trustee or trustees (acknowledgment).

looks like a copy of acknowledgment for license 07-00455-02 N. tar 1 sig is distinct

No. certificate of resolution

*Very similar wording
to Reg Guide*

EXHIBIT 3-5

*De Pont
license
07-00455-02*

Standby

CHECKLIST OF CRITERIA FOR REVIEW OF TRUST AGREEMENTS^a

No

- Copy of corporate by-laws or other evidence indicating that parties signing the financial instrument (for the applicant) are authorized to represent the organization in the transaction.

*To be
verified
by Region*

Evidence that the financial instrument is an originally signed duplicate (e.g., an executed copy of the instrument).

- Evidence that the financial institution has authority to act as a trustee. *yes, see Directory of Trust Institutions Citibank, N.A.*

✓ Purpose of trust ("whereas" clauses).

1. Description

✓ Grantor or grantors (introductory paragraph).

1. Names

2. Addresses

• Trustee or trustees.

✓ 1. Names and addresses *(No address in intro TP, but listed on Cert of Events)*

-2. Bank or corporate trustee (introductory paragraph)

✓ Identification of facilities and cost estimates (Section 2).^b

^aAdapted from 17A Am Jur Legal Forms 2d (Rev) §251.94.

^bReferences are to recommended wording for trust agreements provided in Section 4.

EXHIBIT 3-5 (continued)

- ✓ • Words of transfer, conveyance, and delivery in trust (Section 3).
- ✓ • Payments constituting the trust fund (Section 4).
- ✓ • Duration of trust. *until terminated*
- ✓ • Description of trust property.

1. Property described in attached schedule (Schedule B)
2. Cash
3. Stock and other securities

it does not specify the L/C #

- ✓ • Additions to trust.
- ✓ • Distribution of trust principal (Section 5).

- ✓ 1. Disbursement to licensee upon proper certification
- ✓ 2. Payment for activities at NRC's direction in writing
- ✓ 3. Refund to grantor at NRC's specification in writing after completion of decommissioning activities
- ✓ 4. *No w. withdrawal to exceed 10%*

• Trust management (Sections 6-8).

- ✓ 1. Discretionary powers
- ✓ 2. Fiduciary duty
- ✓ 3. Commingling and investment
- ✓ 4. Sale or exchange of trust property
- ✓ 5. Scope of investments
- ✓ 6. Express powers of trustee
7. Borrowing money and encumbering trust assets

• (Optional provisions)

EXHIBIT 3-5 (continued)

- 8. Insurance
- 9. Operation of business
- 10. Compromise of claims
- ✓ Taxes and expenses (Section 9).
- ✓ Annual valuation (Section 10).
- ✓ Advice of counsel (Section 11).
- Authority, compensation, and tenure of trustees (Sections 12-14).
 - ✓ 1. Trustee compensation
 - ✓ 2. Successor trustee
 - ✓ 3. Instructions to trustee
- ✓ Amendment of agreement (Section 15).
- Irrevocability and termination (Section 16).
- Immunity and indemnification (Section 17).
- ✓ Law to govern construction and operation of trust (Section 18). NY
- ✓ Interpretation and severability (Section 19).
- Date (signature block). *no date*
- ✓ Signatures (signature block).
- ✓ Acknowledgements, seals or attestations, if necessary or desired (witness by notary public).
- ✓ Acceptance of trust by trustee or trustees (acknowledgment).

does not certify signature (implied)

Cert of Resolution is different



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 19 1990

E. I. DePont De Nemours & Co., Inc.
Medical Products Department
ATTN: Francis E. Roy, Jr.
331 Treble Cove Road, No.
Billerica, MA 01862

REFUND OF APPLICATION FEE

1. BACKGROUND:

Check Received August 6, 1990
Application Dated July 30, 1990
Check Number 84287512 (\$120)
Check Amount \$240

2. REFUND:

Amount \$240

This refund is now being processed and will be sent as soon as possible.

3. REASON FOR REFUND:

Fee for application dated July 30, 1990, for License No. 20-00320-21 is being refunded in accordance with Information Notice 90-38, Supplement #1.

NOTE: ENCLOSED IS A COPY OF THE MAY 23, 1990 FEDERAL REGISTER NOTICE CONTAINING THE COMMISSION'S REVISED FEE REGULATIONS WHICH WENT INTO EFFECT JULY 2, 1990. IF YOU HAVE ANY QUESTIONS CONCERNING THE FEES TO BE SUBMITTED WITH FUTURE APPLICATIONS, PLEASE CONTACT US AT 301-492-4650.

Glenda Jackson
Glenda Jackson, Chief
Materials License Fee Section
License Fee and Debt Collection Branch
Division of Accounting and Finance
Office of the Controller

Enclosure: May 23, 1990
Federal Register notice

OFFICIAL RECORD COPY ML 10

30-32013
20-28598-01

RADIOLOGICAL DECOMMISSIONING
COST ASSESSMENT

Submitted to:

E. I. DU PONT DE NEMOURS, (INC.)
331 Treble Cove Road
North Billerica, MA 08162

Submitted by:

Diversified Scientific Services, Inc.
P. O. Box 863
Kingston, Tennessee 37763

September 19, 1990

OFFICIAL RECORD COPY ML 10

115812

NOV 27 1991

91 DEC-4 P 20

FEE NOT REQUIRED
Per 8/30/90 Memo

RECORDED BY 17118
12/14/91
6 F
12/14/91

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	<u>EXECUTIVE SUMMARY</u>	1
1.1	INTRODUCTION	1
1.2	INSPECTION AND ASSESSMENT FIRM	1
1.3	DECOMMISSIONING ASSESSMENT OVERVIEW	2
1.4	SUMMARY	3
2.0	<u>PRELIMINARY REMARKS</u>	4
2.1	INTRODUCTION	4
2.2	PRESENT FACILITY STATUS	4
2.3	EXPECTED GOAL	5
3.0	<u>TECHNICAL ASSESSMENT</u>	6
3.1	INTRODUCTION	6
3.2	PERMITTING AND INSPECTIONS	6
3.2.1	AGENCY INSPECTION SYNOPSIS	7
3.2.2	FACILITY INCIDENT RECORDS SYNOPSIS	9
3.2.3	HEALTH PHYSICS SURVEYS AND MONITORING	11
3.2.4	DISPOSAL RECORDS SYNOPSIS	12
3.3	HEALTH AND SAFETY	13
3.3.1	STRUCTURAL	13
3.3.2	CHEMICALS	13
3.3.3	BIOLOGICALS	14
3.3.4	ASBESTOS	14
3.3.5	HEALTH AND SAFETY PLAN	15
3.3.6	FIRE PROTECTION	15
3.3.7	PERSONNEL EXPOSURE	16
3.4	DECOMMISSIONING PLAN	16
3.5	DECONTAMINATION AND DECOMMISSIONING ASSESSMENT	18
3.5.1	STRUCTURAL	18
3.5.2	INSTALLED COMPONENTS	19
3.5.3	CONTAINMENT	19
3.5.4	MONITORING AND SURVEYS	20
3.6	DECOMMISSIONING REPORT	22
4.0	<u>WASTE VOLUME ESTIMATES</u>	23
4.1	INTRODUCTION	23
4.2	ASSUMPTIONS	23
4.3	RADIOACTIVE WASTE VOLUME ESTIMATES - STRUCTURAL MATERIALS	25

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4.4	RADIOACTIVE WASTE VOLUME ESTIMATES - INSTALLED COMPONENTS	25
4.5	RADIOACTIVE WASTE VOLUME ESTIMATE SUMMARY	26
5.0	<u>COST ANALYSIS</u>	27
5.1	INTRODUCTION	27
5.2	ASSUMPTIONS	27
5.3	FACILITY DECOMMISSIONING COST ANALYSIS	29
5.3.1	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 110	29
5.3.2	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 150	30
5.3.3	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 200	30
5.3.4	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 250	30
5.3.5	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 300	30
5.3.6	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 325	31
5.3.7	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 350	31
5.3.8	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 375	31
5.3.9	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 400	31
5.3.10	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 500	32
5.3.11	FACILITY DECOMMISSIONING COST ANALYSIS - BUILDING 600	32
5.4	WASTE DISPOSAL COST ANALYSIS	32
5.5	COST ANALYSIS SUMMARY	33

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
2-1	FACILITY DESCRIPTION	35
4-1	RADIOACTIVE WASTE VOLUME ESTIMATE OF STRUCTURAL MATERIALS	38
4-2	RADIOACTIVE WASTE VOLUME ESTIMATE OF INSTALLED COMPONENTS	39
4-3	RADIOACTIVE WASTE VOLUME ESTIMATE SUMMARY	40
5-1	DECOMMISSIONING COST ANALYSIS PHYSICAL ASPECTS	41

LIST OF FIGURES (Continued)

<u>Figure</u>	<u>Title</u>	<u>Page</u>
5-2	RADIOACTIVE WASTE DISPOSAL COST OF STRUCTURAL MATERIALS	42
5-3	RADIOACTIVE WASTE DISPOSAL COST OF INSTALLED COMPONENTS	43
5-4	TOTAL DECOMMISSIONING COST SUMMARY DECOMMISSIONING/RADIOACTIVE WASTE DISPOSAL COST ANALYSIS	44

LIST OF APPENDICES

<u>Appendix</u>	<u>Title</u>	<u>Page</u>
1	FACILITY DECOMMISSIONING BUILDING 110 DETAILED COST BREAKDOWN	45
2	FACILITY DECOMMISSIONING BUILDING 150 DETAILED COST BREAKDOWN	54
3	FACILITY DECOMMISSIONING BUILDING 200 DETAILED COST BREAKDOWN	63
4	FACILITY DECOMMISSIONING BUILDING 250 DETAILED COST BREAKDOWN	72
5	FACILITY DECOMMISSIONING BUILDING 300 DETAILED COST BREAKDOWN	81
6	FACILITY DECOMMISSIONING BUILDING 325 DETAILED COST BREAKDOWN	90
7	FACILITY DECOMMISSIONING BUILDING 350 DETAILED COST BREAKDOWN	99
8	FACILITY DECOMMISSIONING BUILDING 375 DETAILED COST BREAKDOWN	108
9	FACILITY DECOMMISSIONING BUILDING 400 DETAILED COST BREAKDOWN	117
10	FACILITY DECOMMISSIONING BUILDING 500 DETAILED COST BREAKDOWN	126
11	FACILITY DECOMMISSIONING BUILDING 600 DETAILED COST BREAKDOWN	135

DOCUMENT REVIEW AND APPROVAL

Prepared by: B. W. Rogers Sept 26, 1990
B. W. (Bill) Rogers Date
Manager of Field Operations

Reviewed by: James T. McVey Sept 25, 1990
James T. McVey Date
Executive Vice President

Approved by: James R. Sims 9/26/90
James R. Sims Date
President

SECTION 1.0
EXECUTIVE SUMMARY

1.1 INTRODUCTION

E.I. du Pont de Nemours & Co. (Inc.), contracted with Diversified Scientific Services, Inc., under Purchase Order Number LLEN53486-0985, to perform a decommissioning cost assessment at the 331 Treble Cove Road, North Billerica, Massachusetts, research and production facility. The decommissioning cost assessment was limited to those actions necessary to decommission the facility from a radioactive materials perspective. To effectively and completely relinquish its radioactive materials license responsibilities in the future for these facilities, Du Pont and Du Pont Merck Pharmaceuticals must obtain an official release authorization from the U.S. Nuclear Regulatory Commission (NRC). Prior to requesting the NRC to inspect this facility, it will be necessary for radioactively contaminated equipment to be removed or cleaned and the remaining structures decontaminated to NRC guidelines. Diversified Scientific Services, Inc. of Kingston, Tennessee, is recognized as a firm which specializes in decontamination and decommissioning activities and was contracted by Du Pont to perform this decommissioning cost assessment. This assessment is designed to provide cost, feasibility and scheduling data sufficient for future budgetary considerations associated with the decommissioning of the North Billerica, Massachusetts, research and production facility.

1.2 INSPECTION AND ASSESSMENT FIRM

Diversified Scientific Services, Inc., is a small business incorporated and located in Kingston, Tennessee. Diversified Scientific has previously performed facility decommissioning activities, as well as decommissioning cost assessments and as such is familiar with the quality of performance, method of operations, financial and production considerations, and safety/liability emphasis which must be placed on such activities. Diversified Scientific constantly interacts with the regulating agencies in the nation and is proficient in regulatory interpretation as well as meeting the agency's goals for decommissioning. The professional staff of Diversified Scientific have a combined educational and experience history of over 100 years with these forms of hazardous materials and technologies.

Diversified Scientific focused the attention of its professional staff to provide Du Pont with a professionally sound and accurate assessment.

1.3 DECOMMISSIONING ASSESSMENT OVERVIEW

This decommissioning assessment project involves eleven buildings with one to three floors each. Of these eleven buildings four are presently radiologically uncontrolled. Buildings 110, 350, 375 and 600 have a history of past radioisotope usage but are not used for radioisotope work at this time. Radiological surveys to confirm cleanliness and some minor decontamination may be required in these buildings. The remaining seven buildings, 150, 200, 250, 300, 325, 400, and 500, are radiologically controlled as restricted areas and controlled areas depending upon the quantities of radioisotopes used in the area. Controlled areas are areas which have very small quantity radioisotope usage, i.e., micro curie quantities. Restricted areas are areas where the radioisotope quantities vary from micro curies to several hundred curies at any given time. The contamination expected to be encountered during the decommissioning include ^{14}C , ^3H , ^{57}Co , ^{65}Zn , ^{125}I , ^{99}Tc , $^{99\text{m}}\text{Tc}$, ^{99}Mo , ^{22}Na , ^{36}Cl , ^{54}Mn , ^{55}Fe , ^{60}Co , ^{58}Co , ^{63}Ni , ^{90}Sr , ^{109}Cd , ^{113}Sn , ^{129}I , ^{133}Ba , ^{137}Cs , ^{147}Pm , ^{153}Gd , ^{241}Am , ^{121}Sn , ^{201}Tl , ^{67}Ga , ^{203}Hg , and ^{111}In isotopes in amounts from trace quantities to moderate concentrations.

Diversified Scientific performed a physical site visit of each building and reviewed available data and records in the preparation of this report. The laboratory and equipment components currently located in these buildings are, for the most part, in good condition and potentially salvageable. However, this cost estimate does not take into account any value that may be realized from the salvage of these components. This report estimates that only a small percentage of these components, i.e., cabinets, hoods, refrigerators, etc. will have to be designated for radioactive waste disposal. Components not designated as radioactive waste are considered to be cleaned on site for unrestricted release. The estimated total radioactive waste volume for these components after on site volume reduction, is 4,525 cubic feet. The floor space designated as radioactive material use areas remaining after the components are

removed was calculated by Diversified Scientific at approximately 143,539 square feet. The facility structures (floors, ceilings, walls, etc.) of the radioactive material use areas were calculated by Diversified Scientific at approximately 587,165 square feet of surface area available for decontamination. Non-destructive and destructive decontamination and/or demolition of the facility structures will result in an estimated radioactive waste volume of 20,790 cubic feet. The facilities at 331 Treble Cove Road, Billerica, Massachusetts, could be rendered for unrestricted release with an estimated radioactive waste volume of 25,315 cubic feet.

The cost to decommission the Billerica, Massachusetts, facility is presented by Diversified Scientific as an estimation based upon 1990 dollars. Diversified Scientific defines within the report the methods and assumptions used in determining these values. A confidence level of 85 percent is placed upon these estimates due to the time and data available for facility review.

1.4 SUMMARY

Diversified Scientific presents to the best of its professional ability with the data available, the methods, concerns, waste volumes and costs associated with decommissioning the facilities at Billerica, Massachusetts. Diversified Scientific is confident that unconditional release of the buildings can be obtained. With proper manloading and management control, the decommissioning effort could be completed in approximately twenty (20) months. The estimated total cost to decommission the facility at Billerica, Massachusetts, inclusive of waste disposal is estimated at \$9,586,593.00. This decommissioning cost analysis is projected to be accurate within plus or minus 15% and was compiled based on 1990 dollars.

SECTION 2.0
PRELIMINARY REMARKS

2.1 INTRODUCTION

Diversified Scientific Services, Inc., of Kingston, Tennessee reviewed the facilities located at 331 Treble Cove Road, Billerica, Massachusetts. This review was conducted with the intent of providing an evaluation and assessment of the facility's current status from a radioactive materials perspective and preparing a cost analysis for the decommissioning and unrestricted release of the facilities. The site inspection of the Billerica, Massachusetts, facilities occurred on June 18 and June 19, 1990 by Diversified Scientific professional staff in the presence of Du Pont's professional staff. The Du Pont staff were knowledgeable of the previous uses and current conditions of each building and either provided immediate input to the inspection team's inquiries or obtained relevant data from their co-workers and historical records. The Du Pont staff's cooperation and thoroughness during the inspection tour enabled Diversified Scientific's preparation of this report to reflect as accurately as possible the efforts required to decommission the facility for unrestricted release.

2.2 PRESENT FACILITY STATUS

The Du Pont and Du Pont Merck Pharmaceuticals' facilities at Billerica, Massachusetts, are located at 331 Treble Cove Road, North Billerica, Massachusetts. The facilities are bounded on one side by a residential area and on the other side by a correctional institute. The site is easily accessible to light vehicles and heavy trucks. Securable areas are present on site for locating and positioning decommissioning support facilities and equipment.

Diversified Scientific toured eleven buildings, (or areas known to have current or previous radioactive materials use) all of which are specifically addressed by this report. The eleven buildings (Building 110, 150, 200, 250, 300, 325, 350, 375, 400, 500 and 600) are generally described in Figure 2-1 (Page 35). Each building was inspected floor by floor and compared with Du Pont supplied building schematic drawings. Rooms or areas with a low probability for radioactive material contamination such as secretarial or staff offices, general use laboratories and break rooms were not inspected in detail due to time and budgetary constraints placed on this evaluation and analysis effort. In general, current radioisotope

utilization is in modern buildings within properly equipped and designated restricted areas. The Billerica facilities reportedly have been used in handling radioactive materials for over 20 years. The primary radioactive material functions for the Billerica, Massachusetts site centers around radiopharmaceutical compound manufacturing, research and testing.

Structurally, the buildings appear to be well maintained and would lend themselves to conventional decontamination and decommissioning methodologies. Diversified Scientific observed during the site inspection that some surfaces consist of multiple layers or coatings. This situation may require more aggressive sampling or decontamination efforts for those specific areas.

2.3 EXPECTED GOAL

Du Pont and Du Pont Merck Pharmaceuticals plan to continue to utilize the Billerica facility for manufacturing, research and development of pharmaceutical compounds. Therefore, this cost estimate is designed to evaluate the real and potentially radiologically affected areas and items in the event that future decommissioning is necessary. The labor, equipment, supplies and other costs which would be incurred to decommission the Billerica facilities to an unrestricted use status are depicted herein. This decommissioning cost estimate can be utilized in the preparation of the Decommissioning Funding Plan required by the U.S. Nuclear Regulatory Commission's radioactive materials regulations (Regulatory Guide 3.65). It is advised that reevaluation of the assumptions and data contained in this report be performed annually to maintain this estimate as accurate as feasible. Such changes as:

- a. Increase or decrease in use area (ft²)
- b. Isotopic quantities or types
- c. Physical or chemical forms
- d. Regulatory changes
- e. Improved decommissioning techniques
- f. Radiological incidents
- g. Others

can drastically increase or decrease this cost estimate.

SECTION 3.0
TECHNICAL ASSESSMENT

3.1 INTRODUCTION

This section of the report addresses the specific findings of the site inspection and the resultant interpretations by Diversified Scientific's professional staff. The Diversified Scientific professionals conducting the site assessment possess over fifty (50) years of combined experience in dealing with the types and forms of contamination present at the Billerica facilities and have extensive actual experience in facility decontamination and decommissioning. Upon return to the Diversified Scientific offices in Kingston, Tennessee, additional professional staff were involved in evaluating this decommissioning project.

Throughout the evaluations and preparation of this document Diversified Scientific considered the need to perform as accurate an analysis as possible so that the future use of the information, contained in this report, would be beneficial in scheduling, planning, and budgetary considerations. Wherever uncertainties exist due to the limited data available to Diversified Scientific, the assumptions and/or contingencies used are stated. Diversified Scientific used precautionary measures to maintain all data and documents as confidential and did not divulge the location or Du Pont's identity to any group outside Diversified Scientific.

3.2 PERMITTING AND INSPECTIONS

The Du Pont and Du Pont Merck Pharmaceuticals' facilities in Billerica, Massachusetts currently function under the provisions of an NRC license issued by Region I. The site's NRC License Number 20-00320-21 expires on November 30, 1990 but is under timely renewal preparation at the time of this report. This NRC license was issued on November 20, 1985 and incorporated three previous license numbers 20-11868-01, 20-00320-09 and 20-00320-13 through reference of the specific letters and submittals dating back to their inception in 1968. The Du Pont, Boston, Massachusetts facilities also operate under the provision of License Number 20-00320-21. The license files revealed:

- a. NRC License Number 20-00320-13 was a major license for the Billerica site and had twenty-one (21) amendments prior to termination.
- b. NRC License Number 20-00320-09 was for the Boston site uses and allowed for 80,000 Ci storage of ^3H at the Billerica site as well as large quantity uses in Boston. This license had sixty-four (64) amendments prior to termination.
- c. NRC License Number 20-11868-01 also involved the Billerica site and had 18 amendments prior to termination.
- d. The current NRC License Number 20-00320-21 has nine (9) amendments, with the most recent being July 18, 1989.
- e. Du Pont also has on file copies of six (6) NRC authorizations for the export of radioactive materials.

Most of the amendments associated with these licenses were for relatively minor changes.

The NRC license allows for large quantities of radionuclides to be on inventory at both sites at any one time (i.e., well over 150,000 curies). The NRC license also allows for the release for disposal of certain isotopes in pre-established maximum concentrations into the air and sewer.

3.2.1 Agency Inspection Synopsis

The inspection reports and the corresponding Du Pont corrective responses were reviewed for the past three years of NRC inspections. During this period, thirty-one (31) inspections, notifications, conferences etc. occurred. The issues involved are summarized below by general categories. It should be noted that only one of these documented issues involved a potential for facility contamination. After closer review, this particular potential issue has been relegated to one of low overall impact with regard to this decommissioning assessment.

- a. Shipment Discrepancies - eleven (11) situations were noted with most involving failure to verify the recipients license status prior to transfer of radioactive materials. The remaining few involved misshipments.
- b. Procedural Shortcomings - nine (9) situations were noted. One of these resulted from a major joint and detailed inspection by the NRC, EPA and State of Massachusetts.
- c. Damaged Sources - two (2) situations were noted. Neither situation resulted in facility contamination.
- d. Personnel Exposures - seven (7) issues were noted with most centering around laboratory handling personnel receiving extremity doses. One series of these personnel exposures (hand contamination) resulted in a monetary fine. No facility contamination is expected as a result of these incidents.
- e. One building at the Boston site (Building 609) was cleaned and released from license control in 1987.
- f. On May 16, 1990 a notation was found in the records concerning a laboratory contamination situation. The other subsequent survey records indicate this situation was rectified.

It should be noted that given the enormous total quantities of isotopes which are prepared, packaged and shipped from these facilities in any given year (not to have only thirty-one (31) incidents or situations of note in three and a half years is an admirable record. The issues depicted in the NRC inspection findings do not appear to pose any significant impact upon the future decommissioning plan. Of these thirty-one issues, about eighty-five percent (85%) occurred at the Billerica site.

3.2.2 Facility Incident Records Synopsis

Numerous cross-linked records were reviewed to help identify and fully understand the radiological incidents that may have occurred at the Billerica site. These records include: laboratory survey sheets, waste records, film badge and bioassay records, engineering reports, Radioisotope Committee minutes, actual incident reports, etc. As a rule, minor spills were immediately cleaned up and resurveyed. A few incidences or operational trends have occurred in the past which could require more detailed surveying and cleaning efforts during decommissioning are noted below. This synopsis covers the records of an eight (8) year period. No other incidences of note were indicated during the interviews that may have occurred prior to that time. It should also be kept in mind that although the numbers of discharges or spills along with the total millicuries involved may seem high, the actual time span involved could be weeks, months or even years.

- a. Effluent releases as authorized by conditions of the license and regulations have occurred. These discharges take the two routes of air release (exhaust ducts) and sewer releases. Over the last eight years the records indicate that these discharges have not exceeded the regulatory levels. The discharges, due to the very nature of the chemical or mechanical procedures being used, have at times amounted to several millicurie amounts per unit time. The release trend, to date, appears to be leveling off to declining. The isotopes most commonly released include: ^{125}I , ^{133}Xe , ^{205}Hg , $^{119\text{m}}\text{Hg}$, ^{85}Kr , ^{67}Ga , ^{35}S , and ^3H . Due to the modes of operation at the site where releases occur it must be assumed that all duct work, exhaust equipment, plumbing lines, sinks, etc. associated with these labs will required detailed surveys and possible removal. Laboratories located in Building 250 are particularly suspect for heavy cleaning activities.

- b. Spills of larger magnitude were noted in the records for:

DATE	ROOM	AMOUNT INVOLVED	ISOTOPE
01/05/89	250/H58 and 50	2 mil dpm/100 cm ²	⁶⁷ Ga
03/22/89	200/H223	3 Ci	⁹⁹ Mo, ^{99m} Tc
07/23/89	250/H50-71	653,000dpm/100 cm ²	²⁰¹ Tl, ²⁰³ Tl
07/27/89	250/H50-71	"Hot Lab" - Cleaned	²⁰¹ Tl
09/08/89	250/H53	300 mCi	²⁰¹ Tl
10/02/89	250/H229	680 mCi	¹³³ Xe
11/06/89	Cyclotron	2mil dpm/100 cm ²	⁶⁷ Ga
11/07/89	250/H105-109	4.4 mil dpm/100 cm ²	⁵⁷ Co
02/02/90	250/H70 and 71	2.7 mil dpm/100 cm ²	⁵⁷ Co
05/09/90	325	3 Ci	⁹⁹ Mo, ^{99m} Tc

Most of these spills occurred on the floor or in hoods and based upon subsequent area survey sheets, these spills were cleaned up. It should also be noted that this information was further verified from "Action Level Reviews: (incident reports) and Radioisotope Committee minutes. It is Diversified Scientific's opinion that the amounts noted in these reports are the amounts involved and not necessarily the actual amount spilled. Due to the physical or natural propensity of some of the tagged compounds to rapidly interact with some of the materials of construction it should be considered that high involvement surfaces such as floors will become waste.

- c. Relatively consistent notations can be found in the records with regard to the cyclotrons at the Billerica site. Components within these devices should be considered to be contaminated and require caution in handling. Furthermore, the floors in these

cyclotron areas may have accumulations of radioactivity and certain wall and/or ceiling surfaces may have become activated due to beam involvement and may require substantial surface removal (i.e. 1-2 feet of concrete).

No other major incidents were noted in the historic records which might present any unusually cumbersome cleaning problems. In relationship to the quantities of radioactive materials used at the facility, the procedures, controls and professional abilities at the site have appeared to prevent mishaps.

3.2.3 Health Physics Surveys and Monitoring

The radioactive materials use areas are surveyed by the Health Physics staff for surface contamination on a regular schedule. Depending on the isotope and quantities used, these survey frequencies range from weekly to monthly. Each laboratory is charged with the responsibility of maintaining a clean area and performing their own surveys as needed.

The health physics audit reports and their independent surveys were reviewed for the past two years. These records revealed that only occasional slight amounts of surface contamination were found in a relatively small percentage of the inspections. No unusual locations nor amounts were noted. Typically, counter tops, floors, fume hoods and refrigerator doors were involved. Due to the internally established guideline of using only health physics controlled disposal resources, no pronounced contamination of individual sinks was noted. Any hot spots were noted to the individual laboratory personnel for proper clean up and future avoidance.

Those areas utilizing higher energy beta or the gamma emitters also had dose rate surveys performed to help detect and control potential contamination. The Billerica site has numerous isotopes that are produced for their customers usage. Therefore, gamma and beta surveys will be required throughout the facility during decommissioning.

The additional data associated with effluent discharge (i.e., stack monitoring, personnel monitoring, etc.) did not reveal any unusual events.

3.2.4 Disposal Records Synopsis

The license issued to Du Pont, allows for a variety of waste disposal options. These include:

- a. Decay-in-storage for solid waste disposal
- b. Disposal at outside facilities such as Barnwell, South Carolina, or Richland, Washington
- c. Disposal to the sanitary sewer, and
- d. Disposal to the air via stack exhaust.

Extensive records were reviewed dating back to 1986 with regard to waste disposal and discharges. The largest proportions of wastes were packaged and sent off-site to commercial, licensed disposal sites. From 1987 through 1990 the amounts of isotopes disposed by sanitary sewer releases averaged 105.1 mCi per year. The year 1990 had one release which actually skewed this average higher than normal for the other years. Of this amount, ^{57}Co releases to the sewer averaged 0.35 mCi, ^{35}S averaged 2.95 mCi, ^{63}Ni averaged 8.07 mCi, ^{125}I averaged 9.08 mCi, $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ averaged 83.7 mCi, ^{32}P averaged 0.24 mCi and other isotopes accounted for the remaining 0.71 mCi per year. With the typical quantities of waste released from the site in connection with these isotopes, the releases should not exceed the regulatory parameters. Air discharges at the site reportedly account for 26.32 Ci per year on an average. Of this amount, ^{133}Xe releases averaged 9.13 Ci, ^{125}I averaged 0.02 Ci, ^{85}Kr averaged 4.77 Ci and other isotopes averaged 12.40 Ci per year. A review of these release records also indicated that the releases were in accordance with regulatory limits and were only a small fractional percent of the allowed MPC values.

Upon commencement of decommissioning of these facilities it would be normal and required for the firm performing any activities in these buildings to do so in accordance with all applicable NRC guidelines and the site license criteria. Work tasks should be conducted in a fashion which would not release the isotopes in concentrations greater than allowed nor should any task result in the uncontrolled release of contamination to unrestricted areas. With proper interfacing and quality control of the contractor the decommissioning tasks will be assured of compliance with applicable regulatory requirements.

Decontamination and decommissioning tasks are carried out under the NRC Radioactive Material License in accordance with an approved decommissioning plan. Du Pont or Du Pont Merck Pharmaceuticals, would remain classified as the generator of the radioactive wastes resulting from decommissioning these facilities. Therefore, the permits, contracts and approvals currently in place for the specific burial sites would have to remain in effect in order to ensure the proper disposal of the radioactive wastes resulting from decommissioning these facilities. Currently, Du Pont can bury wastes at Richland, Washington, and Barnwell, South Carolina.

3.3 HEALTH AND SAFETY

3.3.1 Structural

The decommissioning of the facilities at Billerica, Massachusetts, will involve the physical removal of some structural components within the buildings. This may include flooring, wall surfaces, entire walls, ceiling material, ducts, plumbing, and electrical components. The contractor must have an understanding of industrial safety concerns and also understand the methodologies required to contain the potential spread of contamination. The contractor must also be knowledgeable in the various decontamination techniques of preference so the health and safety concerns for eye protection, respiratory protection, falls, barriers, head and foot protection, and radioisotope uptake are properly addressed. After review of the facility drawings, it is not anticipated that any major structural alterations will occur to the point of hindering the safety or useability of the buildings. The contractor must be familiar with 29 CFR (OSHA) requirements.

3.3.2 Chemicals

During the site visit, small quantities of chemicals were observed in the laboratories. Prior experience with decommissioning activities indicates that unsuspected hazardous substances may be uncovered as residues under and behind removed items or as forgotten stock supplies. The decontamination activities may also involve some hazardous materials or wastes by themselves. Therefore, the contractor should be knowledgeable in the requirements of

proper identification, use, storage and disposal of such materials. The contractor should be cognizant of the Hazard Communication requirements (Right to Know Laws) as well as 40 CFR Regulations for EPA - RCRA, TSCA. Extra efforts should be taken to eliminate these chemical hazards prior to the radioactive materials decommissioning.

3.3.3 Biologicals

The potential exists for a few of the laboratories to contain biologically hazardous materials. These biologically hazardous materials could be radioactively tagged or be present in the laboratories for other purposes. During the facility's decommissioning these materials would need to be identified to the contractor to enable their safe removal, neutralization and disposal. Special personnel protective equipment, containments and procedures may be required.

3.3.4 Asbestos

Some asbestos-containing materials were observed by the inspection team during the site visit. This material was noticed in flooring, pipe insulation and other products such as fume hoods. The quantity of asbestos materials was relatively small and could be easily dealt with by a contractor aware of its characteristics and presence and the necessary precautions. The contractor selected for this project must possess the necessary training in accordance with Federal and State regulations to deal with the asbestos-containing materials. The radiological cross contamination of the asbestos may impose handling precautions which meet or exceed those for routine asbestos removal. However, the specific asbestos monitoring, notifications, packaging, training, containment etc. must be adhered to.

3.3.5 Health and Safety Plan

The contractor should supply a comprehensive Health and Safety Plan which details the protective measures and responsibilities to protect the health and well being of the worker, public, environment, and facilities. This plan should address among other issues:

- a. Exposure control and recording
- b. Respiratory protection
- c. Protective devices and measures
- d. Emergency contingencies and procedures
- e. Monitoring, surveying and analysis
- f. Industrial Safety
- g. Training
- h. Record keeping, etc.

Du Pont's and Du Pont Merck Pharmaceuticals' experience with radioactive materials has also allowed the evolution of in-house documents and procedures. These comprehensive guidelines should be coordinated by the contractor into the decommissioning plan of action.

3.3.6 Fire Protection

Some mechanical and torch cutting operations may be required to allow removal of contaminated items. In addition, to obtain maximum waste volume reduction, the contractor will have to size reduce metallic items such as laboratory benches and hoods. Size reduction could be performed at the site of actual component removal or more likely at a centralized waste packaging area. During these activities the contractor should recognize and address the need for fire protection equipment, fire watches and trained personnel. In addition to the installed sprinklers, fire watches should have handheld fire extinguishers available when cutting and burning is being performed.

3.3.7 Personnel Exposure

In certain areas the likelihood of direct whole body or extremity exposures to penetrating radiation will be moderate to high. Sealed sources of high activity levels may be present and are potential sources of personnel exposure. Diversified Scientific has considered these sources as potentially salvage items which will have been removed early in the process. Several areas were identified as possessing isotopes with penetrating emissions. There are also several hot cells which must be dismantled and which may contain substantial residual radioactivity. Shielding and remote handling will have to be considered along with shielded shipping containers.

Proper use of engineered systems and safeguards such as containment structures with step off pads, as well as, filtered and localized ventilation devices would help protect against the more volatile or airborne prone material. This likely personnel exposure potential could result in biological uptake of isotopes if precautions are not undertaken. The contractor must be prepared to conduct a personnel bioassay program and organ or whole body counts. Proper utilization of respiratory protective devices where particulate or vaporous substances will be encountered will ensure personnel uptakes are as low as reasonably achievable. Continuous Air Monitors (CAMS) should be utilized when it is likely that airborne radioactivity will be present. Jobs which involve cutting and burning or abrasive decontamination techniques are examples of tasks which will warrant the use of CAMS and potential use of respiratory protection.

3.4 DECOMMISSIONING PLAN

The NRC's Regulatory Guide 3.65, issued August 1989, titled "Standard Format and Content of Decommissioning Plans for Licensees Under 10 CFR Parts 30, 40 and 70" requires a decommissioning plan be submitted to, and approved by the NRC prior to initiating decommissioning activities for license termination.

The minimum contents of the decommissioning plan are specified as follows:

- a. General Information - requires the licensee to submit a plan with a schedule for completion of decommissioning and prepare procedures if the procedures necessary to carry out the decommissioning have not been previously approved by the NRC and could increase potential health and safety impacts to workers or the public.
- b. Description of Planned Decommissioning Activities - describes decommissioning objectives, tasks, schedule, and the decommissioning organization and responsibility; details required training; and specifies what contractor assistance will be used.
- c. Description of Methods used for Protection of Occupational and Public Health and Safety - provides a radiological history of the facility; specifies how occupational radiation exposures are to be maintained As Low As Reasonably Achievable (ALARA); describes the Health Physics program; describes the radiation protection policies to ensure the safety of contractor personnel; describes the processes and systems for the handling, storing and disposing of radioactive waste.
- d. Planned Final Survey - describes the plan for demonstrating the plant and site will meet the criteria for unrestricted release as specified in the decommissioning plan and regulations.
- e. Funding - requires an updated cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and a plan for assuring the availability of adequate funds for completion of decommissioning.
- f. Physical Security Plan and Materials Control and Accounting Plan Provisions in Place During Decommissioning - requires a description of and a schedule for any proposed changes to the NRC approved physical security plan and special nuclear materials controls and accounting plan, if applicable.

3.5 DECONTAMINATION AND DECOMMISSIONING ASSESSMENT

3.5.1 Structural

For purposes of this report, structural materials are defined as floors, ceilings, walls, studs, roof materials, exhaust ducting, etc. that are an integral part of the building structure. Most structural surfaces within the buildings will be suitable for non-destructive decontamination techniques. This could include solvent cleaning, HEPA vacuuming, wet wiping and steam cleaning. Non-destructive decontamination techniques and release surveys will be useful where the contaminants have not migrated deep into the structural materials. These techniques will result in the lowest volume of radioactive waste. Aggressive decontamination techniques will be useful where the radioactive contamination has come in contact with porous surfaces, such as wood, flooring, walls, studs, or activation has occurred. Where slight penetration has resulted, it is expected that aggressive decontamination techniques such as scarifying or abrasive cleaning will be the preferred method of decontamination. Other decontamination techniques could involve the removal of floor tiles, concrete, ceiling panels and plaster board. The quantities of waste depicted in Section 4.0 are predicated upon the use of the general techniques described above.

The Diversified Scientific staff (including civil engineers, decommissioning specialist, and health physicist) reviewed the inspection data, the Du Pont supplied data and the facility drawings. For estimating purposes, Diversified Scientific evaluated each of the buildings on a floor by floor basis and each isotopic use area on each floor. Based on the reported isotope use, one or more of the above techniques were theoretically applied to all surfaces. The resultant levels of effort, man loading, waste volumes, schedules, equipment lists and costs reflect Diversified Scientific's best cost estimate to perform this decommissioning project (see Section 5.0). In general the laboratories consisted of a large room with base and island cabinets along the sides and down the center or as laboratory dividers, wall hung cabinets, multiple fume hoods and one or more adjoining rooms used for other laboratory processes.

3.5.2 Installed Components

The buildings are currently in use by Du Pont or Du Pont Merck Pharmaceuticals and therefore contain the supplies, items and equipment necessary for radioactively tagged compound production and utilization. Installed components are defined as fume hoods, laboratory base and island cabinets, refrigerators, freezers, centrifuges, custom lucite boxes and air conditioners. Each room that was reviewed in each building was unique in nature and contained a variety of the above installed components. In general most laboratories contained one to two refrigerators, fume hoods, lucite boxes and general laboratory supplies and chemicals.

Diversified Scientific has considered several possible disposal options with regard to these installed components. Most of the items are obviously in good condition and suitable for minor cleaning. Du Pont and Du Pont Merck Pharmaceuticals could potentially offset a portion, of the decommissioning cost through the salvage of clean, usable installed components. NRC guidelines and historic precedence allows for the reuse of such clean components. Resource recovery, waste minimization and economic incentives should dictate the documented release and reuse of cleaned items.

3.5.3 Containment

Each of the buildings appears to lend itself to easy control for contamination containment. Containment could be either by groups of rooms, by individual room or by floor. Personnel entrance and egress should be established at each laboratory or containment entrance by the use of step off pads to prevent the unnecessary spread of contamination. As the decommissioning tasks begin, each floor of each building could be isolated with physical barriers to prevent cross contamination or releases. Specially constructed containments may be required when removing components from the roof or the roof material itself. These containments could be portable with an associated filtered ventilation system. Reusable containments will minimize radioactive waste generation.

3.5.4 Monitoring and Surveys

The installed monitoring devices and radiological analysis equipment currently utilized for these buildings should be continued in use during the decommissioning project, where possible. A laboratory, in each building, or a central laboratory could be set up for the purpose of performing analysis during the decommissioning. With proper procedural controls and engineered safeguards, site and NRC effluent release guidelines should not be exceeded. Monitors, including working environment CAMS and exhaust CAMS should remain in place wherever possible. Personnel air samples may be advisable or necessary in some work conditions.

The radiological surveys to enable unrestricted release of the buildings will be a significant labor effort. Smears of surfaces and items will be the most useful and accurate methodology. Therefore, the contractor must be proficient in liquid scintillation and gamma counting techniques. Chemiluminescence and phosphorescence in liquid scintillation counting may also be encountered and could produce erroneous radiological data if not recognized and accounted for. Counting techniques and quality controls must be established to insure the consistency and statistical accuracy of the samples. Smears of surfaces and items will be the most useful and accurate methodology. Based upon Diversified Scientific's previous experiences with unknowns, all radiation use areas will be surveyed by direct portable monitoring equipment for potential beta-gamma contaminants. In areas known to use beta-gamma emitting isotopes more comprehensive beta-gamma surveys will be performed. The frequency for smear surveys in high use areas will be at least one smear per each square meter of surface area while low use areas can have less smears analyzed. Core samples and scrapings would also occur to document the condition of remaining structures. After decontamination, areas that indicate the presence of contaminants above the release levels should have additional decontamination and more comprehensive surveys performed. It is advised that the contractor establish a separate QA/QC team of surveyors to perform independent spot surveys to further verify the release data.

The building release criteria would need to be established by and with the regulating agencies prior to initiation of the Decommissioning Project. The standard practice for Du Pont and Du Pont Merck Pharmaceuticals appears to address contaminants greater than background to be significant and detrimental to the laboratory experiments being performed. Such expectations of cleaning this facility to a uniform background level is unrealistic, unattainable and not normally expected by the regulating agencies. Cleaning to as low as reasonably achievable is the preferred and common practice. The NRC published and historically acceptable levels for unrestricted release of facilities and items is found in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" dated June 1980. These acceptable levels are:

ACCEPTABLE SURFACE CONTAMINATION LEVELS			
Nuclide	Average	Maximum	Removable
U-nat, U-235, U-238, and associated decay products	5,000 dpm α /100 cm ²	15,000 dpm α /100 cm ²	1,000 dpm α /100 cm ²
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm ²	300 dpm/100 cm ²	20 dpm/100 cm ²
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm ²	3000 dpm/100 cm ²	200 dpm/100 cm ²
Beta-gamma emitters (nuclide with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta\gamma$ /100 cm ²	15,000 dpm $\beta\gamma$ /100 cm ²	1000 dpm $\beta\gamma$ /100 cm ²

Regulatory precedence has also been set to support release of items and areas with less than 100 percent surveys. Such use of statistically applied surveying techniques may be considered as a potential cost saving tool. These statistically applied surveying techniques should be specified in the decommissioning plan. However, long term liability should be reviewed as well as the NRC's acceptance of these techniques.

Records of all radiological surveys should be maintained to verify cleanliness and to assist in the final release of the buildings by the NRC. The contractor should also participate during the NRC release inspection to answer questions and perform minor touch ups as necessary. A QA/QC program should be established for control and custody of samples, smears and data to insure records accuracy.

3.6 DECOMMISSIONING REPORT

The Contractor performing the decontamination and decommissioning project should provide a report in sufficient detail to allow Du Pont and/or Du Pont Merck Pharmaceuticals to request a final NRC inspection and a release from the license. The report should contain:

- a. General Information - describes the site location and license information.
- b. Description of Decommissioning Activities - describes the decommissioning objective; the tasks performed; radioactive sampling methodology; decontamination procedures; and the decommissioning organization and responsibilities.
- c. Protection of Occupational and Public Health and Safety - describes how contamination control was performed during decommission; how occupational exposures were maintained ALARA; and how releases of radioactivity to the environment were minimized.
- d. Radioactive Waste Management - describes how radioactive waste was treated i.e., liquid waste processing, dry active waste processing (DAW); describes waste packaging, shipping and disposal.
- e. Final Survey Results - the report should contain copies of the final surveys which details the survey location; the dose rate and the loose surface contamination survey results; the technician who performed the surveys; the date the surveys were performed.

SECTION 4.0
WASTE VOLUME ESTIMATES

4.1 INTRODUCTION

The radioactive waste volume estimate contained in this section are based on the findings of the technical assessment (see Section 3.0) and Diversified Scientific professional experience relative to estimating waste volumes for other decommissioning projects of similar complexity and magnitude. Diversified Scientific implemented conventional estimating procedures that would be used for bidding a job of this nature as a fixed-price project. However, detailed radiological analysis were not completed within the scope of the technical assessment. Therefore, the volume estimates are based on the radiological data that was available at the time of the walk-through inspection. Based on this data, Diversified Scientific believes the waste volume estimates contained herein are accurate within a fifteen percent (15%) margin of error.

4.2 ASSUMPTIONS

Radioactive waste resulting from the decommissioning effort was divided into two categories: structural materials and installed components. Structural materials are defined as materials such as floors, ceilings, walls, studs, exhaust ducting, etc. that are an integral part of the building structure. Installed components are defined as fume hoods, sinks, wall hung cabinets, base cabinets, island cabinets, centrifuges, refrigerators, hot cells, and lucite boxes. Additionally, each area in the buildings is designated as either a controlled or restricted area.

A restricted area where more activity is present will potentially have less salvageable material than a controlled area. Likewise, a restricted area decommissioning is expected to result in the generation of more radioactive waste than the decommissioning of a controlled area. Each assumed waste volume has been estimated in accordance with its designation of restricted area or controlled area.

The radioactive waste volume estimates resulting from structural materials were based on the following assumptions:

a. All Radioactive Materials Designated Laboratories at the Billerica, Massachusetts Facility Except Building 250

Controlled Areas: 1% of the floor covering will be removed to a depth of 1/4", and will require disposal as radioactive waste; 1% of the wall surface will be removed to a depth of 1/2" and will require disposal as radioactive waste; 1% of the dropped ceiling material will require disposal as radioactive material; 25% of the fume hood ducting will be disposed of as radioactive waste; 1% of the roof material will be removed to a depth of 1 inch and will be disposed of as radioactive waste; all other structural material will be cleaned in place and surveyed for release.

Restricted Areas: 10% of the floor covering will be removed to a depth of 1/4" and will require disposal as radioactive waste; 10% of the wall surfaces will be removed to a depth of 1/2 inch and will require disposal as radioactive waste; 10% of the dropped ceiling material will require disposal as radioactive material; 25% of the fume hood ducting will be disposed of as radioactive waste; 1% of the roof material will be removed to a depth of 1 inch and will be disposed of as radioactive waste; all other structural material will be cleaned in place, and surveyed for release.

b. Building 250

Controlled Area - 10% of the floor covering will be removed to a depth of 1 inch and will require disposal as radioactive waste; 10% of the wall surfaces will be removed to a depth of 1/2 inch and will require disposal as radioactive waste; 10% of the dropped ceiling material will require disposal as radioactive waste; 25% of the fume hood ducting will be disposed of as radioactive waste; 1% of the roof material will be removed to a depth of 1 inch and will be disposed of as radioactive waste; all other material will be cleaned in place and surveyed for release.

Restricted Area - 100% of the floor covering to a depth of 1/2", walls and dropped ceiling will be removed and classified as radioactive waste; 25% of the fume hood ducting will be disposed of as radioactive waste; 1% of the roof material will be removed to a depth of 1 inch and will be disposed of as radioactive waste, 1 foot of concrete will be removed from the walls, floors and ceilings of the cyclotron rooms and will be disposed of as radioactive waste; all other structural material will be cleaned in place and surveyed for release.

The installed components radioactive waste volume estimates were based on the following assumptions:

- a. All Radioactive Materials Designated Laboratories at the Billerica, Massachusetts Facility - 1% of all refrigerators, base cabinets, island cabinets, wall hung cabinets, centrifuges, hoods, and sinks will require disposal as radioactive waste. 25% of all fume hoods will be disposed of as radioactive waste. Installed components designated as radioactive waste will be volume reduced by 50%. The remaining components will be cleaned and surveyed for release.

4.3 RADIOACTIVE WASTE VOLUME ESTIMATES - STRUCTURAL MATERIALS

The radioactive waste volume estimates for structural materials were derived based on the assumptions contained in Section 4.2. Based on these assumptions, there will be 18,189 cubic feet of structural material classified as radioactive waste in the restricted areas and 2,601 cubic feet classified as radioactive waste in the controlled area. There will be 20,790 total cubic feet of structural material yielded as radioactive waste. Figure 4-1 (Page 38) details the radioactive waste volume by building.

4.4 RADIOACTIVE WASTE VOLUME ESTIMATES - INSTALLED COMPONENTS

The radioactive waste volume estimates for installed components were derived based on the assumptions contained in Section 4.2. Based on these assumptions, there will be 3,879 cubic feet of installed components classified as radioactive waste in the restricted area and 646 cubic

feet classified as radioactive waste in the controlled area. There will be 4,525 total cubic feet of installed components yielded as radioactive waste. Figure 4-2 (Page 39) details the radioactive waste volume by building.

4.5 RADIOACTIVE WASTE VOLUME ESTIMATE SUMMARY

The radioactive waste volumes discussed in Sections 4.3 and 4.4 are summarized in Figure 4-3 (Page 40). The total radioactive waste volume for decommissioning the 331 Treble Cove Road, Billerica, Massachusetts facility is estimated to be 25,315 cubic feet.

SECTION 5.0
COST ANALYSIS

5.1 INTRODUCTION

The cost analysis contained in this section is based on the findings of the technical assessment (See Section 3.0), the waste volume estimates (see Section 4.0), and Diversified Scientific's professional experience relative to costs associated with other decommissioning projects of similar complexity and magnitude. Estimates of manhours, equipment, materials, and procured services are based on conventional estimating procedures currently employed by Diversified Scientific and the industry in bidding projects of this type.

The cost analysis was approached as if the project was being completed as a fixed-price, turn-key procurement. The cost analysis does not factor in contingencies that most companies normally add to the estimated cost of a fixed price procurement. This contingency factor could be an additional 35 percent of the estimated cost or greater. Diversified Scientific believes the cost analysis presented in this report to be accurate within a 15 percent (15%) margin of error.

5.2 ASSUMPTIONS

The following assumptions were used in the compilation of this cost analysis:

- a. Decommissioning activities for the eleven buildings will run consecutively without a time lag between buildings.
- b. Du Pont will supply all fixed radiological laboratory counting equipment and a small portion of the portable radiological survey instruments.
- c. The following cost burden factors were used to calculate the total cost of each direct cost component. These cost burden factors are typical of rates used in the industry by companies that perform this type of work.

<u>Factor</u>	<u>Rate (Percent)</u>
Labor Overhead	160.0
General and Administrative (G&A)	15.5
Fee	20.0

The methodology for calculation of the total cost is detailed below:

LABOR

(Direct Cost) X (Labor Overhead Rate) = Overhead Cost

[Direct Cost + Overhead Cost] X (G & A Rate) = G & A Cost

[Direct Cost + Overhead Cost + G & A Cost] X (Fee Rate) = Fee Cost

Direct Cost + Overhead Cost + G & A Cost + Fee Cost = Total Cost

TRAVEL AND LIVING, MATERIALS, AND PROCURED SERVICES

(Direct Cost) X (G & A Rate) = G & A Cost

[Direct Cost + G & A Cost] X (Fee Rate) = Fee Cost

Direct Cost + G & A Cost + Fee Cost = Total Cost

EQUIPMENT RENTAL

Standard equipment rental rates based on acquisition cost and depreciated value were used. Equipment rental rates are predicted on the assumption that decommissioning efforts on the eleven buildings will run consecutively.

- d. Costs as displayed in this analysis are based on today's (1990) dollars and do not take into account general cost escalation factors or anticipated radioactive waste burial cost increases.

- e. Assumptions relative to the methodology used to determine the waste volume estimates are contained in Section 4.0.
- f. The following rationale was used for calculating the cost associated with waste disposal. These costs are all inclusive and include the cost for containers, transportation, out of compact fees, and burial site disposal cost.

$$(\text{Direct Cost}) \times (\text{G \& A Rate}) = \text{G \& A Cost}$$

$$[\text{Direct Cost} + \text{G \& A Cost}] \times (\text{Fee Rate}) = \text{Fee Cost}$$

$$\text{Direct Cost} + \text{G \& A Cost} + \text{Fee Cost} = \text{Total Cost}$$

5.3 FACILITY DECOMMISSIONING COST ANALYSIS

This section of the analysis deals with the cost for completing the physical aspects of the decommissioning effort. These costs are defined as management, technical, and craft labor; travel and living expense; material cost; equipment rental fees; and procured services fees. All direct cost elements are burdened as detailed in Section 5.2. Figure 5-1 (Page 41) provides a summary of the decommissioning cost analysis for the eleven buildings. The total cost for the physical aspects of decommissioning the eleven Du Pont buildings in Billerica, Massachusetts, excluding waste disposal (See Section 5.4), is estimated at **\$7,348,241.00**. The following paragraphs provide a detailed cost breakdown of the cost associated with decommissioning each building.

5.3.1 Facility Decommissioning Cost Analysis - Building 110

The projected cost for performing the physical aspects of the decommissioning effort for Building 110 is estimated at **\$199,875.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 110 decommissioning effort. Appendix 1 (Page 45) provides a detailed breakdown of the cost elements.

5.3.2 Facility Decommissioning Cost Analysis - Building 150

The projected cost for performing the physical aspects of the decommissioning effort for Building 150 is estimated at **\$195,536.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 150 decommissioning effort. Appendix 2 (Page 54) provides a detailed breakdown of the cost elements.

5.3.3 Facility Decommissioning Cost Analysis - Building 200

The projected cost for performing the physical aspects of the decommissioning effort for Building 200 is estimated at **\$644,982.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 200 decommissioning effort. Appendix 3 (Page 63) provides a detailed breakdown of the cost elements.

5.3.4 Facility Decommissioning Cost Analysis - Building 250

The projected cost for performing the physical aspects of the decommissioning effort for Building 250 is estimated at **\$3,378,834.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 250 decommissioning effort. Appendix 4 (Page 72) provides a detailed breakdown of the cost elements.

5.3.5 Facility Decommissioning Cost Analysis - Building 300

The projected cost for performing the physical aspects of the decommissioning effort for Building 300 is estimated at **\$174,571.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 300 decommissioning effort. Appendix 5 (Page 81) provides a detailed breakdown of the cost elements.

5.3.6 Facility Decommissioning Cost Analysis - Building 325

The projected cost for performing the physical aspects of the decommissioning effort for Building 325 is estimated at **\$376,514.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 325 decommissioning effort. Appendix 6 (Page 90) provides a detailed breakdown of the cost elements.

5.3.7 Facility Decommissioning Cost Analysis - Building 350

The projected cost for performing the physical aspects of the decommissioning effort for Building 350 is estimated at **\$120,282.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 350 decommissioning effort. Appendix 7 (Page 99) provides a detailed breakdown of the cost elements.

5.3.8 Facility Decommissioning Cost Analysis - Building 375

The projected cost for performing the physical aspects of the decommissioning effort for Building 375 is estimated at **\$117,516.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 375 decommissioning effort. Appendix 8 (Page 108) provides a detailed breakdown of the cost elements.

5.3.9 Facility Decommissioning Cost Analysis - Building 400

The projected cost for performing the physical aspects of the decommissioning effort for Building 400 is estimated at **\$505,341.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 400 decommissioning effort. Appendix 9 (Page 117) provides a detailed breakdown of the cost elements.

5.3.10 Facility Decommissioning Cost Analysis - Building 500

The projected cost for performing the physical aspects of the decommissioning effort for Building 500 is estimated at **\$1,389,769.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 500 decommissioning effort. Appendix 10 (Page 126) provides a detailed breakdown of the cost elements.

5.3.11 Facility Decommissioning Cost Analysis - Building 600

The projected cost for performing the physical aspects of the decommissioning effort for Building 600 is estimated at **\$245,019.00**. Figure 5-1 provides a summary of the cost elements associated with the Building 600 decommissioning effort. Appendix 11 (Page 135) provides a detailed breakdown of the cost elements.

5.4 WASTE DISPOSAL COST ANALYSIS

This section of the cost analysis deals with the cost for disposal of radioactive waste generated as a result of the decommissioning effort. Waste volume estimates and the basis for the estimates are detailed in Section 4.0. For purposes of this analysis, radioactive waste has been divided into two (2) categories: structural materials and installed components. Structural materials are defined as materials such as floors, ceilings, walls, studs, exhaust ducting, roof materials, etc. that are an integral part of the building structure. Installed components are defined as items such as fume hoods, laboratory work benches, refrigerators, freezers, centrifuge, and custom lucite boxes. The total cost for radioactive waste disposal resulting from decommissioning the Billerica, Massachusetts facility is estimated at **\$2,238,352.00**.

Figure 5-2 (Page 42) details by building, the cost for disposal of structural materials that are classified as radioactive waste. The disposal method selected identifies the cost for on site volume reduction and composite packaging of the radioactive waste in B-25 containers and shipping those containers to Richland, Washington, for disposal. Radioactive waste disposal costs as presented in Figure 5-2 are inclusive of the cost for containers, transportation, handling fees, out of compact surcharges and burial site disposal costs. All direct cost

elements are burdened as detailed in Section 5.2. The total radioactive waste disposal cost for disposal of structural materials resulting from decommissioning the Billerica, Massachusetts facility is estimated at \$1,838,251.00.

Figure 5-3 (Page 43) details, by building, the cost for disposal of installed components that are classified as radioactive waste. The disposal method selected identifies the cost for on site volume reduction and composite packaging the radioactive waste in B-25 containers and shipping those containers to Richland, Washington, for disposal. Radioactive waste disposal costs as presented are inclusive of the cost for containers, transportation, handling fees, out of compact surcharges and burial site disposal cost. All direct cost elements are burdened as detailed in Section 5.2. The total radioactive waste disposal cost for disposal of installed components resulting from decommissioning the Billerica, Massachusetts facility is estimated at \$400,101.00.

5.5 COST ANALYSIS SUMMARY

This cost analysis is based on defined assumptions and potentially may have an inherent margin of error of 15 percent due to contractual constraints on the level of effort expended to perform the technical assessment and prepare the cost analysis. Other factors can affect the cost analysis such as the level of contamination being more or less extensive than anticipated i.e. core boring and extensive radiological surveys were not included in the technical assessment. Should the contamination levels be more extensive than anticipated, facility decommissioning and radioactive waste disposal cost could increase significantly. Likewise, in the event the contamination is less than anticipated, decommissioning and disposal cost could decrease.

A summary of the overall cost analysis is presented in Figure 5-4 (Page 44). The total decommissioning cost for the Billerica facility is estimated at \$9,586,593.00.

FIGURES

FIGURE 2-1

FACILITY DESCRIPTION
 DU PONT
 AND
 DU PONT MERCK PHARMACEUTICALS
 BILLERICA, MASSACHUSETTS

BUILDING NUMBER	GENERAL USAGE	RADIONUCLIDES USED	TYPE OF CONSTRUCTION	ESTIMATED BUILDING FLOOR SPACE RAD MATERIALS USE AREAS
110	Receiving of Cask and Radioactive Material Only; Ventilation and HVAC Equipment	N/A	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete. Ceilings are ribbed steel with acoustic panels.	144
150	Storage for Radioactive Waste for Decay and Sorting; Vial Crusher; Animal Carcass Storage; Office and Laboratory Area	^{14}C , ^3H , ^{57}Co , ^{65}Zn , ^{125}I	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are vinyl tile over concrete base and/or concrete. Ceilings are ribbed steel with fiber board acoustic panels.	2,500
200	Radioactive Material Package, Labeling, Q.A., Surveying; and Distribution; Office and Non-radioactive Storage Area	^{99}Tc , ^{14}C ; ^{99}Mo , ^{133}Xe , Tc-99m	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with suspended fiber board acoustic panels.	14,193
250	Radioactive Material Package, Cyclotron Processing, Q.A., Surveying; Office Mezzanine Above Room C-100 (8 Offices)	^3H , ^{14}C , ^{22}Na , ^{36}Cl , ^{54}Mn , ^{55}Fe , ^{57}Co , ^{60}Co , ^{63}Ni , ^{99}Tc , ^{90}Sr , ^{109}Cd , ^{113}Sn , ^{129}I , ^{133}Ba , ^{137}Cs , ^{147}Pm , ^{153}Gd , ^{85}Kr , ^{241}Am , ^{121}Sn , ^{201}Tl , ^{111}In , ^{203}Hg	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with suspended fiber board acoustic panels.	42,535

FIGURE 2-1 (Continued)

FACILITY DESCRIPTION
 DU PONT
 AND
 DU PONT MERCK PHARMACEUTICALS
 BILLERICA, MASSACHUSETTS

BUILDING NUMBER	GENERAL USAGE	RADIONUCLIDES USED	TYPE OF CONSTRUCTION	ESTIMATED BUILDING FLOOR SPACE RAD MATERIALS USE AREAS
300	Health Physics Offices and Laboratory Low Levels of Activity, Management Office, Machine Rooms, Drill Presses, Grinding Equipment, Lathes	^{137}Cs , ^{60}Co , ^{54}Mn , U, ^{14}C ^3H	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with suspended fiber board acoustic panels.	480
325	Radioactive Waste Storage Area For Decay and Disposal	All isotopes utilized on site	Pre-Fabricated metal building, open bay with concrete flooring, open ceiling with steel reinforced beams.	12,500
350	Surplus Equipment Storage, Previously the Rabbit Farm. Some Possible Low Level Radioactive Equipment received. Drain System Possibly Contaminated	N/A	Concrete block and red brick with interior walls of wood stud. Painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceiling are ribbed steel with fiber board acoustic panels.	3,940
375	Surplus Equipment Storage, Possible Low Level Radioactive Material Received	N/A	Pre-fabricated metal building open bay with concrete flooring, open ceiling with steel reinforced beams.	5,400

FIGURE 2-1 (Continued)

FACILITY DESCRIPTION
 DU PONT
 AND
 DU PONT MERCK PHARMACEUTICALS
 BILLERICA, MASSACHUSETTS

BUILDING NUMBER	GENERAL USAGE	RADIONUCLIDES USED	TYPE OF CONSTRUCTION	ESTIMATED BUILDING FLOOR SPACE RAD MATERIALS USE AREAS
400	Unrestricted Area Used As Office and Storage Area. Low Level Radioactive Material RIA Kit Manufacturing	^3H , ^{125}I	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floor are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with fiber board acoustic panels.	15,135
500	Radiopharmaceutical research and development animal facility	^{111}In , ^{14}C , ^3H ; ^{99}Tc , Tc-99m	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with fiber board acoustic panels.	45,512
600	Customer Service Center Information Resources Distribution Regulatory Affairs License Verification	N/A	Concrete block and red brick with interior walls of wood stud and painted plaster board. Floors are concrete and/or vinyl tile over concrete base. Ceilings are ribbed steel with suspended fiber board acoustic panels.	1,200
TOTAL				143,539

FIGURE 4-1

RADIOACTIVE WASTE VOLUME ESTIMATE OF STRUCTURAL MATERIALS¹

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

BUILDING NUMBER	VOLUME (FT ³)
110	0
150	57
200	891
250	15,285
300	53
325	36
350	0
375	0
400	365
500	4,103
600	0
TOTAL WASTE VOLUME	20,790²

NOTES

¹STRUCTURAL MATERIALS - DEFINED AS MATERIALS SUCH AS FLOORS, CEILINGS, WALLS, EXHAUST DUCTING, ETC., THAT ARE AN INTEGRAL PART OF THE BUILDING STRUCTURE.

²TOTAL WASTE VOLUME - VOLUME TOTAL IS AFTER COMPOSITE PACKAGING.

FIGURE 4-2

RADIOACTIVE WASTE VOLUME ESTIMATE OF INSTALLED COMPONENTS¹

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

BUILDING NUMBER	VOLUME (FT ³)
110	0
150	0
200	278
250	2,631
300	17
325	0
350	0
375	0
400	54
500	1,545
600	0
TOTAL WASTE VOLUME	4,525²

NOTES

¹INSTALLED COMPONENTS - DEFINED AS FUME HOODS, SINKS, WALL HUNG CABINETS, BASE CABINETS, ISLAND CABINETS, CENTRIFUGES, REFRIGERATORS, HOT CELLS, AND LUCITE BOXES

²TOTAL WASTE VOLUME - VOLUME TOTAL IS AFTER ON SITE VOLUME REDUCTION

FIGURE 4-3

RADIOACTIVE WASTE VOLUME ESTIMATE SUMMARY

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

RADIOACTIVE WASTE DISPOSAL	RADIOACTIVE MATERIALS FOR DISPOSAL (FT ³)
Structural Materials ¹	20,790
Installed Components ²	4,525
TOTAL WASTE VOLUME	25,315

NOTES

- ¹STRUCTURAL MATERIALS - DEFINED AS MATERIALS SUCH AS FLOORS, CEILINGS, WALLS, EXHAUST DUCTING, ETC., THAT ARE AN INTEGRAL PART OF THE BUILDING.
- ²INSTALLED COMPONENTS - DEFINED AS FUME HOODS, SINK, WALL HUNG CABINETS, BASE CABINETS, ISLAND CABINETS, CENTRIFUGES, REFRIGERATORS, HOT CELLS, AND LUCITE BOXES WHICH HAVE BEEN SIZE REDUCED AND COMPOSITE PACKAGED.

FIGURE 5-1

DECOMMISSIONING COST ANALYSIS
PHYSICAL ASPECTS

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

Building Number	Labor (\$)	Travel & Living (\$)	Materials (\$)	Equipment Rental (\$)	Procured Services (\$)	TOTAL COST (\$)
110	112,262	41,365	26,706	7,532	12,010	199,875
150	112,262	41,365	22,368	7,532	12,010	195,537
200	387,749	141,421	76,968	23,383	15,461	644,982
250	2,154,475	807,705	230,980	121,689	63,985	3,378,834
300	100,570	33,659	21,909	6,591	11,843	174,572
325	219,154	79,480	52,308	12,710	12,862	376,514
350	67,750	21,899	15,024	3,766	11,843	120,282
375	67,750	20,596	14,863	3,295	11,012	117,516
400	303,432	111,213	57,125	17,889	15,683	505,341
500	838,876	309,127	158,139	50,107	33,520	1,389,769
600	156,350	43,770	24,111	8,944	11,843	245,018
TOTAL	4,520,630	1,651,600	700,501	263,438	212,072	7,348,241

FIGURE 5-2

RADIOACTIVE WASTE DISPOSAL COST OF STRUCTURAL MATERIALS¹

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

DISPOSAL AT RICHLAND WASHINGTON

Building Number	Disposal Cost at Richland, Washington (\$)
110	0
150	5,040
200	78,782
250	1,351,500
300	4,686
325	3,183
350	0
375	0
400	32,273
500	362,787
600	0
TOTAL COST	1,838,251

NOTES

¹STRUCTURAL COMPONENTS - DEFINED AS MATERIAL SUCH AS FLOORS, CEILINGS, WALLS, STUDS, EXHAUST DUCTING, ETC., THAT ARE AN INTERGRAL PART OF THE BUILDING STRUCTURE.

FIGURE 5-3

RADIOACTIVE WASTE DISPOSAL COST OF INSTALLED COMPONENTS¹

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

DISPOSAL AT RICHLAND WASHINGTON

Building Number	Disposal Cost at Richland, Washington (\$)
110	0
150	0
200	24,581
250	232,633
300	1,503
325	0
350	0
375	0
400	4,775
500	136,609
600	0
TOTAL COST	400,101

NOTES

¹INSTALLED COMPONENTS -

DEFINED AS FUME HOODS, LABORATORY BASE AND ISLAND CABINETS, REFRIGERATORS, FREEZERS, CENTRIFUGES, AND CUSTOM LUCITE BOXES.

FIGURE 5-4

TOTAL DECOMMISSIONING COST SUMMARY
DECOMMISSIONING/RADIOACTIVE WASTE DISPOSAL COST ANALYSIS

DU PONT
AND
DU PONT MERCK PHARMACEUTICALS
BILLERICA, MASSACHUSETTS

COST COMPONENTS	TOTAL COST (\$)
Facility Decommissioning	7,348,241
Radioactive Waste Disposal-Structural Materials ¹	1,838,251
Radioactive Waste Disposal-Installed Components ²	400,101
TOTAL COST	9,586,593

NOTES

¹STRUCTURAL MATERIALS - DEFINED AS MATERIALS SUCH AS FLOORS, CEILINGS, WALLS, STUDS, ROOF MATERIAL, EXHAUST DUCTING, ETC., THAT ARE AN INTERGRAL PART OF THE BUILDING STRUCTURE.

²INSTALLED COMPONENTS - DEFINED AS FUME HOODS, LABORATORY BASE AND ISLAND CABINETS, REFRIGERATORS, FREEZERS, CENTRIFUGES, AND CUSTOM LUCITE BOXES.

APPENDIX 1

*FACILITY DECOMMISSIONING
BUILDING 110
DETAILED COST BREAKDOWN*

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 110
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	1,742
Direct Labor	31,153
Labor Overhead	49,844
Consumables	19,269
Material Acquisition	0
T S & L	29,845
Subcontracted items	8,665
Total Direct Costs	138,776
G & A	21,510
Total Costs	160,286
Equipment Rental	7,532
Profit	32,057
Contingency	0
Price	199,875

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		11		53.46	588	941	237	1,766	353	2,119
Corporate RESO		21		42.90	901	1,441	363	2,705	541	3,246
Mgr. Field Operation		28		36.64	1,026	1,642	413	3,081	616	3,697
Project Mgr		110		33.33	3,666	5,866	1,478	11,010	2,202	13,212
Health & Safety Mgr.		99		30.03	2,973	4,757	1,198	8,928	1,786	10,713
Clerk		88		12.54	1,104	1,766	445	3,314	663	3,977
Shift Supervisor		99		17.82	1,764	2,823	711	5,298	1,060	6,357
HP Foreman		99		17.16	1,699	2,718	685	5,102	1,020	6,122
Decon Foreman		99		17.16	1,699	2,718	685	5,102	1,020	6,122
HP Tech		517		13.86	7,166	11,465	2,888	21,518	4,304	25,822
Decon Tech		373		13.86	5,170	8,272	2,083	15,525	3,105	18,630
Plumber		99		17.16	1,699	2,718	685	5,102	1,020	6,122
Electrician		99		17.16	1,699	2,718	685	5,102	1,020	6,122
		1,742			31,153	49,844	12,555	93,552	18,710	112,262
TOTAL LABOR		1,742			31,153	49,844	12,555	93,552	18,710	112,262

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LOGGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	11	800.00	8,800		1,364	10,164	2,033	12,197
Per Diem "A"								
Per Day	5	125.00	625		97	722	144	866
Per Diem "B"								
Per Day	52	75.00	3,900		605	4,505	901	5,405
Per Diem "C"								
Per Day	234	65.00	15,210		2,358	17,568	3,514	21,081
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	3	70.00	210		33	243	49	291

TOTAL TS&L			29,845		4,626	34,471	6,894	41,365
=====								

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	242	7.50	1,815	0	281	2,096	419	2,516
2	Cotton Rags	21	1.50	32	0	5	36	7	44
3	Utility Cleaner	4	25.00	100	0	16	116	23	139
4	Anti-C Gloves	121	0.85	103	0	16	119	24	143
5	Respirator Cartridges	28	6.00	168	0	26	194	39	233
6	Safety Boots	14	70.00	980	0	152	1,132	226	1,358
7	Safety Glasses	28	5.00	140	0	22	162	32	194
8	Hard Hats	14	8.50	119	0	18	137	27	165
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	15	4.50	68	0	10	78	16	94
14	Leather Palm Gloves	22	2.50	55	0	9	64	13	76
15	Misc Office Supplies	2	150.00	300	0	47	347	69	416
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	2	41.00	82	0	13	95	19	114
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	11	1.25	14	0	2	16	3	19
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	2	27.50	55	0	9	64	13	76
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	2	9.49	19	0	3	22	4	26
28	Survey Meter Repair Parts	2	250.00	500	0	78	578	116	693
29	55 Gallon Drums	8	45.00	360	0	56	416	83	499
30	Drum Liners	8	2.50	20	0	3	23	5	28
31	Plastic Bags	55	0.70	39	0	6	44	9	53
32	Maslin	2	65.00	130	0	20	150	30	180
33	Smears	6,592	0.20	1,318	0	204	1,523	305	1,827
34	Smear Cocktail	38	85.00	3,230	0	501	3,731	746	4,477
35	Vials	6,592	0.18	1,187	0	184	1,370	274	1,645
36	Oil Dry	8	4.75	38	0	6	44	9	53
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	55	1.50	83	0	13	95	19	114
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	25.00	25	0	4	29	6	35
42	M43-20 Replacement Windows	30	30.00	900	0	140	1,040	208	1,247

Diversified Scientific Services Inc.
 P.O.Box 803
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 110
 DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	30	90.00	2,700	0	419	3,119	624	3,742
44 L.P. Fuel	1	50.00	50	0	8	58	12	69
45 Batteries (D-cell)	75	2.50	188	0	29	217	43	260
46 P-10 Gas	1	750.00	750	0	116	866	173	1,040
TOTAL CONSUMABLES			19,269	0	2,987	22,255	4,451	26,706

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 16

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	156			156		156
2	Model 3 Survey Meter	10	1.43	229			229		229
3	Model 44-9 Probe	15	0.90	216			216		216
4	Pallet Jack	2	1.95	62			62		62
5	Drum Cart	1	0.91	15			15		15
6	Roll Around Cart	1	0.62	10			10		10
7	Skill Saw	2	0.62	20			20		20
8	Ladders	4	0.74	47			47		47
9	Typewriter	1	1.83	29			29		29
10	PC/Printer/Software	1	20.31	325			325		325
11	File Cabinet	5	0.71	57			57		57
12	Coffee Maker	2	0.62	20			20		20
13	Sawz-all	2	0.90	29			29		29
14	Demolition Saw	1	3.25	52			52		52
15	Floor Tile Machine	1	2.54	41			41		41
16	Respirators (Full)	3	0.71	34			34		34
17	Respirators (1/2 Face)	5	0.14	11			11		11
18	Negative Air Machine	2	8.13	260			260		260
19	Copy Machine	1	10.15	162			162		162
20	Air Line (1/4")	5	0.15	12			12		12
21	Air Line (3/4")	5	0.15	12			12		12
22	Air Hammer (Large)	1	1.63	26			26		26
23	Air Hammer (Small)	6	0.62	60			60		60
24	Needle Gun	2	0.82	26			26		26
25	Air Stapler	1	1.02	16			16		16
26	FAX Machine	1	10.15	162			162		162
27	Fork Lift	1	64.99	1,040			1,040		1,040
28	Scabbler (moose)	1	171.56	2,745			2,745		2,745
29	Scabbler (squirrel)	1	21.21	339			339		339
30	Model 43-20 Probe	10	1.53	245			245		245
31	Temporary Lighting	5	1.02	82			82		82
32	Portable Heaters	10	0.51	82			82		82
33	Model 239-17 Floor Monitor	1	11.38	182			182		182
34	Job Truck	1	32.50	520			520		520
35	Compressor	2	6.50	208			208		208
				7,532		0	7,532	0	7,532

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	5	275.00	1,375		213	1,588	318	1,906
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	2	50.00	100		16	116	23	139
5	Urinalysis	17	60.00	1,020		158	1,178	236	1,414
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				8,665		1,343	10,008	2,002	12,010

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 110
DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 2

**FACILITY DECOMMISSIONING
BUILDING 150
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total

Labor Hours	1,742
Direct Labor	31,153
Labor Overhead	49,844
Consumables	16,138
Material Acquisition	0
T S & L	29,845
Subcontracted items	8,665

Total Direct Costs	135,645
G & A	21,025

Total Costs	156,670
Equipment Rental	7,532
Profit	31,334
Contingency	0

Price	195,536
	=====

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 150
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		11		53.46	588	941	237	1,766	353	2,119
Corporate RESO		21		42.90	901	1,441	363	2,705	541	3,246
Mgr. Field Operation		28		36.64	1,026	1,642	413	3,081	616	3,697
Project Mgr		110		33.33	3,666	5,866	1,478	11,010	2,202	13,212
Health & Safety Mgr.		99		30.03	2,973	4,757	1,198	8,928	1,786	10,713
Clerk		88		12.54	1,104	1,766	445	3,314	663	3,977
Shift Supervisor		99		17.82	1,764	2,823	711	5,298	1,060	6,357
HP Foreman		99		17.16	1,699	2,718	685	5,102	1,020	6,122
Decon Foreman		99		17.16	1,699	2,718	685	5,102	1,020	6,122
HP Tech		517		13.86	7,166	11,465	2,888	21,518	4,304	25,822
Decon Tech		373		13.86	5,170	8,272	2,083	15,525	3,105	18,630
Plumber		99		17.16	1,699	2,718	685	5,102	1,020	6,122
Electrician		99		17.16	1,699	2,718	685	5,102	1,020	6,122
		1,742			31,153	49,844	12,555	93,552	18,710	112,262
TOTAL LABOR		1,742			31,153	49,844	12,555	93,552	18,710	112,262

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	11	800.00	8,800		1,364	10,164	2,033	12,197
Per Diem "A"								
Per Day	5	125.00	625		97	722	144	866
Per Diem "B"								
Per Day	52	75.00	3,900		605	4,505	901	5,405
Per Diem "C"								
Per Day	234	65.00	15,210		2,358	17,568	3,514	21,081
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	3	70.00	210		33	243	49	291

TOTAL TS&L			29,845		4,626	34,471	6,894	41,365
=====								

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

Item No.	CONSUMABLES Description	Quantity	Unit Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	242	7.50	1,815	0	281	2,096	419	2,516
2	Cotton Rags	8	1.50	12	0	2	14	3	17
3	Utility Cleaner	2	25.00	50	0	8	58	12	69
4	Anti-C Gloves	121	0.85	103	0	16	119	24	143
5	Respirator Cartridges	28	6.00	168	0	26	194	39	233
6	Safety Boots	14	70.00	980	0	152	1,132	226	1,358
7	Safety Glasses	28	5.00	140	0	22	162	32	194
8	Hard Hats	14	8.50	119	0	18	137	27	165
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	15	4.50	68	0	10	78	16	94
14	Leather Palm Gloves	22	2.50	55	0	9	64	13	76
15	Misc Office Supplies	2	150.00	300	0	47	347	69	416
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	2	41.00	82	0	13	95	19	114
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	11	1.25	14	0	2	16	3	19
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	2	27.50	55	0	9	64	13	76
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	2	9.49	19	0	3	22	4	26
28	Survey Meter Repair Parts	2	250.00	500	0	78	578	116	693
29	55 Gallon Drums	7	45.00	315	0	49	364	73	437
30	Drum Liners	7	2.50	18	0	3	20	4	24
31	Plastic Bags	55	0.70	39	0	6	44	9	53
32	Maslin	2	65.00	130	0	20	150	30	180
33	Smears	4,892	0.20	978	0	152	1,130	226	1,356
34	Smear Cocktail	28	85.00	2,380	0	369	2,749	550	3,299
35	Vials	4,892	0.18	881	0	136	1,017	203	1,220
36	Oil Dry	7	4.75	33	0	5	38	8	46
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	55	1.50	83	0	13	95	19	114
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	25.00	25	0	4	29	6	35
42	M43-20 Replacement Windows	20	30.00	600	0	93	693	139	832

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	20	90.00	1,800	0	279	2,079	416	2,495
44 L.P. Fuel	1	50.00	50	0	8	58	12	69
45 Batteries (D-cell)	50	2.50	125	0	19	144	29	173
46 P-10 Gas	1	500.00	500	0	78	578	116	693
TOTAL CONSUMABLES			16,138	0	2,501	18,640	3,728	22,368

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 150
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 16

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	156			156		156
2	Model 3 Survey Meter	10	1.43	229			229		229
3	Model 44-9 Probe	15	0.90	216			216		216
4	Pallet Jack	2	1.95	62			62		62
5	Drum Cart	1	0.91	15			15		15
6	Roll Around Cart	1	0.62	10			10		10
7	Skill Saw	2	0.62	20			20		20
8	Ladders	4	0.74	47			47		47
9	Typewriter	1	1.83	29			29		29
10	PC/Printer/Software	1	20.31	325			325		325
11	File Cabinet	5	0.71	57			57		57
12	Coffee Maker	2	0.62	20			20		20
13	Sawz-all	2	0.90	29			29		29
14	Demolition Saw	1	3.25	52			52		52
15	Floor Tile Machine	1	2.54	41			41		41
16	Respirators (Full)	3	0.71	34			34		34
17	Respirators (1/2 Face)	5	0.14	11			11		11
18	Negative Air Machine	2	8.13	260			260		260
19	Copy Machine	1	10.15	162			162		162
20	Air Line (1/4")	5	0.15	12			12		12
21	Air Line (3/4")	5	0.15	12			12		12
22	Air Hammer (Large)	1	1.63	26			26		26
23	Air Hammer (Small)	6	0.62	60			60		60
24	Needle G.m	2	0.82	26			26		26
25	Air Stapler	1	1.02	16			16		16
26	FAX Machine	1	10.15	162			162		162
27	Fork Lift	1	64.99	1,040			1,040		1,040
28	Scabblers (moose)	1	171.56	2,745			2,745		2,745
29	Scabblers (squirrel)	1	21.21	339			339		339
30	Model 43-20 Probe	10	1.53	245			245		245
31	Temporary Lighting	5	1.02	82			82		82
32	Portable Heaters	10	0.51	82			82		82
33	Model 239-17 Floor Monitor	1	11.38	182			182		182
34	Job Truck	1	32.50	520			520		520
35	Compressor	2	6.50	208			208		208
				7,532		0	7,532	0	7,532

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	5	275.00	1,375		213	1,588	318	1,906
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	2	50.00	100		16	116	23	139
5	Urinalysis	17	60.00	1,020		158	1,178	236	1,414
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				8,665		1,343	10,008	2,002	12,010

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 150
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 3

**FACILITY DECOMMISSIONING
BUILDING 200
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 200
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total

Labor Hours	6,331
Direct Labor	107,600
Labor Overhead	172,161
Consumables	55,533
Material Acquisition	0
T S & L	102,035
Subcontracted items	11,155

Total Direct Costs	448,484
G & A	69,515

Total Costs	517,999
Equipment Rental	23,383
Profit	103,600
Contingency	0

Price	644,982
	=====

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 200
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
	Corporate Management	31		53.46	1,657	2,652	668	4,977	995	5,972
	Corporate RESO	58		42.90	2,488	3,981	1,003	7,472	1,494	8,966
	Mgr. Field Operation	76		36.64	2,785	4,456	1,122	8,363	1,673	10,036
	Project Mgr	302		33.33	10,066	16,105	4,056	30,227	6,045	36,273
	Health & Safety Mgr.	291		30.03	8,739	13,982	3,522	26,242	5,248	31,491
	Clerk	280		12.54	3,511	5,618	1,415	10,544	2,109	12,653
	Shift Supervisor	291		17.82	5,186	8,297	2,090	15,572	3,114	18,687
	HP Foreman	291		17.16	4,994	7,990	2,012	14,996	2,999	17,995
	Decon Foreman	291		17.16	4,994	7,990	2,012	14,996	2,999	17,995
	HP Tech	2,037		13.86	28,233	45,173	11,378	84,783	16,957	101,740
	Decon Tech	1,801		13.86	24,962	39,939	10,060	74,960	14,992	89,953
	Plumber	291		17.16	4,994	7,990	2,012	14,996	2,999	17,995
	Electrician	291		17.16	4,994	7,990	2,012	14,996	2,999	17,995
		6,331			107,600	172,161	43,363	323,124	64,625	387,749
	TOTAL LABOR	6,331			107,600	172,161	43,363	323,124	64,625	387,749

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 200
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	39	800.00	31,200		4,836	36,036	7,207	43,243
Per Diem "A"								
Per Day	15	125.00	1,875		291	2,166	433	2,599
Per Diem "B"								
Per Day	151	75.00	11,325		1,755	13,080	2,616	15,696
Per Diem "C"								
Per Day	859	65.00	55,835		8,654	64,489	12,898	77,387
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	10	70.00	700		109	809	162	970

TOTAL TS&L			102,035		15,815	117,850	23,570	141,421
=====								

Diversified Scientific Services Inc.

P.O.Box 863

Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 200
 DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	1,260	7.50	9,450	0	1,465	10,915	2,183	13,098
2	Cotton Rags	92	1.50	138	0	21	159	32	191
3	Utility Cleaner	18	25.00	450	0	70	520	104	624
4	Anti-C Gloves	630	0.85	536	0	83	619	124	742
5	Respirator Cartridges	30	6.00	180	0	28	208	42	249
6	Safety Boots	15	70.00	1,050	0	163	1,213	243	1,455
7	Safety Glasses	30	5.00	150	0	23	173	35	208
8	Hard Hats	15	8.50	128	0	20	147	29	177
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	32	4.50	144	0	22	166	33	200
14	Leather Palm Gloves	105	2.50	263	0	41	303	61	364
15	Misc Office Supplies	7	150.00	1,050	0	163	1,213	243	1,455
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	7	41.00	287	0	44	331	66	398
18	Water Cooler	2	55.00	110	0	17	127	25	152
19	Ice	35	1.25	44	0	7	51	10	61
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	7	27.50	193	0	30	222	44	267
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	2	18.54	37	0	6	43	9	51
27	Coffee	7	9.49	66	0	10	77	15	92
28	Survey Meter Repair Parts	7	250.00	1,750	0	271	2,021	404	2,426
29	55 Gallon Drums	16	45.00	720	0	112	832	166	998
30	Drum Liners	16	2.50	40	0	6	46	9	55
31	Plastic Bags	175	0.70	123	0	19	141	28	170
32	Maslin	7	65.00	455	0	71	526	105	631
33	Smears	31,638	0.20	6,328	0	981	7,308	1,462	8,770
34	Smear Cocktail	181	85.00	15,385	0	2,385	17,770	3,554	21,324
35	Vials	31,638	0.18	5,695	0	883	6,578	1,316	7,893
36	Oil Dry	16	4.75	76	0	12	88	18	105
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	175	1.50	263	0	41	303	61	364
39	Electrical Tape	1	45.00	45	0	7	52	10	62
40	Rope (nylon)	1,000	0.40	400	0	62	462	92	554
41	Spray Adhesive	5	28.50	143	0	22	165	33	198
42	Oxygen/Acetylene	1	75.00	75	0	12	87	17	104

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 200
 DETAILED COST BREAKDOWN

43 M43-20 Replacement Windows	40	30.00	1,200	0	186	1,386	277	1,663
44 M-44-9 Replacement Windows	40	90.00	3,600	0	558	4,158	832	4,990
45 L.P. Fuel	1	175.00	175	0	27	202	40	243
46 Batteries (D-cell)	100	2.50	250	0	39	289	58	347
47 P-10 Gas	1	1,250.00	1,250	0	194	1,444	289	1,733
TOTAL CONSUMABLES			55,533	0	8,608	64,140	12,828	76,968

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 200
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 49

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	478			478		478
2	Model 3 Survey Meter	10	1.43	701			701		701
3	Model 44-9 Probe	15	0.90	662			662		662
4	Pallet Jack	2	1.95	191			191		191
5	Drum Cart	1	0.91	45			45		45
6	Roll Around Cart	1	0.62	30			30		30
7	Skill Saw	2	0.62	61			61		61
8	Ladders	4	0.74	145			145		145
9	Typewriter	1	1.83	90			90		90
10	PC/Printer/Software	1	20.31	995			995		995
11	File Cabinet	5	0.71	174			174		174
12	Coffee Maker	2	0.62	61			61		61
13	Sawz-all	2	0.90	88			88		88
14	Demolition Saw	1	3.25	159			159		159
15	Floor Tile Machine	1	2.54	124			124		124
16	Respirators (Full)	3	0.71	104			104		104
17	Respirators (1/2 Face)	5	0.14	34			34		34
18	Negative Air Machine	2	8.13	797			797		797
19	Copy Machine	1	10.15	497			497		497
20	Air Line (1/4")	5	0.15	37			37		37
21	Air Line (3/4")	5	0.15	37			37		37
22	Air Hammer (Large)	1	1.63	80			80		80
23	Air Hammer (Small)	6	0.62	182			182		182
24	Needle Gun	2	0.82	80			80		80
25	Air Stapler	1	1.02	50			50		50
26	FAX Machine	1	10.15	497			497		497
27	Fork Lift	1	64.99	3,185			3,185		3,185
28	Scabbler (moose)	1	171.56	8,406			8,406		8,406
29	Scabbler (squirrel)	1	21.21	1,039			1,039		1,039
30	Model 43-20 Probe	10	1.53	750			750		750
31	Temporary Lighting	5	1.02	250			250		250
32	Portable Heaters	10	0.51	250			250		250
33	Model 239-17 Floor Monitor	1	11.38	558			558		558
34	Job Truck	1	32.50	1,593			1,593		1,593
35	Compressor	2	6.50	637			637		637
36	Breathing Air Machine	1	6.46	317			317		317
				23,383		0	23,383	0	23,383

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 200
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	9	275.00	2,475		384	2,859	572	3,430
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	7	50.00	350		54	404	81	485
5	Urinalysis	36	60.00	2,160		335	2,495	499	2,994
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				11,155		1,729	12,884	2,577	15,461

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 200
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP	10.50	13.86
Dr	10.50	13.86
Pl	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 4

FACILITY DECOMMISSIONING

BUILDING 250

DETAILED COST BREAKDOWN

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 250
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	36,051
Direct Labor	597,868
Labor Overhead	956,588
Consumables	166,652
Material Acquisition	0
T S & L	582,760
Subcontracted items	46,165
Total Direct Costs	2,350,033
G & A	364,255
Total Costs	2,714,288
Equipment Rental	121,689
Profit	542,858
Contingency	0
Price	3,378,834

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 250
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
	Corporate Management	148		53.46	7,912	12,659	3,189	23,760	4,752	28,512
	Corporate RESO	281		42.90	12,055	19,288	4,858	36,201	7,240	43,441
	Mgr. Field Operation	370		36.64	13,558	21,693	5,464	40,715	8,143	48,858
	Project Mgr	1,478		33.33	49,262	78,819	19,852	147,933	29,587	177,520
	Health & Safety Mgr.	1,467		30.03	44,054	70,486	17,754	132,294	26,459	158,753
	Clerk	1,456		12.54	18,258	29,213	7,358	54,829	10,966	65,795
	Shift Supervisor	1,467		17.82	26,142	41,827	10,535	78,504	15,701	94,205
	HP Foreman	1,467		17.16	25,174	40,278	10,145	75,597	15,119	90,716
	Decon Foreman	1,467		17.16	25,174	40,278	10,145	75,597	15,119	90,716
	HP Tech	7,368		13.86	102,120	163,393	41,155	306,668	61,334	368,001
	Decon Tech	16,148		13.86	223,811	358,098	90,196	672,105	134,421	806,526
	Plumber	1,467		17.16	25,174	40,278	10,145	75,597	15,119	90,716
	Electrician	1,467		17.16	25,174	40,278	10,145	75,597	15,119	90,716
		36,051			597,868	956,588	240,941	1,795,396	359,079	2,154,475
	TOTAL LABOR	36,051			597,868	956,588	240,941	1,795,396	359,079	2,154,475

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 250
 DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	222	800.00	177,600		27,528	205,128	41,026	246,154
Per Diem "A"								
Per Day	77	125.00	9,625		1,492	11,117	2,223	13,340
Per Diem "B"								
Per Day	769	75.00	57,675		8,940	66,615	13,323	79,938
Per Diem "C"								
Per Day	5,126	65.00	333,190		51,644	384,834	76,967	461,801
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	51	70.00	3,570		553	4,123	825	4,948

TOTAL TS&L			582,760		90,328	673,088	134,618	807,705
=====								

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 250
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	7,770	7.50	58,275	0	9,033	67,308	13,462	80,769
2	Cotton Rags	86	1.50	129	0	20	149	30	179
3	Utility Cleaner	17	25.00	425	0	66	491	98	589
4	Anti-C Gloves	3,885	0.85	3,302	0	512	3,814	763	4,577
5	Respirator Cartridges	40	6.00	240	0	37	277	55	333
6	Safety Boots	20	70.00	1,400	0	217	1,617	323	1,940
7	Safety Glasses	40	5.00	200	0	31	231	46	277
8	Hard Hats	20	8.50	170	0	26	196	39	236
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	185	4.50	833	0	129	962	192	1,154
14	Leather Palm Gloves	700	2.50	1,750	0	271	2,021	404	2,426
15	Misc Office Supplies	37	150.00	5,550	0	860	6,410	1,282	7,692
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	37	41.00	1,517	0	235	1,752	350	2,103
18	Water Cooler	2	55.00	110	0	17	127	25	152
19	Ice	182	1.25	228	0	35	263	53	315
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	37	27.50	1,018	0	158	1,175	235	1,410
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	37	9.49	351	0	54	406	81	487
28	Survey Meter Repair Parts	37	250.00	9,250	0	1,434	10,684	2,137	12,821
29	55 Gallon Drums	28	45.00	1,260	0	195	1,455	291	1,746
30	Drum Liners	28	2.50	70	0	11	81	16	97
31	Plastic Bags	910	0.70	637	0	99	736	147	883
32	Maslin	37	65.00	2,405	0	373	2,778	556	3,333
33	Smears	68,979	0.20	13,796	0	2,138	15,934	3,187	19,121
34	Smear Cocktail	394	85.00	33,490	0	5,191	38,681	7,736	46,417
35	Vials	68,979	0.18	12,416	0	1,925	14,341	2,868	17,209
36	Oil Dry	28	4.75	133	0	21	154	31	184
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	910	1.50	1,365	0	212	1,577	315	1,892
39	Electrical Tape	1	45.00	45	0	7	52	10	62
40	Airline Kit	1	150.00	150	0	23	173	35	208
41	Harnesses	6	15.00	90	0	14	104	21	125
42	Rope (nylon)	1,000	0.40	400	0	62	462	92	554

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 250
 DETAILED COST BREAKDOWN

43 Spray Adhesive	5	28.50	143	0	22	165	33	198
44 Oxygen/Acetylene	1	1,000.00	1,000	0	155	1,155	231	1,386
45 M43-20 Replacement Windows	70	30.00	2,100	0	326	2,426	485	2,911
46 M-44-9 Replacement Windows	70	90.00	6,300	0	977	7,277	1,455	8,732
47 L.P. Fuel	1	925.00	925	0	143	1,068	214	1,282
48 Batteries (D-cell)	150	2.50	375	0	58	433	87	520
49 P-10 Gas	1	1,500.00	1,500	0	233	1,733	347	2,079
TOTAL CONSUMABLES			166,652	0	25,831	192,484	38,497	230,980

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 250
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 255

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	2,489			2,489		2,489
2	Model 3 Survey Meter	10	1.43	3,647			3,647		3,647
3	Model 44-9 Probe	15	0.90	3,443			3,443		3,443
4	Pallet Jack	2	1.95	995			995		995
5	Drum Cart	1	0.91	232			232		232
6	Roll Around Cart	1	0.62	158			158		158
7	Skill Saw	2	0.62	316			316		316
8	Ladders	4	0.74	755			755		755
9	Typewriter	1	1.83	467			467		467
10	PC/Printer/Software	1	20.31	5,179			5,179		5,179
11	File Cabinet	5	0.71	905			905		905
12	Coffee Maker	2	0.62	316			316		316
13	Sawz-all	2	0.90	459			459		459
14	Demolition Saw	1	3.25	829			829		829
15	Floor Tile Machine	1	2.54	648			648		648
16	Respirators (Full)	3	0.71	543			543		543
17	Respirators (1/2 Face)	5	0.14	179			179		179
18	Negative Air Machine	2	8.13	4,146			4,146		4,146
19	Copy Machine	1	10.15	2,588			2,588		2,588
20	Air Line (1/4")	5	0.15	191			191		191
21	Air Line (3/4")	5	0.15	191			191		191
22	Air Hammer (Large)	1	1.63	416			416		416
23	Air Hammer (Small)	6	0.62	949			949		949
24	Needle Gun	2	0.82	418			418		418
25	Air Stapler	1	1.02	260			260		260
26	FAX Machine	1	10.15	2,588			2,588		2,588
27	Fork Lift	1	64.99	16,572			16,572		16,572
28	Scabbler (moose)	1	171.56	43,748			43,748		43,748
29	Scabbler (squirrel)	1	21.21	5,409			5,409		5,409
30	Model 43-20 Probe	10	1.53	3,902			3,902		3,902
31	Temporary Lighting	5	1.02	1,301			1,301		1,301
32	Portable Heaters	10	0.51	1,301			1,301		1,301
33	Model 239-17 Floor Monitor	1	11.38	2,902			2,902		2,902
34	Job Truck	1	32.50	8,288			8,288		8,288
35	Compressor	2	6.50	3,315			3,315		3,315
36	Breathing Air Machine	1	6.46	1,647			1,647		1,647
				121,689		0	121,689	0	121,689

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 250
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	10	280.00	2,800		434	3,234	647	3,881
2	Instrument Calibration	42	275.00	11,550		1,790	13,340	2,668	16,008
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	37	50.00	1,850		287	2,137	427	2,564
5	Large Air Compressor	9	825.00	7,425		1,151	8,576	1,715	10,291
6	Jack Hammer	9	700.00	6,300		977	7,277	1,455	8,732
7	Urinalysis	204	60.00	12,240		1,897	14,137	2,827	16,965
8	Whole Body Counts	10	350.00	3,500		543	4,043	809	4,851
				46,165		7,156	53,321	10,664	63,985

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 250
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 5

**FACILITY DECOMMISSIONING
BUILDING 300
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	1,543
Direct Labor	27,908
Labor Overhead	44,653
Consumables	15,807
Material Acquisition	0
T S & L	24,285
Subcontracted items	8,545
Total Direct Costs	121,198
G & A	18,786
Total Costs	139,984
Equipment Rental	6,591
Profit	27,997
Contingency	0
Price	174,571

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
	Corporate Management	11		53.46	588	941	237	1,766	353	2,119
	Corporate RESO	20		42.90	858	1,373	346	2,577	515	3,092
	Mgr. Field Operation	26		36.64	953	1,524	384	2,861	572	3,433
	Project Mgr	102		33.33	3,400	5,439	1,370	10,209	2,042	12,251
	Health & Safety Mgr.	91		30.03	2,733	4,372	1,101	8,206	1,641	9,848
	Clerk	80		12.54	1,003	1,605	404	3,013	603	3,615
	Shift Supervisor	91		17.82	1,622	2,595	654	4,870	974	5,844
	HP Foreman	91		17.16	1,562	2,498	629	4,689	938	5,627
	Decon Foreman	91		17.16	1,562	2,498	629	4,689	938	5,627
	HP Tech	397		13.86	5,502	8,804	2,217	16,524	3,305	19,829
	Decon Tech	361		13.86	5,003	8,006	2,016	15,025	3,005	18,030
	Plumber	91		17.16	1,562	2,498	629	4,689	938	5,627
	Electrician	91		17.16	1,562	2,498	629	4,689	938	5,627
		1,543			27,908	44,653	11,247	83,808	16,762	100,570
	TOTAL LABOR	1,543			27,908	44,653	11,247	83,808	16,762	100,570

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	9	800.00	7,200		1,116	8,316	1,663	9,979
Per Diem "A"								
Per Day	5	125.00	625		97	722	144	866
Per Diem "B"								
Per Day	46	75.00	3,450		535	3,985	797	4,782
Per Diem "C"								
Per Day	180	65.00	11,700		1,814	13,514	2,703	16,216
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	3	70.00	210		33	243	49	291

TOTAL TS&L			24,285		3,764	28,049	5,610	33,659
=====								

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	270	7.50	2,025	0	314	2,339	468	2,807
2	Cotton Rags	2	1.50	3	0	0	3	1	4
3	Utility Cleaner	1	25.00	25	0	4	29	6	35
4	Anti-C Gloves	120	0.85	102	0	16	118	24	141
5	Respirator Cartridges	18	6.00	108	0	17	125	25	150
6	Safety Boots	9	70.00	630	0	98	728	146	873
7	Safety Glasses	18	5.00	90	0	14	104	21	125
8	Hard Hats	9	8.50	77	0	12	88	18	106
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	13	4.50	59	0	9	68	14	81
14	Leather Palm Gloves	18	2.50	45	0	7	52	10	62
15	Misc Office Supplies	2	150.00	300	0	47	347	69	416
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	2	41.00	82	0	13	95	19	114
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	10	1.25	13	0	2	14	3	17
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	2	27.50	55	0	9	64	13	76
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	2	9.49	19	0	3	22	4	26
28	Survey Meter Repair Parts	2	250.00	500	0	78	578	116	693
29	55 Gallon Drums	7	45.00	315	0	49	364	73	437
30	Drum Liners	7	2.50	18	0	3	20	4	24
31	Plastic Bags	50	0.70	35	0	5	40	8	49
32	Maslin	2	65.00	130	0	20	150	30	180
33	Smears	4,846	0.20	969	0	150	1,119	224	1,343
34	Smear Cocktail	28	85.00	2,380	0	369	2,749	550	3,299
35	Vials	4,846	0.18	872	0	135	1,007	201	1,209
36	Oil Dry	7	4.75	33	0	5	38	8	46
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	50	1.50	75	0	12	87	17	104
39	Electrical Tape	1	45.00	45	0	7	52	10	62
40	Rope (nylon)	500	0.40	200	0	31	231	46	277
41	Spray Adhesive	5	28.50	143	0	22	165	33	198
42	Oxygen/Acetylene	1	25.00	25	0	4	29	6	35

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 300
 DETAILED COST BREAKDOWN

43 M43-20 Replacement Windows	20	30.00	600	0	93	693	139	832
44 M-44-9 Replacement Windows	20	90.00	1,800	0	279	2,079	416	2,495
45 L.P. Fuel	1	50.00	50	0	8	58	12	69
46 Batteries (D-cell)	50	2.50	125	0	19	144	29	173
47 P-10 Gas	1	500.00	500	0	78	578	116	693
TOTAL CONSUMABLES			15,807	0	2,450	18,257	3,651	21,909

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 14

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	137			137		137
2	Model 3 Survey Meter	10	1.43	200			200		200
3	Model 44-9 Probe	15	0.90	189			189		189
4	Pallet Jack	2	1.95	55			55		55
5	Drum Cart	1	0.91	13			13		13
6	Roll Around Cart	1	0.62	9			9		9
7	Skill Saw	2	0.62	17			17		17
8	Ladders	4	0.74	41			41		41
9	Typewriter	1	1.83	26			26		26
10	PC/Printer/Software	1	20.31	284			284		284
11	File Cabinet	5	0.71	50			50		50
12	Coffee Maker	2	0.62	17			17		17
13	Sawz-all	2	0.90	25			25		25
14	Demolition Saw	1	3.25	46			46		46
15	Floor Tile Machine	1	2.54	36			36		36
16	Respirators (Full)	3	0.71	30			30		30
17	Respirators (1/2 Face)	5	0.14	10			10		10
18	Negative Air Machine	2	8.13	228			228		228
19	Copy Machine	1	10.15	142			142		142
20	Air Line (1/4")	5	0.15	11			11		11
21	Air Line (3/4")	5	0.15	11			11		11
22	Air Hammer (Large)	1	1.63	23			23		23
23	Air Hammer (Small)	6	0.62	52			52		52
24	Needle Gun	2	0.82	23			23		23
25	Air Stapler	1	1.02	14			14		14
26	FAX Machine	1	10.15	142			142		142
27	Fork Lift	1	64.99	910			910		910
28	Scabbler (moose)	1	171.56	2,402			2,402		2,402
29	Scabbler (squirrel)	1	21.21	297			297		297
30	Model 43-20 Probe	10	1.53	214			214		214
31	Temporary Lighting	5	1.02	71			71		71
32	Portable Heaters	10	0.51	71			71		71
33	Model 239-17 Floor Monitor	1	11.38	159			159		159
34	Job Truck	1	32.50	455			455		455
35	Compressor	2	6.50	182			182		182
				6,591		0	6,591	0	6,591

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 300
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	5	275.00	1,375		213	1,588	318	1,906
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	2	50.00	100		16	116	23	139
5	Urinalysis	15	60.00	900		140	1,040	208	1,247
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				8,545		1,324	9,869	1,974	11,843

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 300
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 6

**FACILITY DECOMMISSIONING
BUILDING 325
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 325
DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	3,573
Direct Labor	60,815
Labor Overhead	97,304
Consumables	37,740
Material Acquisition	0
T S & L	57,345
Subcontracted items	9,280
Total Direct Costs	262,485
G & A	40,685
Total Costs	303,170
Equipment Rental	12,710
Profit	60,634
Contingency	0
Price	376,514

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 325
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		18		53.46	962	1,540	388	2,890	578	3,468
Corporate RESO		33		42.90	1,416	2,265	571	4,251	850	5,102
Mgr. Field Operation		44		36.64	1,612	2,580	650	4,842	968	5,810
Project Mgr		174		33.33	5,799	9,279	2,337	17,416	3,483	20,899
Health & Safety Mgr.		163		30.03	4,895	7,832	1,973	14,699	2,940	17,639
Clerk		152		12.54	1,906	3,050	768	5,724	1,145	6,869
Shift Supervisor		163		17.82	2,905	4,647	1,171	8,723	1,745	10,467
HP Foreman		163		17.16	2,797	4,475	1,127	8,400	1,680	10,080
Decon Foreman		163		17.16	2,797	4,475	1,127	8,400	1,680	10,080
HP Tech		1,141		13.86	15,814	25,303	6,373	47,490	9,498	56,988
Decon Tech		1,033		13.86	14,317	22,908	5,770	42,995	8,599	51,594
Plumber		163		17.16	2,797	4,475	1,127	8,400	1,680	10,080
Electrician		163		17.16	2,797	4,475	1,127	8,400	1,680	10,080
		3,573			60,815	97,304	24,509	182,628	36,526	219,154
TOTAL LABOR		3,573			60,815	97,304	24,509	182,628	36,526	219,154

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 325
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	21	800.00	16,800		2,604	19,404	3,881	23,285
Per Diem "A"								
Per Day	9	125.00	1,125		174	1,299	260	1,559
Per Diem "B"								
Per Day	85	75.00	6,375		988	7,363	1,473	8,836
Per Diem "C"								
Per Day	485	65.00	31,525		4,886	36,411	7,282	43,694
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	6	70.00	420		65	485	97	582

TOTAL TS&L			57,345		8,888	66,233	13,247	79,480
=====								

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 325
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	685	7.50	5,138	0	796	5,934	1,187	7,121
2	Cotton Rags	17	1.50	26	0	4	29	6	35
3	Utility Cleaner	4	25.00	100	0	16	116	23	139
4	Anti-C Gloves	343	0.85	292	0	45	337	67	404
5	Respirator Cartridges	30	6.00	180	0	28	208	42	249
6	Safety Boots	15	70.00	1,050	0	163	1,213	243	1,455
7	Safety Glasses	30	5.00	150	0	23	173	35	208
8	Hard Hats	15	8.50	128	0	20	147	29	177
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	19	4.50	86	0	13	99	20	119
14	Leather Palm Gloves	60	2.50	150	0	23	173	35	208
15	Misc Office Supplies	4	150.00	600	0	93	693	139	832
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	4	41.00	164	0	25	189	38	227
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	19	1.25	24	0	4	27	5	33
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	4	27.50	110	0	17	127	25	152
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	4	9.49	38	0	6	44	9	53
28	Survey Meter Repair Parts	4	250.00	1,000	0	155	1,155	231	1,386
29	55 Gallon Drums	12	45.00	540	0	84	624	125	748
30	Drum Liners	12	2.50	30	0	5	35	7	42
31	Plastic Bags	95	0.70	67	0	10	77	15	92
32	Maslin	4	65.00	260	0	40	300	60	360
33	Smears	20,302	0.20	4,060	0	629	4,690	938	5,628
34	Smear Cocktail	116	85.00	9,860	0	1,528	11,388	2,278	13,666
35	Vials	20,302	0.18	3,654	0	566	4,221	844	5,065
36	Oil Dry	12	4.75	57	0	9	66	13	79
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	50	1.50	75	0	12	87	17	104
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	50.00	50	0	8	58	12	69
42	M43-20 Replacement Windows	40	30.00	1,200	0	186	1,386	277	1,663

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 325
 DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	40	90.00	3,600	0	558	4,158	832	4,990
44 L.P. Fuel	1	100.00	100	0	16	116	23	139
45 Batteries (D-cell)	100	2.50	250	0	39	289	58	347
46 P-10 Gas	1	1,000.00	1,000	0	155	1,155	231	1,386
TOTAL CONSUMABLES			37,740	0	5,850	43,590	8,718	52,308

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 325
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 27

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	264			264		264
2	Model 3 Survey Meter	10	1.43	386			386		386
3	Model 44-9 Probe	15	0.90	365			365		365
4	Pallet Jack	2	1.95	105			105		105
5	Drum Cart	1	0.91	25			25		25
6	Roll Around Cart	1	0.62	17			17		17
7	Skill Saw	2	0.62	33			33		33
8	Ladders	4	0.74	80			80		80
9	Typewriter	1	1.83	49			49		49
10	PC/Printer/Software	1	20.31	548			548		548
11	File Cabinet	5	0.71	96			96		96
12	Coffee Maker	2	0.62	33			33		33
13	Sawz-all	2	0.90	49			49		49
14	Demolition Saw	1	3.25	88			88		88
15	Floor Tile Machine	1	2.54	69			69		69
16	Respirators (Full)	3	0.71	58			58		58
17	Respirators (1/2 Face)	5	0.14	19			19		19
18	Negative Air Machine	2	8.13	439			439		439
19	Copy Machine	1	10.15	274			274		274
20	Air Line (1/4")	5	0.15	20			20		20
21	Air Line (3/4")	5	0.15	20			20		20
22	Air Hammer (Large)	1	1.63	44			44		44
23	Air Hammer (Small)	6	0.62	100			100		100
24	Needle Gun	2	0.82	44			44		44
25	Air Stapler	1	1.02	28			28		28
26	FAX Machine	1	10.15	274			274		274
27	Fork Lift	1	64.99	1,755			1,755		1,755
28	Scabblers (moose)	1	171.56	4,632			4,632		4,632
29	Scabblers (squirrel)	1	21.21	573			573		573
30	Model 43-20 Probe	10	1.53	413			413		413
31	Temporary Lighting	5	1.02	138			138		138
32	Portable Heaters	10	0.51	138			138		138
33	Model 239-17 Floor Monitor	1	11.38	307			307		307
34	Job Truck	1	32.50	878			878		878
35	Compressor	2	6.50	351			351		351
				12,710		0	12,710	0	12,710

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 325
 DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	6	275.00	1,650		256	1,906	381	2,287
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	4	50.00	200		31	231	46	277
5	Urinalysis	21	60.00	1,260		195	1,455	291	1,746
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				9,280		1,438	10,718	2,144	12,862

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 325
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 7

**FACILITY DECOMMISSIONING
BUILDING 350
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 350
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total

Labor Hours	1,044
Direct Labor	18,801
Labor Overhead	30,081
Consumables	10,840
Material Acquisition	0
T S & L	15,800
Subcontracted items	8,545

Total Direct Costs	84,067
G & A	13,030

Total Costs	97,097
Equipment Rental	3,766
Profit	19,419
Contingency	0

Price	120,282
	=====

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 350
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		7		53.46	374	599	151	1,124	225	1,349
Corporate RESO		13		42.90	558	892	225	1,675	335	2,010
Mgr. Field Operation		18		36.64	660	1,055	266	1,981	396	2,377
Project Mgr		70		33.33	2,333	3,733	940	7,006	1,401	8,408
Health & Safety Mgr.		59		30.03	1,772	2,835	714	5,321	1,064	6,385
Clerk		48		12.54	602	963	243	1,808	362	2,169
Shift Supervisor		59		17.82	1,051	1,682	424	3,157	631	3,789
HP Foreman		59		17.16	1,012	1,620	408	3,040	608	3,648
Decon Foreman		59		17.16	1,012	1,620	408	3,040	608	3,648
HP Tech		269		13.86	3,728	5,965	1,503	11,196	2,239	13,435
Decon Tech		265		13.86	3,673	5,877	1,480	11,030	2,206	13,236
Plumber		59		17.16	1,012	1,620	408	3,040	608	3,648
Electrician		59		17.16	1,012	1,620	408	3,040	608	3,648
		1,044			18,801	30,081	7,577	56,458	11,292	67,750
TOTAL LABOR		1,044			18,801	30,081	7,577	56,458	11,292	67,750

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 350
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
Airfare:								
Per Round-trip	6	800.00	4,800		744	5,544	1,109	6,653
Per Diem "A"								
Per Day	2	125.00	250		39	289	58	347
Per Diem "B"								
Per Day	28	75.00	2,100		326	2,426	485	2,911
Per Diem "C"								
Per Day	114	65.00	7,410		1,149	8,559	1,712	10,270
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	2	70.00	140		22	162	32	194
TOTAL TS&L			15,800		2,449	18,249	3,650	21,899

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 350
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	132	7.50	990	0	153	1,143	229	1,372
2	Cotton Rags	6	1.50	9	0	1	10	2	12
3	Utility Cleaner	2	25.00	50	0	8	58	12	69
4	Anti-C Gloves	66	0.85	56	0	9	65	13	78
5	Respirator Cartridges	18	6.00	108	0	17	125	25	150
6	Safety Boots	9	70.00	630	0	98	728	146	873
7	Safety Glasses	18	5.00	90	0	14	104	21	125
8	Hard Hats	9	8.50	77	0	12	88	18	106
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	13	4.50	59	0	9	68	14	81
14	Leather Palm Gloves	18	2.50	45	0	7	52	10	62
15	Misc Office Supplies	2	150.00	300	0	47	347	69	416
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	2	41.00	82	0	13	95	19	114
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	6	1.25	8	0	1	9	2	10
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	2	27.50	55	0	9	64	13	76
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	2	9.49	19	0	3	22	4	26
28	Survey Meter Repair Parts	2	250.00	500	0	78	578	116	693
29	55 Gallon Drums	6	45.00	270	0	42	312	62	374
30	Drum Liners	6	2.50	15	0	2	17	3	21
31	Plastic Bags	30	0.70	21	0	3	24	5	29
32	Maslin	2	65.00	130	0	20	150	30	180
33	Smears	2,218	0.20	444	0	67	512	102	615
34	Smear Cocktail	13	85.00	1,105	0	171	1,276	255	1,532
35	Viols	2,218	0.18	399	0	62	461	92	553
36	Oil Dry	6	4.75	29	0	4	33	7	40
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	30	2.00	60	0	9	69	14	83
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	25.00	25	0	4	29	6	35
42	M43-20 Replacement Windows	10	30.00	300	0	47	347	69	416

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 350
DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	10	90.00	900	0	140	1,040	208	1,247
44 L.P. Fuel	1	50.00	50	0	8	58	12	69
45 Batteries (D-cell)	25	2.50	63	0	10	72	14	87
46 P-10 Gas	1	250.00	250	0	39	289	58	347
TOTAL CONSUMABLES			10,840	0	1,680	12,520	2,504	15,024

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 350
 DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 8

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	78			78		78
2	Model 3 Survey Meter	10	1.43	114			114		114
3	Model 44-9 Probe	15	0.90	108			108		108
4	Pallet Jack	2	1.95	31			31		31
5	Drum Cart	1	0.91	7			7		7
6	Roll Around Cart	1	0.62	5			5		5
7	Skill Saw	2	0.62	10			10		10
8	Ladders	4	0.74	24			24		24
9	Typewriter	1	1.83	15			15		15
10	PC/Printer/Software	1	20.31	162			162		162
11	File Cabinet	5	0.71	28			28		28
12	Coffee Maker	2	0.62	10			10		10
13	Sawz-all	2	0.90	14			14		14
14	Demolition Saw	1	3.25	26			26		26
15	Floor Tile Machine	1	2.54	20			20		20
16	Respirators (Full)	3	0.71	17			17		17
17	Respirators (1/2 Face)	5	0.14	6			6		6
18	Negative Air Machine	2	8.13	130			130		130
19	Copy Machine	1	10.15	81			81		81
20	Air Line (1/4")	5	0.15	6			6		6
21	Air Line (3/4")	5	0.15	6			6		6
22	Air Hammer (Large)	1	1.63	13			13		13
23	Air Hammer (Small)	6	0.62	30			30		30
24	Needle Gun	2	0.82	13			13		13
25	Air Stapler	1	1.02	8			8		8
26	FAX Machine	1	10.15	81			81		81
27	Fork Lift	1	64.99	520			520		520
28	Scabbler (moose)	1	171.56	1,372			1,372		1,372
29	Scabbler (squirrel)	1	21.21	170			170		170
30	Model 43-20 Probe	10	1.53	122			122		122
31	Temporary Lighting	5	1.02	41			41		41
32	Portable Heaters	10	0.51	41			41		41
33	Model 239-17 Floor Monitor	1	11.38	91			91		91
34	Job Truck	1	32.50	260			260		260
35	Compressor	2	6.50	104			104		104
				3,766		0	3,766	0	3,766

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 350
 DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	5	275.00	1,375		213	1,588	318	1,906
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	2	50.00	100		16	116	23	139
5	Urinalysis	15	60.00	900		140	1,040	208	1,247
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				8,545		1,324	9,869	1,974	11,843

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 350
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 8

*FACILITY DECOMMISSIONING
BUILDING 375
DETAILED COST BREAKDOWN*

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 375
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	1,044
Direct Labor	18,801
Labor Overhead	30,081
Consumables	10,724
Material Acquisition	0
T S & L	14,860
Subcontracted items	7,945
Total Direct Costs	82,411
G & A	12,774
Total Costs	95,184
Equipment Rental	3,295
Profit	19,037
Contingency	0
Price	117,516

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 375
DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
	Corporate Management	7		53.46	374	599	151	1,124	225	1,349
	Corporate RESO	13		42.90	558	892	225	1,675	335	2,010
	Mgr. Field Operation	18		36.64	660	1,055	266	1,981	396	2,377
	Project Mgr	70		33.33	2,333	3,733	940	7,006	1,401	8,408
	Health & Safety Mgr.	59		30.03	1,772	2,835	714	5,321	1,064	6,385
	Clerk	48		12.54	602	963	243	1,808	362	2,169
	Shift Supervisor	59		17.82	1,051	1,682	424	3,157	631	3,789
	HP Foreman	59		17.16	1,012	1,620	408	3,040	608	3,648
	Decon Foreman	59		17.16	1,012	1,620	408	3,040	608	3,648
	HP Tech	269		13.86	3,728	5,965	1,503	11,196	2,239	13,435
	Decon Tech	265		13.86	3,673	5,877	1,480	11,030	2,206	13,236
	Plumber	59		17.16	1,012	1,620	408	3,040	608	3,648
	Electrician	59		17.16	1,012	1,620	408	3,040	608	3,648
		1,044			18,801	30,081	7,577	56,458	11,292	67,750
	TOTAL LABOR	1,044			18,801	30,081	7,577	56,458	11,292	67,750

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 375
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	6	800.00	4,800		744	5,544	1,109	6,653
Per Diem "A"								
Per Day	2	125.00	250		39	289	58	347
Per Diem "B"								
Per Day	25	75.00	1,875		291	2,166	433	2,599
Per Diem "C"								
Per Day	103	65.00	6,695		1,038	7,733	1,547	9,279
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	2	70.00	140		22	162	32	194

TOTAL TS&L			14,860		2,303	17,163	3,433	20,596
=====								

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 375
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	132	7.50	990	0	153	1,143	229	1,372
2	Cotton Rags	6	1.50	9	0	1	10	2	12
3	Utility Cleaner	2	25.00	50	0	8	58	12	69
4	Anti-C Gloves	66	0.85	56	0	9	65	13	78
5	Respirator Cartridges	18	6.00	108	0	17	125	25	150
6	Safety Boots	9	70.00	630	0	98	728	146	873
7	Safety Glasses	18	5.00	90	0	14	104	21	125
8	Hard Hats	9	8.50	77	0	12	88	18	106
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	13	4.50	59	0	9	68	14	81
14	Leather Palm Gloves	9	2.50	23	0	3	26	5	31
15	Misc Office Supplies	1	150.00	150	0	23	173	35	208
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	1	41.00	41	0	6	47	9	57
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	6	1.25	8	0	1	9	2	10
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	1	27.50	28	0	4	32	6	38
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	1	9.49	9	0	1	11	2	13
28	Survey Meter Repair Parts	1	250.00	250	0	39	289	58	347
29	55 Gallon Drums	6	45.00	270	0	42	312	62	374
30	Drum Liners	6	2.50	15	0	2	17	3	21
31	Plastic Bags	30	0.70	21	0	3	24	5	29
32	Meslin	1	65.00	65	0	10	75	15	90
33	Smears	2,848	0.20	570	0	88	658	132	789
34	Smear Cocktail	16	85.00	1,360	0	211	1,571	314	1,885
35	Vials	2,848	0.18	513	0	79	592	118	711
36	Oil Dry	6	4.75	29	0	4	33	7	40
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	30	1.50	45	0	7	52	10	62
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	20.00	20	0	5	23	5	28
42	M43-20 Replacement Windows	10	30.00	300	0	47	347	69	416

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 375
 DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	10	90.00	900	0	140	1,040	208	1,247
44 L.P. Fuel	1	25.00	25	0	4	29	6	35
45 Batteries (D-cell)	25	2.50	63	0	10	72	14	87
46 P-10 Gas	1	250.00	250	0	39	289	58	347
TOTAL CONSUMABLES			10,724	0	1,662	12,386	2,477	14,863

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 375
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 7

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	68			68		68
2	Model 3 Survey Meter	10	1.43	100			100		100
3	Model 44-9 Probe	15	0.90	95			95		95
4	Pallet Jack	2	1.95	27			27		27
5	Drum Cart	1	0.91	6			6		6
6	Roll Around Cart	1	0.62	4			4		4
7	Skill Saw	2	0.62	9			9		9
8	Ladders	4	0.74	21			21		21
9	Typewriter	1	1.83	13			13		13
10	PC/Printer/Software	1	20.31	142			142		142
11	File Cabinet	5	0.71	25			25		25
12	Coffee Maker	2	0.62	9			9		9
13	Sawz-all	2	0.90	13			13		13
14	Demolition Saw	1	3.25	23			23		23
15	Floor Tile Machine	1	2.54	18			18		18
16	Respirators (Full)	3	0.71	15			15		15
17	Respirators (1/2 Face)	5	0.14	5			5		5
18	Negative Air Machine	2	8.13	114			114		114
19	Copy Machine	1	10.15	71			71		71
20	Air Line (1/4")	5	0.15	5			5		5
21	Air Line (3/4")	5	0.15	5			5		5
22	Air Hammer (Large)	1	1.63	11			11		11
23	Air Hammer (Small)	6	0.62	26			26		26
24	Needle Gun	2	0.82	11			11		11
25	Air Stapler	1	1.02	7			7		7
26	FAX Machine	1	10.15	71			71		71
27	Fork Lift	1	64.99	455			455		455
28	Scabbler (moose)	1	171.56	1,201			1,201		1,201
29	Scabbler (squirrel)	1	21.21	148			148		148
30	Model 43-20 Probe	10	1.53	107			107		107
31	Temporary Lighting	5	1.02	36			36		36
32	Portable Heaters	10	0.51	36			36		36
33	Model 239-17 Floor Monitor	1	11.38	80			80		80
34	Job Truck	1	32.50	228			228		228
35	Compressor	2	6.50	91			91		91
				3,295		0	3,295	0	3,295

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 375
 DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	3	275.00	825		128	953	191	1,143
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	1	50.00	50		8	58	12	69
5	Urinalysis	15	60.00	900		140	1,040	208	1,247
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				7,945		1,231	9,176	1,835	11,012

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 375
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 9

**FACILITY DECOMMISSIONING
BUILDING 400
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 400
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total

Labor Hours	4,952
Direct Labor	84,203
Labor Overhead	134,724
Consumables	41,216
Material Acquisition	0
T S & L	80,240
Subcontracted items	11,315

Total Direct Costs	351,698
G & A	54,513

Total Costs	406,211
Equipment Rental	17,889
Profit	81,242
Contingency	0

Price	505,341
	=====

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 400
 DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		24		53.46	1,283	2,053	517	3,853	771	4,624
Corporate RESO		46		42.90	1,973	3,157	795	5,926	1,185	7,111
Mgr. Field Operation		60		36.64	2,199	3,518	886	6,602	1,320	7,923
Project Mgr		238		33.33	7,933	12,692	3,197	23,821	4,764	28,586
Health & Safety Mgr.		227		30.03	6,817	10,907	2,747	20,471	4,094	24,565
Clerk		216		12.54	2,709	4,334	1,092	8,134	1,627	9,761
Shift Supervisor		227		17.82	4,045	6,472	1,630	12,148	2,430	14,577
HP Foreman		227		17.16	3,895	6,233	1,570	11,698	2,340	14,037
Decon Foreman		227		17.16	3,895	6,233	1,570	11,698	2,340	14,037
HP Tech		1,589		13.86	22,024	35,238	8,875	66,137	13,227	79,364
Decon Tech		1,417		13.86	19,640	31,423	7,915	58,978	11,796	70,773
Plumber		227		17.16	3,895	6,233	1,570	11,698	2,340	14,037
Electrician		227		17.16	3,895	6,233	1,570	11,698	2,340	14,037
		4,952			84,203	134,724	33,934	252,860	50,572	303,432
TOTAL LABOR		4,952			84,203	134,724	33,934	252,860	50,572	303,432

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 400
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	31	800.00	24,800		3,844	28,644	5,729	34,373
Per Diem "A"								
Per Day	10	125.00	1,250		194	1,444	289	1,733
Per Diem "B"								
Per Day	118	75.00	8,850		1,372	10,222	2,044	12,266
Per Diem "C"								
Per Day	672	65.00	43,680		6,770	50,450	10,090	60,540
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	8	70.00	560		87	647	129	776

TOTAL TS&L			80,240		12,437	92,677	18,535	111,213
=====								

Diversified Scientific Services Inc.

P.O.Box 863

July 27, 1990

Kingston, Tennessee 37763

Title:

BILLERICA, MASS

FACILITY DECOMMISSIONING BUILDING 400

DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	1,080	7.50	8,100	0	1,256	9,356	1,871	11,227
2	Cotton Rags	32	1.50	48	0	7	55	11	67
3	Utility Cleaner	7	25.00	175	0	27	202	40	243
4	Anti-C Gloves	540	0.85	459	0	71	530	106	636
5	Respirator Cartridges	30	6.00	180	0	28	208	42	249
6	Safety Boots	15	70.00	1,050	0	163	1,213	243	1,455
7	Safety Glasses	30	5.00	150	0	23	173	35	208
8	Hard Hats	15	8.50	128	0	20	147	29	177
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	25	4.50	113	0	17	130	26	156
14	Leather Palm Gloves	90	2.50	225	0	35	260	52	312
15	Misc Office Supplies	6	150.00	900	0	140	1,040	208	1,247
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	6	41.00	246	0	38	284	57	341
18	Water Cooler	2	55.00	110	0	17	127	25	152
19	Ice	27	1.25	34	0	5	39	8	47
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	6	27.50	165	0	26	191	38	229
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	6	9.49	57	0	9	66	13	79
28	Survey Meter Repair Parts	6	250.00	1,500	0	233	1,733	347	2,079
29	55 Gallon Drums	12	45.00	540	0	84	624	125	748
30	Drum Liners	12	2.50	30	0	5	35	7	42
31	Plastic Bags	135	0.70	95	0	15	109	22	131
32	Maslin	6	65.00	390	0	60	450	90	541
33	Smears	18,841	0.20	3,768	0	584	4,352	870	5,223
34	Smear Cocktail	108	85.00	9,180	0	1,423	10,603	2,121	12,723
35	Vials	18,841	0.18	3,391	0	526	3,917	783	4,700
36	Dil Dry	12	4.75	57	0	9	66	13	79
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	135	1.50	203	0	31	234	47	281
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	75.00	75	0	12	87	17	104
42	M43-20 Replacement Windows	40	30.00	1,200	0	186	1,386	277	1,663

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 400
DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	40	90.00	3,600	0	558	4,158	832	4,990
44 L.P. Fuel	1	150.00	150	0	23	173	35	208
45 Batteries (2 Cell)	100	2.50	250	0	39	289	58	347
46 P-10 Gas	1	1,000.00	1,000	0	155	1,155	231	1,386
TOTAL CONSUMABLES			41,216	0	6,388	47,604	9,521	57,125

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 400
 DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 38

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	371			371		371
2	Model 3 Survey Meter	10	1.43	543			543		543
3	Model 44-9 Probe	15	0.90	513			513		513
4	Pallet Jack	2	1.95	148			148		148
5	Drum Cart	1	0.91	35			35		35
6	Roll Around Cart	1	0.62	24			24		24
7	Skill Saw	2	0.62	47			47		47
8	Ladders	4	0.74	112			112		112
9	Typewriter	1	1.83	70			70		70
10	PC/Printer/Software	1	20.31	772			772		772
11	File Cabinet	5	0.71	135			135		135
12	Coffee Maker	2	0.62	47			47		47
13	Sawz-all	2	0.90	68			68		68
14	Demolition Saw	1	3.25	124			124		124
15	Floor Tile Machine	1	2.54	97			97		97
16	Respirators (Full)	3	0.71	81			81		81
17	Respirators (1/2 Face)	5	0.14	27			27		27
18	Negative Air Machine	2	8.13	618			618		618
19	Copy Machine	1	10.15	386			386		386
20	Air Line (1/4")	5	0.15	29			29		29
21	Air Line (3/4")	5	0.15	29			29		29
22	Air Hammer (Large)	1	1.63	62			62		62
23	Air Hammer (Small)	6	0.62	141			141		141
24	Needle Gun	2	0.82	62			62		62
25	Air Stapler	1	1.02	39			39		39
26	FAX Machine	1	10.15	386			386		386
27	Fork Lift	1	64.99	2,470			2,470		2,470
28	Scabbler (moose)	1	171.56	6,519			6,519		6,519
29	Scabbler (squirrel)	1	21.21	806			806		806
30	Model 43-20 Probe	10	1.53	581			581		581
31	Temporary Lighting	5	1.02	194			194		194
32	Portable Heaters	10	0.51	194			194		194
33	Model 239-17 Floor Monitor	1	11.38	432			432		432
34	Job Truck	1	32.50	1,235			1,235		1,235
35	Compressor	2	6.50	494			494		494
				17,889		0	17,889	0	17,889

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 400
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	10	280.00	2,800		434	3,234	647	3,881
2	Instrument Calibration	9	275.00	2,475		384	2,859	572	3,430
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	6	50.00	300		47	347	69	416
5	Urinalysis	29	60.00	1,740		270	2,010	402	2,412
6	Whole Body Counts	10	350.00	3,500		543	4,043	809	4,851
				11,315		1,754	13,069	2,614	15,683

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 400
DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 10

FACILITY DECOMMISSIONING
BUILDING 500
DETAILED COST BREAKDOWN

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 500
 DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	13,824
Direct Labor	232,788
Labor Overhead	372,461
Consumables	114,097
Material Acquisition	0
T S & L	223,035
Subcontracted items	24,185
Total Direct Costs	966,567
G & A	149,818
Total Costs	1,116,385
Equipment Rental	50,107
Profit	223,277
Contingency	0
Price	1,389,769

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 500
 DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
Corporate Management		63		53.46	3,368	5,389	1,357	10,114	2,023	12,137
Corporate RESO		119		42.90	5,105	8,168	2,057	15,331	3,066	18,397
Mgr. Field Operation		156		36.64	5,716	9,146	2,304	17,166	3,433	20,599
Project Mgr		622		33.33	20,731	33,170	8,355	62,256	12,451	74,707
Health & Safety Mgr.		611		30.03	18,348	29,357	7,394	55,100	11,020	66,120
Clerk		600		12.54	7,524	12,038	3,032	22,595	4,519	27,113
Shift Supervisor		611		17.82	10,888	17,421	4,388	32,697	6,539	39,236
HP Foreman		611		17.16	10,485	16,776	4,225	31,486	6,297	37,783
Decon Foreman		611		17.16	10,485	16,776	4,225	31,486	6,297	37,783
HP Tech		4,277		13.86	59,279	94,847	23,890	178,015	35,603	213,619
Decon Tech		4,321		13.86	59,889	95,822	24,135	179,847	35,969	215,816
Plumber		611		17.16	10,485	16,776	4,225	31,486	6,297	37,783
Electrician		611		17.16	10,485	16,776	4,225	31,486	6,297	37,783
		13,824			232,788	372,461	93,814	699,063	139,813	838,876
TOTAL LABOR		13,824			232,788	372,461	93,814	699,063	139,813	838,876

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 500
DETAILED COST BREAKDOWN

TRAVEL, SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
Airfare:								
Per Round-trip	85	800.00	68,000		10,540	78,540	15,708	94,248
Per Diem "A"								
Per Day	32	125.00	4,000		620	4,620	924	5,544
Per Diem "B"								
Per Day	319	75.00	23,925		3,708	27,633	5,527	33,160
Per Diem "C"								
Per Day	1,916	65.00	124,540		19,304	143,844	28,769	172,612
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	21	70.00	1,470		228	1,698	340	2,037
TOTAL TS&L			223,035		34,570	257,605	51,521	309,127

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37753

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 500
DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	3,000	7.50	22,500	0	3,488	25,988	5,198	31,185
2	Cotton Rags	126	1.50	189	0	29	218	44	262
3	Utility Cleaner	25	25.00	625	0	97	722	144	866
4	Anti-C Gloves	1,500	0.85	1,275	0	198	1,473	295	1,767
5	Respirator Cartridges	36	6.00	216	0	33	249	50	299
6	Safety Boots	18	70.00	1,260	0	195	1,455	291	1,746
7	Safety Glasses	36	5.00	180	0	28	208	42	249
8	Hard Hats	18	8.50	153	0	24	177	35	212
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	70	4.50	315	0	49	364	73	437
14	Leather Palm Gloves	240	2.50	600	0	93	693	139	832
15	Misc Office Supplies	15	150.00	2,250	0	349	2,599	520	3,119
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	15	41.00	615	0	95	710	142	852
18	Water Cooler	2	55.00	110	0	17	127	25	152
19	Ice	75	1.25	94	0	15	108	22	130
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	15	27.50	413	0	64	476	95	572
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	15	9.49	142	0	22	164	33	197
28	Survey Meter Repair Parts	15	250.00	3,750	0	581	4,331	866	5,198
29	55 Gallon Drums	29	45.00	1,305	0	202	1,507	301	1,809
30	Drum Liners	29	2.50	73	0	11	84	17	100
31	Plastic Bags	375	0.70	263	0	41	303	61	364
32	Maslin	15	65.00	975	0	151	1,126	225	1,351
33	Smears	70,031	0.20	14,006	0	2,171	16,177	3,235	19,413
34	Smear Cocktail	400	85.00	34,000	0	5,270	39,270	7,854	47,124
35	Vials	70,031	0.18	12,606	0	1,954	14,559	2,912	17,471
36	Oil Dry	29	4.75	138	0	21	159	32	191
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Coats	375	1.50	563	0	87	650	130	780
39	Electrical Tape	1	45.00	45	0	7	52	10	62
40	Airline Kit	1	150.00	150	0	23	173	35	208
41	Harnesses	6	15.00	90	0	14	104	21	125
42	Rope (nylon)	1,000	0.40	400	0	62	462	92	554

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 500
DETAILED COST BREAKDOWN

43 Spray Adhesive	5	28.50	143	0	22	165	33	198	
44 Oxygen/Acetylene	1	700.00	700	0	109	809	162	970	
45 M43-20 Replacement Windows	70	30.00	2,100	0	326	2,426	485	2,911	
46 M-44-9 Replacement Windows	70	90.00	6,300	0	977	7,277	1,455	8,732	
47 L.P. Fuel	1	375.00	375	0	58	433	87	520	
48 Batteries (D-cell)	150	2.50	375	0	58	433	87	520	
49 P-10 Gas	1	1,500.00	1,500	0	233	1,733	347	2,079	
TOTAL CONSUMABLES				114,097	0	17,685	131,782	26,356	158,139

Diversified Scientific Services Inc.

P.O.Box 863

July 27, 1990

Kingston, Tennessee 37763

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 500
 DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 105

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	1,025			1,025		1,025
2	Model 3 Survey Meter	10	1.43	1,502			1,502		1,502
3	Model 44-9 Probe	15	0.90	1,418			1,418		1,418
4	Pallet Jack	2	1.95	410			410		410
5	Drum Cart	1	0.91	96			96		96
6	Roll Around Cart	1	0.62	65			65		65
7	Skill Saw	2	0.62	130			130		130
8	Ladders	4	0.74	311			311		311
9	Typewriter	1	1.83	192			192		192
10	PC/Printer/Software	1	20.31	2,133			2,133		2,133
11	File Cabinet	5	0.71	373			373		373
12	Coffee Maker	2	0.62	130			130		130
13	Sawz-all	2	0.90	189			189		189
14	Demolition Saw	1	3.25	341			341		341
15	Floor Tile Machine	1	2.54	267			267		267
16	Respirators (Full)	3	0.71	224			224		224
17	Respirators (1/2 Face)	5	0.14	74			74		74
18	Negative Air Machine	2	8.13	1,707			1,707		1,707
19	Copy Machine	1	10.15	1,066			1,066		1,066
20	Air Line (1/4")	5	0.15	79			79		79
21	Air Line (3/4")	5	0.15	79			79		79
22	Air Hammer (Large)	1	1.63	171			171		171
23	Air Hammer (Small)	6	0.62	391			391		391
24	Needle Gun	2	0.82	172			172		172
25	Air Stapler	1	1.02	107			107		107
26	FAX Machine	1	10.15	1,066			1,066		1,066
27	Fork Lift	1	64.99	6,824			6,824		6,824
28	Scabbler (moose)	1	171.56	18,014			18,014		18,014
29	Scabbler (squirrel)	1	21.21	2,227			2,227		2,227
30	Model 43-20 Probe	10	1.53	1,607			1,607		1,607
31	Temporary Lighting	5	1.02	536			536		536
32	Portable Heaters	10	0.51	536			536		536
33	Model 239-17 Floor Monitor	1	11.38	1,195			1,195		1,195
34	Job Truck	1	32.50	3,413			3,413		3,413
35	Compressor	2	6.50	1,365			1,365		1,365
36	Breathing Air System	1	6.46	678			678		678
				50,107		0	50,107	0	50,107

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 500
DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	11	280.00	3,080		477	3,557	711	4,269
2	Instrument Calibration	19	275.00	5,225		810	6,035	1,207	7,242
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	15	50.00	750		116	866	173	1,040
5	Large Air Compressor	4	825.00	3,300		512	3,812	762	4,574
6	Jack Hammer	4	700.00	2,800		434	3,234	647	3,881
7	Urinalysis	78	60.00	4,680		725	5,405	1,081	6,486
8	Whole Body Counts	11	350.00	3,850		597	4,447	889	5,336
				24,185		3,749	27,934	5,587	33,520

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 500
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

APPENDIX 11

**FACILITY DECOMMISSIONING
BUILDING 600
DETAILED COST BREAKDOWN**

Diversified Scientific Services Inc.
P.O.Box 063
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 600
DETAILED COST BREAKDOWN

PROPOSAL RECAP	Total
Labor Hours	2,381
Direct Labor	43,387
Labor Overhead	69,419
Consumables	17,396
Material Acquisition	0
T S & L	31,580
Subcontracted items	8,545
Total Direct Costs	170,328
G & A	26,401
Total Costs	196,729
Equipment Rental	8,944
Profit	39,346
Contingency	0
Price	245,019

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 600
 DETAILED COST BREAKDOWN

Task	Job Classification	Hours		Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
		S/T	O/T							
	Corporate Management	13		53.46	695	1,112	280	2,087	417	2,504
	Corporate RESO	24		42.90	1,030	1,647	415	3,092	618	3,710
	Mgr. Field Operation	32		36.64	1,173	1,876	473	3,521	704	4,226
	Project Mgr	126		33.33	4,200	6,719	1,692	12,611	2,522	15,134
	Health & Safety Mgr.	115		30.03	3,453	5,526	1,392	10,371	2,074	12,445
	Clerk	104		12.54	1,304	2,087	526	3,916	783	4,700
	Shift Supervisor	115		17.82	2,049	3,279	826	6,154	1,231	7,385
	HP Foreman	493		17.16	8,460	13,536	3,409	25,405	5,081	30,486
	Decon Foreman	433		17.16	7,430	11,888	2,994	22,313	4,463	26,776
	HP Tech	378		13.86	5,239	8,383	2,111	15,733	3,147	18,880
	Decon Tech	318		13.86	4,407	7,052	1,776	13,236	2,647	15,883
	Plumber	115		17.16	1,973	3,157	795	5,926	1,185	7,111
	Electrician	115		17.16	1,973	3,157	795	5,926	1,185	7,111
		2,381			43,387	69,419	17,485	130,292	26,058	156,350
	TOTAL LABOR	2,381			43,387	69,419	17,485	130,292	26,058	156,350

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 600
DETAILED COST BREAKDOWN

TRAVEL SUBSISTANCE, AND LODGING

	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price

Airfare:								
Per Round-trip	12	800.00	9,600		1,488	11,088	2,218	13,306
Per Diem "A"								
Per Day	6	125.00	750		116	866	173	1,040
Per Diem "B"								
Per Day	61	75.00	4,575		709	5,284	1,057	6,341
Per Diem "C"								
Per Day	235	65.00	15,275		2,368	17,643	3,529	21,171
Personal Auto								
Per Mile	5,000	0.22	1,100		171	1,271	254	1,525
Car Rental								
Per Day	4	70.00	280		43	323	65	388

TOTAL TS&L			31,580		4,895	36,475	7,295	43,770
=====								

Diversified Scientific Services Inc.

P.O.Box 863

July 27, 1990

Kingston, Tennessee 37763

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 600
 DETAILED COST BREAKDOWN

CONSUMABLES		Unit							
Item No.	Description	Quantity	Cost	Amount	Overhead	G & A	Cost	Profit	Price
1	Personnel Clothing	312	7.50	2,340	0	363	2,703	541	3,243
2	Cotton Rags	8	1.50	12	0	2	14	3	17
3	Utility Cleaner	2	25.00	50	0	8	58	12	69
4	Anti-C Gloves	156	0.85	133	0	21	153	31	184
5	Respirator Cartridges	18	6.00	108	0	17	125	25	150
6	Safety Boots	9	70.00	630	0	98	728	146	873
7	Safety Glasses	18	5.00	90	0	14	104	21	125
8	Hard Hats	9	8.50	77	0	12	88	18	106
9	Safety Signs/Rope	1	50.00	50	0	8	58	12	69
10	Misc Tools	1	500.00	500	0	78	578	116	693
11	Duct Tape	25	5.50	138	0	21	159	32	191
12	Plastic	15	55.00	825	0	128	953	191	1,143
13	Urine Sample Bottles	13	4.50	59	0	9	68	14	81
14	Leather Palm Gloves	27	2.50	68	0	10	78	16	94
15	Misc Office Supplies	3	150.00	450	0	70	520	104	624
16	First Aid Kits	1	35.00	35	0	5	40	8	49
17	Gator Ade	3	41.00	123	0	19	142	28	170
18	Water Cooler	1	55.00	55	0	9	64	13	76
19	Ice	13	1.25	16	0	3	19	4	23
20	Push Brooms	2	15.00	30	0	5	35	7	42
21	Mops Heads	3	27.50	83	0	13	95	19	114
22	Mop Bucket	2	47.50	95	0	15	110	22	132
23	Mop Wringer	2	62.50	125	0	19	144	29	173
24	Misc Cleaning Supplies	1	600.00	600	0	93	693	139	832
25	Extension Cords	4	35.00	140	0	22	162	32	194
26	Fire Extinguishers	1	18.54	19	0	3	21	4	26
27	Coffee	3	9.49	28	0	4	33	7	39
28	Survey Meter Repair Parts	3	250.00	750	0	116	866	173	1,040
29	55 Gallon Drums	7	45.00	315	0	49	364	73	437
30	Drum Liners	7	2.50	18	0	3	20	4	24
31	Plastic Bags	65	0.70	46	0	7	53	11	63
32	Meslin	3	65.00	195	0	30	225	45	270
33	Smears	5,536	0.20	1,107	0	172	1,279	256	1,535
34	Smear Cocktail	32	85.00	2,720	0	422	3,142	628	3,770
35	Vials	5,536	0.18	996	0	154	1,151	230	1,381
36	Oil Dry	7	4.75	33	0	5	38	8	46
37	Lumber	1	750.00	750	0	116	866	173	1,040
38	Lab Costs	65	1.50	98	0	15	113	23	135
39	Rope (nylon)	500	0.40	200	0	31	231	46	277
40	Spray Adhesive	5	28.50	143	0	22	165	33	198
41	Oxygen/Acetylene	1	50.00	50	0	8	58	12	69
42	M43-20 Replacement Windows	20	30.00	600	0	93	693	139	832

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 600
 DETAILED COST BREAKDOWN

43 M-44-9 Replacement Windows	20	90.00	1,800	0	279	2,079	416	2,495
44 L.P. Fuel	1	75.00	75	0	12	87	17	104
45 Batteries (D-cell)	50	2.50	125	0	19	144	29	173
46 P-10 Gas	1	500.00	500	0	78	578	116	693
TOTAL CONSUMABLES			17,396	0	2,696	20,093	4,019	24,111

Diversified Scientific Services Inc.
P.O.Box 863
Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
FACILITY DECOMMISSIONING BUILDING 600
DETAILED COST BREAKDOWN

EQUIPMENT RENTAL

Days in Use: 19

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	HEPA Vacuums	2	4.88	185			185		185
2	Model 3 Survey Meter	10	1.43	272			272		272
3	Model 44-9 Probe	15	0.90	257			257		257
4	Pallet Jack	2	1.95	74			74		74
5	Drum Cart	1	0.91	17			17		17
6	Roll Around Cart	1	0.62	12			12		12
7	Skill Saw	2	0.62	24			24		24
8	Ladders	4	0.74	56			56		56
9	Typewriter	1	1.83	35			35		35
10	PC/Printer/Software	1	20.31	386			386		386
11	File Cabinet	5	0.71	67			67		67
12	Coffee Maker	2	0.62	24			24		24
13	Sawz-all	2	0.90	34			34		34
14	Demolition Saw	1	3.25	62			62		62
15	Floor Tile Machine	1	2.54	48			48		48
16	Respirators (Full)	3	0.71	40			40		40
17	Respirators (1/2 Face)	5	0.14	13			13		13
18	Negative Air Machine	2	8.13	309			309		309
19	Copy Machine	1	10.15	193			193		193
20	Air Line (1/4")	5	0.15	14			14		14
21	Air Line (3/4")	5	0.15	14			14		14
22	Air Hammer (Large)	1	1.63	31			31		31
23	Air Hammer (Small)	6	0.62	71			71		71
24	Needle Gun	2	0.82	31			31		31
25	Air Stapler	1	1.02	19			19		19
26	FAX Machine	1	10.15	193			193		193
27	Fork Lift	1	64.99	1,235			1,235		1,235
28	Scabblers (moose)	1	171.56	3,260			3,260		3,260
29	Scabblers (squirrel)	1	21.21	403			403		403
30	Model 43-20 Probe	10	1.53	291			291		291
31	Temporary Lighting	5	1.02	97			97		97
32	Portable Heaters	10	0.51	97			97		97
33	Model 239-17 Floor Monitor	1	11.38	216			216		216
34	Job Truck	1	32.50	618			618		618
35	Compressor	2	6.50	247			247		247
				8,944		0	8,944	0	8,944

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 600
 DETAILED COST BREAKDOWN

SUBCONTRACTED ITEMS

Item No.	Description	Quantity	Rate	Amount	Overhead	G & A	Total Cost	Profit	Price
1	Health Exams	9	280.00	2,520		391	2,911	582	3,493
2	Instrument Calibration	5	275.00	1,375		213	1,588	318	1,906
3	Equipment Shipment	1	500.00	500		78	578	116	693
4	Federal Express	2	50.00	100		16	116	23	139
5	Urinalysis	15	60.00	900		140	1,040	208	1,247
6	Whole Body Counts	9	350.00	3,150		488	3,638	728	4,366
				8,545		1,544	9,869	1,974	11,843

Diversified Scientific Services Inc.
 P.O.Box 863
 Kingston, Tennessee 37763

July 27, 1990

Title: BILLERICA, MASS
 FACILITY DECOMMISSIONING BUILDING 600
 DETAILED COST BREAKDOWN

Diversified Scientific Services Inc. Rate Table

Labor Grade	Salary Rate	Benefited Rate
Corporate Management	40.50	53.46
Corporate RESO	32.50	42.90
Mgr. Field Operation	27.76	36.64
Project Mgr	25.25	33.33
Health & Safety Mgr.	22.75	30.03
Clerk	9.50	12.54
Shift Supervisor	13.50	17.82
HP Foreman	13.00	17.16
Decon Foreman	13.00	17.16
HP Tech	10.50	13.86
Decon Tech	10.50	13.86
Plumber	13.00	17.16
Electrician	13.00	17.16

Fringe Benefit Rate	32.0%	
Material Overhead	0.0%	
Labor Overhead	160.0%	(Used for some calculations)
G & A	15.5%	15.5%
Profit	20.0%	0.0%
Airfare (RT)	0.0%	
Per Diem "A"	0.0%	
Per Diem "B"	0.0%	
Per Diem "C"	0.0%	
Car Rental	0.0%	

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03211
STATUS CODE: 0
FEE CATEGORY: 3A 3N
EXP. DATE: 19961130
FEE COMMENTS:
DECOM FIN ASSUR REQD: Y

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: DU PONT MERCK PHARMACEUTICAL CO.
RECEIVED DATE: 911127
CKET NO: 3032013
CONTROL NO.: 115812
LICENSE NO.: 20-28598-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED

AMOUNT: \$11
CHECK NO.: 110

3. COMMENTS

SIGNED Rebecca J. Brown
DATE 11/29/91

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED)

1. FEE CATEGORY AND AMOUNT: 3A 3N

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT FEE NOT REQUIRED
RENEWAL _____
LICENSE _____
Per 8/30/90 Memo

3. OTHER _____

NOTE

SUBMIT AS AN
AMENDMENT TO
030-32013 LIC.
20-28598-01
(DU PONT MERCK
PHARMACEUTICALS, INC.)
PER CRIC LETTER
11/22/91

SIGNED _____
DATE 12/11/91