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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD
(ASLB)

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CLOSED HEARING

In the Matter of:

LOUISIANA ENERGY SERVICES, L.P. Docket Nos.
70-3103-ML (National Enrichment Facility) ASLBP No.
04-826-01-ML

Monday, February 13th, 2006

3rd Floor Hearing Room
Nuclear Regulatory Commission
Headquarters
11545 Rockville Pike
Rockville, Maryland

The above-entitled matter came on for hearing, pursuant to notice, at 9:30 a.m.

BEFORE:

G. PAUL BOLLWERK, III Chair
PAUL B. ABRAMSON Administrative Law Judge

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SECY-02

APPEARANCES:

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AMY ROMA
KAREN VALLOCH
LIBBY PERCH
BRICE SMITH

I-N-D-E-X

I-N-D-E-X

EXHIBIT INDEX

KEY
I-Identified
A-Admitted into evidence
R-Rejected
W-Withdrawn
TUA-Taken under advisement

Official Hearing Document Exhibit #/letter Title	Disposition/ Page
LES 118 Krich letter, 11-23-05	I-3283
LES 119 Financial Assurance, Final Rule 10-23-03	I-3283
LES 120 General Requirements for Decommissioning Nuclear Facilities, Final Rule, 6-27-88	I-3283
LES 121 Excerpt of NUREG 1827, SER for NEF	I-3283
LES 122 Krich letter, 5-11-05	I-3283
LES 123 Oliver letter, 1-9-06	I-3283
LES 124 Excerpt NEF SAR Chapter 1, section 1.1	I-3283
LES 118-124	A-3283
NIRS/PC 281 LES Spreadsheet, 12-22-05	I-3340
NIRS/PC 281	A-3341
NIRS/PC 285 Internet document	I-3355
NIRS/PC 286 NEF letter, 2-11-05	I-3403
NIRS/PC 286	A-3404
NIRS/PC 285	A-3407
Staff 48 Collier Spreadsheet	I-3414
Staff 48	A-3415
NIRS/PC 287 Staff's Proposed Findings of Fact and Conclusions of Law	I-3418
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P-R-O-C-E-E-D-I-N-G-S

9:30 a.m.

CHAIR BOLLWERK: Good morning. Today this Atomic Safety and Licensing Board is here to conduct additional evidentiary hearing sessions regarding two specific issues in the Louisiana Energy Services, LP proceeding.

As we noted in our issuances of December 13th and 27th 2005, the Board will receive testimony and exhibits, and allow the cross examination of witnesses relating to certain matters at issue in this proceeding, regarding the December 2003 application of the Louisiana Energy Services, or LES, for a license under 10CFR Part 70, for authorization to posses and use source byproduct and special nuclear material, in order to enrich natural uranium to a maximum of five percent uranium 235, or U-235, by the gas centrifuge process.

LES proposes to conduct this enrichment process at a facility denominated as the National Enrichment Facility, or NEF, to be constructed near Eunice, New Mexico.

Specifically, the Board will hear evidence regarding two discreet topics. First, the potential costs of washing and recertifying empty depleted uranium hexafluoride cylinders for reuse or, alternatively, disposing of those cylinders.

And, second, the cost of capital associated with the construction of a private deconversion facility in the LES estimate for constructing such a facility.

As we noted, in our December 13th Order, scheduling of

this hearing, its genesis was a November 29th, 2005 LES motion to supplement the record, regarding these matters, with the admission of LES exhibit 118, which is a November 23rd, 2005 letter, memorializing LES' commitments to, one, an additional 60 cents per kilogram uranium, KGU, for the cost of cylinder washing, and second, an additional 40 cents per KGU, to account for the cost of capital.

Before we begin with the testimony of these matters, I would like to introduce the Board members. To my right is Dr. Paul Abramson. Dr. Abramson is both a nuclear physicist and an attorney. He is a full time member of the Panel.

My name is Paul Bollwerk, I'm an attorney, a full time panel member, and the Chairman of this Licensing Board. The third board member, Dr. Charles Kelber, who is a nuclear physicist and part time member of the Licensing Board panel, is unavailable to participate in today's evidentiary session regarding these matters.

At this point I would like to have the representatives, or counsel for the parties, identify themselves for the record. Why don't we start with the representatives for Nuclear Information and Research Service, Public Citizen, NIRS/PC, then move to counsel for Applicant, Louisiana Energy Services, and finally to the NRC Staff counsel.

Mr. Lovejoy?

MR. LOVEJOY: Thank you, Your Honor. I'm Lindsay Lovejoy, counsel for Nuclear Information and Resource Service, and Public Citizen.

MR. CURTISS: Thank you, Mr. Chairman. My name is

Jim Curtiss, counsel to LES, and with me here at the table are Tyson Smith, to my left, and Marty O'Neill to my right.

MS. CLARK: Good morning, my name is Lisa Clark, I represent the NRC Staff. And with me today is Margaret Bupp.

CHAIR BOLLWERK: All right. Before we begin with the substantive matters, before us today, there is one item that I would like to bring to the attention of those attending today's proceeding.

Because it is anticipated that the testimony regarding the two cost issues will involve confidential, proprietary business information, the evidentiary presentation regarding these matters is being closed to the public.

As was the case with evidentiary material gathered during the October 2005 proceedings, we anticipate that we will be able to obtain a party review of, and make a decision on, redacted publicly available versions of these materials, in relatively short order following this hearing.

Also I would note that today, again, we will be utilizing some technology in the hearing room that I will, that will, I hope, be essentially transparent to the parties.

Having these hearings here in the Agency's Rockville Headquarters, gives us another opportunity to test some of the technology that has been developed for the potential high level waste proceeding, namely the digital data management system, or DDMS, and may be used in the near term in other appropriate Licensing Board Panel cases.

As we noted previously the DDMS is our attempt to digitize both the video and documentary record of an evidentiary proceeding, and

make it accessible and usable to the Board and the litigants in a courtroom setting.

What we will, again, be doing with the DDMS during this proceeding, is marking the exhibits electronically, which may involve some interchange between the technicians and our law clerk, Bethany Engle.

Also, although none of the parties expressed the need to use the display technology as part of their evidentiary presentations, we do have a document camera, and other technology available if they need it, and can advise us of what they will use.

And, again, if any of the counsel are interested, we will be glad to arrange to have our DDMS project manager, Andrew Wilke, show them how the system works.

With all that being said we are ready to begin with the parties' opening statements, outlining their respective positions concerning the cost matters that are the subject matter of this evidentiary session.

As will be the case with the evidentiary presentations, the opening statements must begin with LES, followed by the NRC Staff, and then NIRS/PC. And as we begin I would ask that if it has not been done already, all cell phones in the hearing room should be turned off, and we note that that will be the rule throughout this proceeding.

Mr. Curtiss?

MR. CURTISS: Thank you, Mr. Chairman, Dr. Abramson.

As you noted in your opening remarks, this hearing is focused on two specific and rather narrow issues, both associated with the Applicant's cost estimate for the deconversion of the uranium hexafluoride

that will be generated by the National Enrichment Facility.

The first issue is whether, in view of the testimony presented in the October hearing, on the estimate cost of cylinder washing and recertification, testimony that established that based upon the Urenco business study, the estimate cost of cylinder washing and recertification was approximately 60 cents per KGU, whether this estimate is based upon testimony to be presented today by NIRS/PC, not reasonable to rely on.

What the testimony on this issue will establish today is that this 60 cent estimate is not only reasonable it is, in fact, highly conservative. Indeed, the testimony will establish that in response to a request from the NRC Staff, LES confirmed with Cameco, a company that, as does Urenco, has substantial cylinder washing experience, that our estimate is highly conservative.

In fact, in a letter that will be introduced as an exhibit, later today, Cameco informed LES that their actual cost of cylinder washing and recertification is 29 cents per KGU, less than half of the 60 cents committed to by LES previously.

You will also hear testimony that it is reasonable to assume that because cylinders are a valuable commodity they will be reused by NEF or by others.

For this reason there is absolutely no basis to dispose of these cylinders. Indeed, as Dr. Paul Harding previously testified in October, it would be ludicrous to do so.

The second issue in this proceeding is whether, for purposes of demonstrating compliance with the NRC's financial assurance

requirements, LES must assume that funds will need to be borrowed to build the deconversion facility, and if so, how to account for the so-called cost of capital.

The testimony that you will hear, from LES, on this issue will establish that for purposes of complying with the NRC's financial assurance requirements, what we submit is the central focus of the determination on this issue.

The Applicant will financially assure the cost of deconversion over the 30 year nominal operating life of the NEF. Such that the surety bond, which will be the financial instrument employed by LES, will be sufficient, at that time, should the licensee be unable, because of bankruptcy, or other reasons, to disposition tails, for the NRC to call the surety bond, place it in the required stand-by trust, and use those funds to carry out this task.

As LES stated, in its letter of November 23rd, which will be offered as an exhibit in this proceeding, and as the NRC Staff has stated, in its prefiled direct testimony, if the necessary funds are financially assured over the 30 year operating life of the NEF, there would be no need to borrow funds to build a deconversion facility.

Let me be clear about one thing here. Because in this proceeding, at various points in time, NIRS/PC has charged that LES has changed its position, the fact of the matter is that the assurance of the necessary funds, over the 30 year operating life of the NEF, is precisely the approach that LES described in its application, when it submitted it in December of 2003.

Let me also add that if, for whatever reason, the licensee goes out of business before the end of the NEF operating life, for bankruptcy, or any other reasons, a highly unlikely circumstance given the financial qualifications and need determinations that have been made regarding this proposed facility, in that circumstance there will be more than sufficient funds for the NRC to turn to DOE under the statutory provision in 3113, for the disposition of tails generated up to that point.

In short, under no circumstance will the federal government be left holding the bag for the cost of dispositioning the tails, which I submit is the fundamental gravamen of the financial assurance finding that is required to be made.

And finally, and most importantly for the issue in this proceeding, because of the approach outlined in the application, and restated in the testimony filed in this proceeding, and reflected in the November 23rd letter, which will be offered as an exhibit, no borrowing will be required for the deconversion facility in order to demonstrate that LES satisfies the NRC's financial assurance requirements. Thank you.

CHAIR BOLLWERK: All right. NRC Staff?

MS. CLARK: Thank you. Good morning, everyone. The focus of this hearing, on these particular issues, is ultimately to determine whether there will be sufficient financial assurance to disposition the tails.

The regulations don't require that any particular strategy be used by the Applicant, and the Staff was not, in its review, attempting in any way to determine for the Applicant what strategy would be used.

Based on our reading of the application, as presented to

us, we interpreted the Applicant's strategy for disposing of tails to be as follows: Construction and operation of a private deconversion facility would occur during the operating life of the NEF, such that deconversion services would be available, to the NEF, beginning in 2016.

LES would be charged for those deconversion services by the private deconversion facility. It is true that LES could, alternatively, dispose of these tails by transferring them to the Department of Energy.

We have received a cost estimate, from the Department of Energy, to account for these services. And the Staff is currently in the process of reviewing that estimate to determine whether it accounts for all necessary elements, and is sufficiently documented.

JUDGE ABRAMSON: Counsel, when does the Staff expect to complete that review and let us know?

MS. CLARK: It is, in part, dependent on when we get the answers to outstanding questions.

JUDGE ABRAMSON: This is the first we, and as far as I can recall, the first we were apprised of the possibility that the Staff hadn't endorsed the DOE numbers, or wasn't confident that they covered everything.

MS. CLARK: No, we have been on an ongoing review process. And we have been, actually, requesting additional information with regard to the DOE cost estimate.

JUDGE ABRAMSON: We would appreciate it if you could notify us, as promptly as is practicable, when you will finish that, and give us written confirmation.

MS. CLARK: I will do that. Now, in the course of this proceeding LES has provided what they've called a line item cost of what debt service would be, if it is incurred, for the building and operation of the private deconversion facility.

The Staff conducted a preliminary analysis to determine whether that 40 cent figure was appropriate. In order to do this the Staff developed a spreadsheet. The purpose of the spreadsheet was simply to project the cash flow to determine whether there would be sufficient revenues to cover the cost of capital.

In doing so the Staff identified a couple of outstanding issues regarding the manner in which LES applied the underlying assumptions with regard to that cost figure. These related to the interest rate which was, nominally, 10 percent but transferred to a number of 6 percent for after tax purposes, and also a failure to escalate construction costs.

However, it is important to note that the Staff did not undertake an analysis of the underlying assumptions provided by LES for that cost number. The spreadsheet was merely a means of taking the assumptions that we got from LES and applying them in order to calculate the cash flow.

And, most importantly, the Staff has not performed any independent analysis to determine the proper cost of capital, or the underlying assumptions that must be made in order to asses the cost of capital. Thank you.

CHAIR BOLLWERK: All right. Mr. Lovejoy?

MR. LOVEJOY: Thank you, Your Honor. We are back because some of the issues that LES had an obligation to deal with were not properly addressed in the previous hearings, and actually the fact is they have not been dealt with correctly even now.

I'm going to refer, if I may, to the cost of capital matter, first, because it seems to me that the cylinder management question follows from that.

Clearly the cost of capital is an important issue in determining deconversion costs. It was, at first, completely omitted from the estimate that LES submitted to Staff.

And, as you recall, in the October hearings we heard a couple of what I would call improvised explanations from LES. First LES said that there was extra money, somehow, in the cost estimate that they had presented for operations and maintenance.

There has never been any documentation of this fact. And I have not seen it pursued. So I suppose that one is dropped by the wayside. Next LES said, I think in the second day of the October hearings, that it could generate the necessary funds to pay for the cost of capital just by projecting three percent escalation in revenues.

And I guess I would characterize that theory as the one under which LES is going to fool the bank. I have never been able to fool a bank and I don't think it would work this time.

The current approach from LES is simply to stand on the deconversion cost estimate that they gave originally, which had no provision for return on investment. And the way they do that is they say that the

periodic redetermination of the cost of decommissioning will result in adjustments.

So that by the end of the operating life of the plant, in 2036, there ought to be enough cash there to build the plant and operate it. There are several problems with this theory.

First, stepping back, in addressing cost of capital LES has, essentially, changed its decommissioning strategy. That is the nature of their testimony. It simply is not the strategy that LES presented before now, or that the Staff have reviewed.

Under the Commission's plausible strategy requirement the Applicant must present a plausible strategy for decommissioning the plant and then present the cost of that strategy.

LES has, until now, presented a Memorandum of Understanding with Areva and a cost estimate prepared by Cogema in 2004. Neither one of these refers to a strategy to deconvert and dispose of depleted uranium after the end of the operating life of the NEF in 2036.

LES' theory seems to be that if the cost estimates are wrong, and they are wrong, they will get fixed down the road in the adjustment process. That theory makes a joke of the requirement that in the public proceedings they are supposed to present their plausible strategy and the cost thereof, and the Board and the Commission determine what the costs will be. They simply won't follow the rule.

LES has presented no spreadsheet, no projections, no calculations of the amount that would be required, say, in 2004 dollars to carry out deconversion beginning in 2036.

Now, there are other questions raised by their new strategy. It is not at all clear, in light of the settlement agreement between LES and the State of New Mexico, that LES can accumulate its entire depleted uranium inventory at the NEF site, during the operating life of the facility.

So under that settlement agreement LES is going to have to move a large part of that inventory off-site, to another storage location, raising additional issues of what would be the storage location, are they licensed, what would it cost to store it, what would it cost to transport it, what would it cost to bring it back?

None of this is accounted for in any of the estimates LES has presented. If we are going to be talking about the strategy which LES presented as its plausible strategy, in the October hearings, we do have an estimate of the cost of that strategy.

Dr. Makhijani has prepared it, he has presented it in a spreadsheet, taking most of the assumptions LES has made, which are otherwise contested in the October hearings, but taking those assumptions, the present value of deconversion costs per KGU is just shy of 3 dollars and 50 cents.

He will explain the spreadsheet to you, and we can get clear about any questions anyone has. Now, the other reason we were here is perhaps more focused issue of cylinder management, management of the depleted UF6 cylinders.

The change in strategy has an impact there, also. First LES has proposed the figure of 60 cents for cleaning the cylinders and

recertifying them under what we understand is the standard of ANSI N14.1.

And that is an estimate we can live with for that process which is to clean and prepare cylinders for reuse. But this doesn't end the question, it is not -- this is not the cost of cleaning cylinders so that they can be free released or of disposing of them.

It seems to me, well it seemed pretty clear, that if they are going to clean the cylinders and recycle them, as Mr. Curtiss just said, and if LES wants the Commission to say, okay that is sufficient, then LES has to present some projection of the existence of a market that will accept these recycled cylinders.

So that one can assume that they will go into that market. But there has been no showing of that. The latest strategy in which the cylinders will pile up in inventory until 2036 makes it even less likely that they can be cleaned, and recertified, and put back into the industry.

By that time there will be, perhaps, 13,000 cylinders in inventory. If LES wants to avoid any further responsibility for those cylinders it will need to prove that customers will exist to take them in 2036, and succeeding years.

But the idea that there is actually going to be a market to absorb that kind of volume of used DUF-6 cylinders is completely unsupported.

So I submit they need to establish how they can be disposed of. The cost of the disposal is not estimated anywhere in LES' presentation either. This is another failure of proof.

This is, clearly, LES' burden to demonstrate how it will

finish the job of cleaning up this facility. And it has not met this burden.

Thank you, Your Honor.

CHAIR BOLLWERK: All right, thank you. Before we begin with the testimony let me bring up one procedural point on, actually, an unrelated issue.

We received, on Friday afternoon, a motion from NIRS/PC regarding leave to make presentations and otherwise participate in the mandatory hearing that is scheduled for March.

We are not going to issue an order in terms of a schedule. But I would just note that the standard reply for, or response for motions is 10 days which would fall, I believe, on the 21st of February, if I counted correctly, which is the day after President's Day.

And that is when if the Staff or the Applicant have any responses to that motion they should file them at that point. I think if the parties don't have anything else at this point we are ready to begin with the first witness for Louisiana Energy Services.

MR. SMITH: Our first witness is Mr. Rod Krich.

WHEREUPON,

ROD KRICH

was called as a witness by counsel for LES and, having been duly sworn, assumed the witness stand, was examined and testified as follows:

MR. SMITH: Good morning.

WITNESS KRICH: Good morning.

MR. SMITH: Could you please state your name for the record?

WITNESS KRICH: Rod Krich.

MR. SMITH: And do you have, in front of you, a document entitled the Supplemental Prefiled Direct Testimony of Rod Krich, on behalf of Louisiana Energy Services, LP, Regarding Cost of Cylinder Management, and Cost of Capital Issues, dated December 29th, 2005?

WITNESS KRICH: What was the date of that?

MR. SMITH: December 29th, 2005.

WITNESS KRICH: Yes, I do.

MR. SMITH: And was this testimony prepared by you, or under your supervision?

WITNESS KRICH: Yes, it was.

MR. SMITH: Do you have any corrections to your testimony at this time?

WITNESS KRICH: No, I don't.

MR. SMITH: Is the document true and correct to the best of your knowledge and belief?

WITNESS KRICH: Yes, it is.

MR. SMITH: I would like to move that the direct testimony be admitted into the record.

CHAIR BOLLWERK: Any objections?

(No response.)

CHAIR BOLLWERK: Hearing none then the document entitled the Supplemental Prefiled Direct Testimony of Rod Krich on Behalf of LES Regarding Cost of Cylinder Management and Cost of Capital Issues should be placed into the record as if read.

(Whereupon, the direct prefiled testimony of Rod Krich was bound into the record as if having been read.)

December 29, 2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket No. 70-3103-ML
Louisiana Energy Services, L.P.	)	
	)	ASLBP No. 04-826-01-ML
(National Enrichment Facility)	)	

SUPPLEMENTAL PREFILED DIRECT TESTIMONY OF ROD KRICH ON BEHALF OF LOUISIANA ENERGY SERVICES, L.P. REGARDING COST OF CYLINDER MANAGEMENT AND COST OF CAPITAL ISSUES

I. WITNESS BACKGROUND

Q1. Please state your name, occupation, and by whom you are employed.

A1. My name is Rod M. Krich. I am Vice President of Licensing, Safety, and Nuclear Engineering for Louisiana Energy Services, L.P. ("LES"), the license applicant in this matter. I am presently "on loan" to LES from Exelon Nuclear, where I am Vice President, Licensing Projects, and lead Exelon Nuclear's licensing activities relative to future generation ventures. As an Exelon employee, I also have assisted in the Yucca Mountain Project licensing effort, and served as the lead on strategic licensing issues related to the development of a new approach to licensing advanced reactors, such as the Pebble Bed Modular Reactor.

Q2. Please describe your current responsibilities.

A2. I am responsible for leading the effort on behalf of LES to obtain a license from the U.S. Nuclear Regulatory Commission ("NRC"), and all necessary state and federal permits, to construct and operate the proposed National Enrichment Facility ("NEF"), a gas centrifuge

enrichment facility that would be located in Lea County, New Mexico and provide enrichment services principally to U.S. nuclear utilities. I also am responsible for implementing the Quality Assurance Program and ensuring that engineering products and services provided by contractors are of sufficiently high quality to be accepted by LES.

Q3. Please summarize your educational and professional qualifications.

A3. I hold a B.S. in mechanical engineering from the New Jersey Institute of Technology and an M.S. in nuclear engineering from the University of Illinois. I have over 30 years of experience in the industry, covering engineering, licensing, and regulatory matters. This experience encompasses the design, licensing, and operation of nuclear facilities. A full statement of my professional qualifications was included with LES's initial prefiled direct testimony in this proceeding, submitted on September 16, 2005. *See* "Prefiled Direct Testimony of Rod Krich, Leslie Compton, Paul Harding, and Paul Schneider on Behalf of Louisiana Energy Services, L.P. Regarding Applicant's Strategy and Cost Estimate for the Private Sector Deconversion of Depleted Uranium Hexafluoride from the Proposed National Enrichment Facility" (Sept. 16, 2005).

Q4. Are you familiar with the proposed National Enrichment Facility ("NEF") and the operations that will take place there?

A4. Yes.

Q5. What is the basis of your familiarity with the NEF?

A5. As Vice President of Licensing, Safety, and Nuclear Engineering for LES, I have the overall responsibility for licensing and engineering matters related to the NEF project. In this capacity, I oversaw preparation and submittal of the NEF license application, as well as the

engineering design of the facility processes and safety systems. As a result, I am very familiar with the NEF license application, and NRC requirements and guidance related to the contents of such an application. Further, I serve as LES's lead contact with respect to matters related to the NRC Staff's review of the NEF license application. Finally, I also am responsible for the preparation of all state and federal permit applications related to the NEF.

Q6. What is the purpose of your testimony?

A6. I am providing this testimony on behalf of LES in accordance with the Licensing Board's Memorandum and Order (Ruling on Motion to Supplement Record) of December 13, 2005 ("December 13 Order"). The Board issued that Memorandum and Order in response to LES's November 29, 2005 motion to supplement the record developed during the evidentiary hearings held from October 24-27, 2005. Specifically, LES requested the admission of proposed LES Exhibit 118, which is a November 23, 2005 letter from LES to the NRC Staff. In ruling on the motion, the Board decided to afford LES an opportunity to seek (and NIRS/PC an opportunity to contest) the admission of Exhibit 118 in the context of "an additional, albeit highly focused, evidentiary hearing session." December 13 Order, at 2 n.2. My testimony is intended to support the admission of LES Exhibit 118 and to present further the views expressed by LES in that exhibit.

Q7. Please describe LES Exhibit 118 and the issues discussed therein.

A7. LES Exhibit 118 is a November 23, 2005 letter from LES to the NRC Staff that provides clarifying information on two issues raised by NIRS/PC and addressed by the parties during the evidentiary hearings in October. Those issues pertain to the alleged need to account for (1) the potential cost of washing and recertifying empty depleted uranium hexafluoride

("DUF_6") cylinders for reuse or, alternatively, the cost of disposing of those cylinders; and (2) the "cost of capital" associated with the construction of a private deconversion facility. These issues were raised in the context of Contention NIRS/PC EC-5/TC-2, which states, in relevant part:

> LES has presented additional estimates for the costs of deconversion, transportation, and disposal of depleted uranium for purposes of the decommissioning and funding plan required by 42 U.S.C. 2243 and 10 C.F.R. 30.35, 40.36, and 70.25. *See* LES Response to RAI dated January 7, 2005. Such presentations are insufficient because they contain no factual bases or documented support for the amounts of the following particular current LES estimates, *i.e.*, $2.69/kgU for conversion, $1.14/kgU for disposal, $0.85/kgU for transportation, and a total of $5.85/kgU including contingency, and cannot be the basis for financial assurance.

NIRS/PC, in other words, claim that LES did not account for the cost of DUF_6 cylinder management and the cost of capital in the deconversion component of its cost estimate, and should do so in the form of specific "line items" for those costs.

Q8. What prompted LES to submit the November 23, 2005 letter?

A8. Subsequent to the October 2005 evidentiary hearings, the NRC made an oral request that LES submit a letter clarifying the basis for the absence of specific line items for cost of capital and the cost of cylinder management in LES's deconversion cost estimate. LES responded to that request on the docket in the November 23, 2005 letter.

Q9. Please summarize the views expressed by LES in its November 23, 2005 letter (LES Exh. 118), in responding to the Staff's request for clarification on the two issues identified above.

A9. With respect to the first issue, LES stated that because the washing and recertification of cylinders likely would occur during the operational life of the NEF, as the

cylinders are used and reused, the associated cost would be considered an operational cost. LES also stated that it is unreasonable to assume that fully serviceable cylinders would be cut up and disposed of on a routine basis, insofar as those cylinders could be continuously reused or recycled for storing and/or transporting radioactive material. In this regard, LES characterized the empty cylinders as valuable commodities, not as waste material requiring disposal. Additionally, LES did not take any credit for the reuse or resale of these cylinders to offset the cost of dispositioning the depleted uranium byproduct generated by the NEF.

With respect to the second issue, LES stated that if funding in the amount of $2.67 per kgU (*i.e.*, LES's deconversion facility cost estimate) were financially assured over the proposed facility's nominal 30-year operating period, that funding would be sufficient to cover the costs associated with the construction and operation of a private deconversion facility. That is to say, sufficient funds would be available at that time from the LES financial assurance instrument for the NRC to contract with a third party for the construction and operation of a deconversion facility. Because there would be no need to borrow funds for this purpose, there would be no debt to service (*i.e.*, cost of capital). LES further explained that sufficient funds would be available at any time to fund a backup dispositioning path, *i.e.*, disposal of the DUF_6 by DOE.

Notwithstanding these views, in the interest of addressing the Staff's concerns and resolving these two issues expeditiously, LES (1) committed to an additional $0.60 per kgU to address the cost of cylinder management, and (2) indicated a willingness to commit, if necessary, to an additional $0.40 per kgU to address the "cost of capital."

Q10. Do the views set forth in LES Exhibit 118 still reflect the views of LES relative to the issues of cylinder management costs and cost of capital?

A10. Generally speaking, yes. As I will testify shortly, after careful consideration of the cost of capital issue raised by NIRS/PC, LES has even greater assurance in the reasonableness of its position. In short, when the parties and the Board first considered the cost of capital question, they viewed it principally in terms of an alleged omission from, or missing element in, LES's cost estimate for dispositioning depleted uranium. However, when the issue is viewed within the broader context of the NRC's financial assurance requirements, and the particular facts of this case, it is clear that LES has satisfied its financial assurance obligations and that a line item for cost of capital is not necessary.

II. LES VIEWS REGARDING THE COST OF DUF_6 CYLINDER MANAGEMENT AND THE COST OF CAPITAL FOR A PRIVATE DECONVERSION FACILITY

A. Empty DUF_6 Cylinder Management Costs

Q11. NIRS/PC have argued that LES inappropriately excluded from the deconversion portion of its estimate the cost of managing empty DUF_6 cylinders. In particular, NIRS/PC have suggested that LES must provide a line item for the cost of disposing of DUF_6 cylinders as low-level radioactive waste. Do you agree with these assertions?

A11. No. As Dr. Harding and I testified during the October 2005 evidentiary hearings, empty DUF_6 cylinders would be valuable operational commodities, because such cylinders could be continuously reused or recycled for storing and/or transporting radioactive material. *See* Tr. at 1965-77. In this regard, we explained that it is not reasonable to assume that fully serviceable cylinders would be routinely cut up and disposed of as waste. *See id.* It is not LES's expectation

that cylinders will be used once, washed, and then disposed of, as such a practice would disregard a valuable commercial resource.

Q12. So you do not view the cost of cylinder washing and recertification, or the cost of cylinder disposal for that matter, to be decommissioning costs for which funding must be provided in a licensee's financial assurance instrument?

A12. That is correct. As I testified previously, it is necessary to wash a used DUF_6 cylinder typically only once every five years in conjunction with the "recertification" of that cylinder for reuse. *See* Tr. at 1966-67. If LES commences DU dispositioning activities during the operating life of the NEF, then much of the washing and recertification of cylinders would occur during that time, as those cylinders are used and reused. To the extent LES pays for the washing and recertification of those cylinders, it would do so out of operational funds. *See* Tr. at 1968-69, 2313. Accordingly, at the end of the NEF license period, many of the cylinders already will have been washed and recertified. *See id.* Any suggestion by NIRS/PC that a third party operating a deconversion facility would be required to wash and recertify, or to dispose of, 30 years worth of empty DUF_6 cylinders, is truly an unrealistic and "worst case" scenario. *See* Tr. at 2311-12. Nonetheless, even under that scenario, it is unreasonable to assume that the third party would incur substantial cylinder management-related costs, because following the removal of the any DUF_6 for deconversion, the emptied cylinders would still retain their intrinsic commercial value. It certainly is not reasonable to assume that the cylinders would invariably require disposal as low-level radioactive waste, as NIRS/PC suggest. This is directly contrary to real-world experience.

Q13. To what "real-world" experience are you referring?

A13. During the October 2005 hearings, Dr. Harding indicated that he "fundamentally disagreed" with the NIRS/PC proposition that empty DUF_6 cylinders must be cut up and disposed of as waste. Tr. at 1991. Dr. Harding, drawing from his extensive familiarity with enrichment-related operations in Europe, emphasized that empty DUF_6 cylinders are considered a commercial resource. Tr. at 1975-76. This is manifest in the fact that the Urenco business study contains a cost estimate for a cylinder washing facility. Tr. at 1973; LES Exh. 91 at 11.

Q14. So, in this regard, you would not consider the cost of disposing of an empty DUF_6 cylinder to be a known and reasonably foreseeable cost that must be included in an applicant's initial site-specific cost estimate.

A14. Yes, that is correct. In fact, NUREG-1757 provides that the initial site-specific cost estimate required for a decommissioning funding plan "should represent the licensee's *best approximation* of all direct and indirect costs of decommissioning its facilities under *routine facility conditions*." LES Exh. 82 at A-26 (emphasis added). NUREG-1757 further states that "[t]he assumption that routine facility conditions will prevail at the time of decommissioning implies that the cost estimate need not consider a worst-case decommissioning scenario." *Id.* Additionally, the decommissioning cost estimate need not include disposal of non-radioactive materials (*i.e.*, cleaned cylinders) beyond that necessary to terminate the NRC license. *Id.*

Q15. You stated above that, notwithstanding these views, LES has committed to an additional $0.60 per kgU to address the cost of cylinder management. Please describe the basis for this cost estimate.

A15. Though LES does not believe that cylinder management costs need be included in its initial site-specific cost estimate, LES, in its November 23, 2005 letter to the Staff, has

nonetheless committed to add $0.60 per kgU to its current cost for this purpose. The Staff has indicated that it considers this figure to be reasonable. Staff Proposed Findings at ¶ 5.5. As explained during the October 2005 hearings, and in LES Exhibit 118, the $0.60 per kgU estimate is based directly on cost estimates contained in the Urenco business study (as are the other components of LES's cost estimate for constructing and operating a private deconversion facility). *See* LES Exh. 91 at 11; Tr. at 1981-82. Indeed, NIRS/PC expert Arjun Makhijani derived approximately the same number (*i.e.*, $0.59 per kgU) from the cost information set forth in the business study. *See* NIRS/PC Disposal Rebuttal A.11. LES considers $0.60 per kgU to be a very conservative number with respect to the cost of cylinder washing and recertification.

Q16. Please state the basis for your conclusion that $0.60 per kgU provides a conservative estimate of the cost of cylinder washing and recertification.

A16. As I testified during the October evidentiary hearing, the $0.60 per kg U is conservative because it assumes that entire inventory of depleted uranium produced during the licensed life of the facility is contained in cylinders and that each cylinder is used only once. Tr. at 2311. This is the *worst case* scenario. Tr. at 2312. Further, in practice, the filled cylinders, in addition to being emptied by the deconverter, returned to LES, and recertified every five years, will also be moved back and forth from the cylinder storage pad for various plant evolutions, thereby necessitating the required five-year cleaning and recertification of these cylinders. *Id.* This adds an additional layer of conservatism in the $0.60 per kgU estimate.

Q17. Has LES estimated the cost for cleaning DUF_6 cylinders to a free release level?

A17. As I testified at the October evidentiary hearing, cleaning a cylinder to free release standards (*i.e.*, washing, cutting and manually grit-blasting the cylinder), and disposing of

the small amount of the resultant radioactive material (experience has shown that only the welding rings at each of the end caps of a cylinder cannot be decontaminated to free-release levels), is actually a little less expensive than cylinder washing and recertification. Tr. at 2309-10. Accordingly, the $0.60 per kgU is sufficiently conservative to bound the cost of cleaning UF_6 cylinders to meet free release standards. Tr. at 2310.

Q18. Please summarize your views concerning the issue of empty UF_6 cylinder management costs.

A18. In my opinion, such costs are not properly included in LES's initial site-specific cost estimate. These particular costs are more likely to be incurred as operational costs. Additionally, in view of the intrinsic commercial value of empty cylinders, the assumption that the cylinders will require disposal, particularly as low-level radioactive waste, is unreasonable. Also, as I mentioned earlier, if necessary, empty used cylinders can be cleaned to meet free release standards.

Nonetheless, in response to the Staff's request for clarifying information, LES has committed to add a line item of $0.60 per kgU for cylinder management to its current deconversion cost estimate. This figure is based on estimates in the Urenco business study, the same document on which LES principally relied in developing its $2.67 per kgU cost estimate. *See* LES Exh. 91 at 11. The $0.60 per kgU is conservative, and bounds the cost of washing and recertifying the cylinders or, alternatively, the cost of cleaning the cylinders to meet free release standards.

B. Cost of Capital Associated With Constructing a Private Deconversion Facility

Q19. You stated above that LES has complied with the applicable provisions of the Commission's decommissioning funding requirements, even though LES did not include a "line item" for the cost of capital in the deconversion component of its cost estimate. Is that correct?

A19. Yes.

Q20. Please state the basis for your conclusion.

A20. As Vice President of Licensing, Safety, and Nuclear Engineering for LES, I am responsible for ensuring that LES, as an NRC license applicant, complies with all pertinent NRC regulatory requirements, including the financial assurance requirements applicable to Part 70 materials licensees. In this capacity (and in other prior capacities), I have become familiar with the NRC's decommissioning financial assurance regulations. As the NRC noted in a recent rulemaking, these regulations "are designed to ensure that adequate funding will be available for timely decommissioning by licensees following shutdown of normal operations." LES Exh. 119 ("Financial Assurance for Materials Licensees: Final Rule," 68 Fed. Reg. 57327 (Oct. 3, 2003)) at 57328. In short, I conclude that by financially assuring the necessary funds during the operating life of the NEF to pay for all required DU dispositioning activities -- including the deconversion DUF_6 to DU_3O_8 -- LES has met the regulatory obligation imposed on it as an NRC license applicant. Thus, for the purpose of demonstrating compliance with the NRC's financial assurance requirements, there is no need to compute a cost of capital.

Q21. Please describe in greater detail the NRC decommissioning financial assurance requirements of which you speak.

A21. By way of background, the Commission's current framework for decommissioning financial assurance was established in 1988 as part of the decommissioning rulemaking. Although the Commission has modified and augmented its financial assurance regulations since that time, the 1988 framework remains intact. A key feature of that framework is the use of a graded approach to decommissioning funding assurance, whereby an applicant first develops an initial *approximate* cost estimate; then updates that cost estimate at regular intervals subsequent to license issuance; and, lastly, prepares a final, more detailed cost estimate immediately prior to facility decommissioning. In its 1988 rulemaking, the Commission summed up the spectrum of required "steps" or activities as follows:

> [The] [c]ombination of these steps, first establishing a general level of adequate financial responsibility for decommissioning early in life, followed by periodic adjustment, and then evaluation of specific provisions close to the time of decommissioning, will provide reasonable assurance that the Commission's objective is met, namely that *at the time of permanent end of operations*, sufficient funds are available to decommission the facility in a manner which protects public health and safety. More detailed consideration by NRC early in life beyond the certification is not considered necessary because of the steps discussed above.

LES Exh. 120 ("General Requirements for Decommissioning Nuclear Facilities: Final Rule," 53 Fed. Reg. 24108 (June 27, 1988)) at 24030-31. Although the Commission made this particular statement while discussing reactor decommissioning, the approach described by the Commission also applies to materials licensees This fact is evident from the Commission's Part 30, 40, and 70 regulations and implementing guidance.

Q22. Please describe the specific financial assurance requirements that apply to LES, as an applicant seeking NRC authorization to construct and operate a uranium enrichment facility.

A22. As an applicant seeking NRC authorization to construct and operate a uranium enrichment facility, LES is required to submit a decommissioning funding plan ("DFP"). *See* 10 C.F.R. §§ 30.35, 40.36, and 70.25. The DFP must contain: (a) a site-specific cost estimate for decommissioning; (b) a description of the means for adjusting the cost estimate and associated funding level periodically over the life of the facility; (c) a certification by the licensee that financial assurance has been provided in the amount of the cost estimate; and (d) identification of one or more financial assurance mechanisms (including supporting documentation). *See* 10 C.F.R. § 70.25(e); LES Exh. 82 (excerpts from Volume 3 of NUREG-1757, "Consolidated NMSS Decommissioning Guidance") at A-30. The purpose of the DFP is to ensure that the applicant has (1) considered the *decommissioning* activities that it may need to conduct in the future, (2) performed a reasonable and credible site-specific cost estimate for those activities, and (3) committed to the NRC to provide an acceptable financial assurance mechanism to cover the cost of those activities in the future. *See* LES Exh. 81 (NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility"); LES Exh. 82 at 4-1 to 4-2. It is LES's initial site-specific cost estimate -- and not the specific financial assurance mechanism proposed by LES -- that NIRS/PC have challenged in this proceeding.

Q23. Please describe the specific financial assurance requirements that would apply to LES once it has received a license from the NRC to construct and operate the proposed NEF.

A23. As stated above, a licensee is required to adjust its initial cost estimate and associated decommissioning funding level periodically over the life of the facility. This requirement is set forth in 10 C.F.R. § 70.25(e), which requires a licensee to update its cost estimate and decommissioning funding level at least once every three years. This is sometimes

referred to as the triennial update. The triennial update process is intended to address changes in estimated decommissioning costs as they occur, regardless of their cause or magnitude. Indeed, in making the periodic update a specific regulatory requirement, the NRC stated as follows:

> [D]ecommissioning costs [ ] may change for a variety of licensee-specific reasons (*e.g.*, due to changes in the size and scope of operations), as well as for other reasons that may be out of the licensees control (*e.g.*, inflation). The proposed 3-year cost estimate updates are intended to capture changes in estimated costs regardless of cause, and to ensure that the level of financial assurance required of each licensee is appropriate.

LES Exh. 119 at 57,332. Notably, LES will be required by license condition to provide updated cost estimates and revised funding instruments *annually* on a forward-looking basis, to reflect projections of DUF_6 production. *See* Staff Exh. 37 at 10.16.

Near the end of the facility license period, the licensee must submit a decommissioning plan ("DP"), *before* the licensee commences any decommissioning activities. Among other things, a DP must detail the specific decommissioning activities to be performed and the radiation protection procedures to be implemented by the licensee. With respect to financial assurance, a DP must include: (1) an updated, detailed cost estimate for decommissioning; (2) one or more financial assurance mechanisms (including supporting documentation); (3) a comparison of the updated cost estimate with the present funds set aside for decommissioning; and (d) a plan for assuring the availability of adequate funds for completion of decommissioning. *See* LES Exh. 81 at 10-1; LES Exh. 82 at 4-4 to 4-6.

Q24. Please describe the specific manner in which LES has complied with the DFP requirement described above.

A24. Consistent with the Staff guidance set forth in NUREG-1757, Volume 3, LES has submitted a DFP as part of its license application. That DFP includes a decommissioning cost

estimate that encompasses estimated costs for general facility decommissioning and DU dispositioning. The bases for LES's DU dispositioning cost estimate, the adequacy of which NIRS/PC have challenged in this proceeding, are set forth in detail in the prefiled testimony and proposed findings submitted by LES in connection with the October 2005 evidentiary hearings. LES has estimated the total cost of decommissioning the NEF to be approximately $942 million, in 2004 dollars. This includes: an estimated cost of $622 million to disposition DU byproduct produced over the licensed period of the NEF. *See* LES Exh. 83, at Table 10.1-14 ("Total Decommissioning Costs").

As I testified previously, LES first estimated the cost of dispositioning DU on a dollar per kilogram of uranium ("kgU") basis, accounting for the cost of each of the constituent DU dispositioning activities -- deconversion, transportation, and disposal. Using cost information obtained from third party commercial sources, LES estimated the total DU dispositioning cost to be $4.68/kgU ($4,680 per MT of uranium), in 2004 dollars. This figure includes: (1) $2.69/kgU for deconversion of DUF_6 to DU_3O_8 (of which CaF_2 disposal accounts for $0.02/kgU), (2) $0.85/kgU for transportation of DUF_6 and DU_3O_8, and (3) $1.14/kgU for near-surface disposal of DU_3O_8. Conservatively assuming that the NEF will generate 132,942 MT of DU over a nominal 30 year operational period (this is conservative insofar as LES expects to end facility production about five years earlier), the total estimated DU dispositioning cost is $622,169,000, as alluded to above.

Q25. Please describe the specific manner in which LES, as a license applicant, has complied with the applicable decommissioning financial assurance requirements.

A25. The manner in which LES has complied with the financial assurance requirements outlined above is described in detail in Section 10.2.1 of the NEF SAR (LES Exh. 83) and in Section 10.3.1.10 of the NEF SER (Staff Exh. 37). LES will utilize a surety bond financial instrument to provide reasonable assurance that adequate funds will be available to decommission the NEF and to disposition DUF_6 produced by NEF operations. In accordance with an exemption granted by the NRC, LES will provide financial assurance for DU dispositioning *during* the operating life of the NEF, *i.e.*, as the NEF operates. *See* LES Exh. 121 at 1-9 to 1-10 (NEF SER, Chapter 1). Initially, LES's financial assurance instrument will provide funding to disposition the DUF_6 generated during the first three years of NEF operation ($22.7 million, assuming generation of 4,861 MT of DU in the first three-year period). Staff Exh. 37 at 10-14. *Id.* As noted above, with respect to DU dispositioning, LES will revise its cost estimate and associated funding level annually on a prospective basis, adjusting its financial assurance instrument annually to ensure that sufficient financial assurance is provided prospectively for the DUF6 projected to be generated in the coming year. *See* Staff Exh. 37 at 10-16.

Q26. Please explain the nature and purpose of the exemption sought by LES and granted by the Staff.

A26. The exemption granted by the NRC Staff is an exemption from the financial assurance requirement in 10 C.F.R. § 70.25(e) that a licensee's DFP "contain a certification by the licensee that financial assurance for decommissioning has been provided in *the amount of the cost estimate for decommissioning*" (emphasis added). Read literally, Section 70.25(e) means that the applicant must provide financial assurance in the amount of the full decommissioning

cost estimate. In its initial December 2003 license application, however, LES proposed an incremental approach to financial assurance (as USEC has with respect to the American Centrifuge plant). Specifically, Section 10.2.1 of the SAR states:

> . . . LES will provide decommissioning funding assurance for disposition of depleted tails at a rate in proportion to the amount of accumulated tails onsite up to the maximum amount of the tails as described in Section 10.3, Tails Disposition.

See LES Exh. 83 at 10.2-1. In the spring of 2005, the NRC Staff notified LES that, as a procedural matter, LES would need to obtain an exemption from the specific provision of Section 70.25(e) (which also appears in Section 40.36(d)) identified above. Accordingly, on May 11, 2005, LES submitted an exemption request. *See* LES Exh. 122. The Staff granted the exemption, agreeing with LES that providing financial assurance on a forward-looking incremental basis satisfies the purpose of the applicable decommissioning funding requirements. LES Exh. 121 at 1-9 to 1-10. That purpose, of course, is to ensure that financial assurance is provided *before* the decommissioning liability is incurred, such that adequate funding will be available for timely decommissioning by licensees following permanent cessation of operations. To that end, the Staff has imposed a license condition that requires LES to adhere to the proposed incremental funding approach and annual prospective updates to LES's decommissioning cost estimate and funding level. Staff Exh. 37 at 10-16.

Q27. So for the reasons stated above, you conclude that there is no need for LES to account for the "cost of capital" of building a private deconversion facility, as NIRS/PC contend is necessary?

A27. Yes. It is clear that, when LES's $2.67 per kgU cost estimate is multiplied by the *total* number of kilograms of DU to be generated by the NEF during its nominal 30-year

operational period (*i.e.*, 133,942,000 kgU), and escalated in accordance with the required periodic adjustment, sufficient financial assurance will be available at the end of the facility's operating life to construct and operate a deconversion facility. If, for some reason, LES were financially unable to fulfill its responsibility to disposition NEF-generated DUF_6, sufficient funds would be available at that time from the LES financial assurance instrument to cover the cost of constructing and operating a deconversion facility to process all of the DUF_6 generated by the NEF over its operating life. There would be no need to borrow funds for that purpose, and hence there would be no debt to service (*i.e.*, cost of capital).

Q28. Based on that explanation, the financial assurance instrument would contain sufficient funds for a third party to construct and operate a deconversion facility at the end of the NEF's license period. Does your conclusion change if LES seeks to undertake DU dispositioning activities prior to the end of the license period?

A28. No. Assuming that LES is still engaged in enrichment operations, any decision to begin dispositioning DU from the facility prior to the end of the license period would be LES's prerogative as a business matter. Moreover, at that juncture, any expenses incurred by LES in deconverting DUF_6 to DU_3O_8 for disposal would be *operational* expenses paid for out of LES's operational budget -- not with funds withdrawn from LES's financial assurance instrument (*i.e.*, surety bond). This conclusion is consistent with LES's longstanding position, as set forth in Section 10.3 of the SAR, that "[t]he disposition of tails from the NEF is an element of authorized operating activities," and "involves neither decommissioning waste nor [] decommissioning activities." LES Exh. 83 at 10.3-1.

Putting aside this distinction between operational and decommissioning activities, from a financial assurance perspective, there is no NRC requirement that LES commence DU dispositioning activities before the end of the NEF's operating period. As I stated earlier, the Commission's financial assurance framework rests on the premise that, under normal conditions, a licensee will commence decommissioning at the end of its facility's operating period. Indeed, Section 70.38, which discusses timetables for site decommissioning activities, states in subsection (j)(1) that to complete decommissioning, "the licensee shall [c]ertify the disposition of all licensed material, including accumulated wastes;" and in subsection (k)(1) that a license will be terminated following a Commission determination that "[s]pecial nuclear material has been properly disposed [of]."

Q29. Do you have any other thoughts to add regarding the manner in which LES has complied with the Commission's decommissioning financial assurance requirements?

A29. I would add that LES can demonstrate compliance with the Commission's financial assurance requirements on an independent and backup basis. Specifically, LES has agreed to provide financial assurance for DU dispositioning in an amount that would be sufficient to pay DOE to disposition any DUF_6 produced by the NEF. Indeed, if LES adds another $0.60 per kgU for cylinder management costs to its current cost, LES's revised cost estimate of $5.28 per kgU would actually exceed, by a significant margin, DOE's estimated cost of $4.68 per kgU. The ability of LES to fund this alternative DU dispositioning option provides "defense-in-depth" with respect to LES's financial assurance showing.

Q30. Please summarize your conclusions regarding the "cost of capital" issue raised by NIRS/PC.

A30. In assessing LES's compliance with the Commission's decommissioning financial assurance requirements, it is not necessary to consider the "cost of capital" associated with building a private deconversion facility. By providing financial assurance in increments on an annual, forward-looking basis -- in accordance with the exemption granted by the Staff -- LES will meet the ultimate objective of the financial assurance requirements. That objective is to provide reasonable assurance that, before the permanent cessation of operations, sufficient financial assurance is available to decommission the facility in a timely manner. Of particular relevance here, sufficient funds would be available from LES's financial assurance instrument at the end of operating life to pay for the construction of a deconversion facility, without resorting to borrowed funds for that purpose.

Q31. Does this conclude your testimony?

A31. Yes.

Respectfully submitted,

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Dated at Washington, District of Columbia
this 29th day December 2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 70-3103-ML
Louisiana Energy Services, L.P.	)	ASLBP No. 04-826-01-ML
(National Enrichment Facility)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the "SUPPLEMENTAL PREFILED DIRECT TESTIMONY OF ROD KRICH ON BEHALF OF LOUISIANA ENERGY SERVICES, L.P. REGARDING COST OF CYLINDER MANAGEMENT AND COST OF CAPITAL ISSUES" in the above-captioned proceeding have been served on the following parties by overnight delivery via Federal Express for delivery on December 30, 2005 as shown below.

Administrative Judge
G. Paul Bollwerk, III, Chair
Atomic Safety and Licensing Board Panel
Mail Stop T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Administrative Judge
Paul B. Abramson
Atomic Safety and Licensing Board Panel
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James R. Curtiss
Counsel for Louisiana Energy Services, L.P.

MR. SMITH: And now do you have in front of you a document entitled the Supplemental Prefiled Rebuttal Testimony of Rod Krich on Behalf of LES Regarding Cost of Cylinder Management and Cost of Capital Issues?

WITNESS KRICH: Dated January 13th?

MR. SMITH: Yes.

WITNESS KRICH: Yes, I do.

MR. SMITH: And was that testimony prepared by you, or under your supervision?

WITNESS KRICH: Yes, it was.

MR. SMITH: And do you have any corrections to your rebuttal testimony at this time?

WITNESS KRICH: No, I don't.

MR. SMITH: Is this document true and correct to the best of your knowledge and belief?

WITNESS KRICH: It is.

MR. SMITH: I would like to move that the rebuttal testimony be admitted into the record.

CHAIR BOLLWERK: All right. Any objections?

(No response.)

CHAIR BOLLWERK: Hearing none then the Supplemental Prefiled Testimony of Rod Krich, on behalf of LES, Regarding Cost of Cylinder Management, and Cost of Capital Issues, should be put into the record as if read, is adopted and put into the record as if read.

(Whereupon, the prefiled rebuttal testimony of Rod Krich

was bound into the record as if having been read.)

January 13, 2006

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket No. 70-3103-ML
Louisiana Energy Services, L.P.	)	
	)	ASLBP No. 04-826-01-ML
(National Enrichment Facility)	)	

SUPPLEMENTAL PREFILED REBUTTAL TESTIMONY OF ROD KRICH ON BEHALF OF LOUISIANA ENERGY SERVICES, L.P. REGARDING COST OF CYLINDER MANAGEMENT AND COST OF CAPITAL ISSUES

I. WITNESS BACKGROUND

Q1. Please state you name, occupation, employer, and responsibilities relative to the licensing of Louisiana Energy Services, L.P.'s ("LES") proposed National Enrichment Facility ("NEF").

A1. I, Rod M. Krich, am Vice President of Licensing, Safety, and Nuclear Engineering for LES, the applicant in this matter. I am presently "on loan" to LES from Exelon Nuclear, where I am Vice President Licensing Projects. I am responsible for leading the effort on behalf of LES to obtain a license from the U.S. Nuclear Regulatory Commission ("NRC"), as well as other necessary state and federal permits, to construct and operate the proposed NEF. A full statement of my professional qualifications was included with LES's initial prefiled direct testimony in this proceeding, submitted on September 16, 2005. *See* "Prefiled Direct Testimony of Rod Krich and Thomas Potter on Behalf of Louisiana Energy Services, L.P. Regarding Applicant's Strategy and Cost Estimate for the Private Sector Disposal of Depleted Uranium from the Proposed National Enrichment Facility" (Sept. 16, 2005).

Q2. What is the purpose of this rebuttal testimony?

A2. The purpose of this rebuttal testimony is to respond to certain claims contained in the prefiled direct testimony of Arjun Makhijani regarding cylinder washing and the cost of capital, as submitted on behalf of Nuclear Information and Resource Service and Public Citizen ("NIRS/PC") on December 30, 2005. *See* "Prefiled Direct Testimony of Dr. Arjun Makhijani in Support of NIRS/PC Contentions EC-3/TC-1, EC-5/TC-2, and EC-6/TC-3 Concerning LES's Deconversion Strategy and Cost Estimate (Costs of Capital and Cylinder Management)" (Dec. 30, 2005) (hereinafter "Makhijani Direct Testimony"). My rebuttal testimony concerns only those portions of Dr. Makhijani's direct testimony that were not excluded by the Licensing Board in its Memorandum and Order (Ruling on In Limine Motion) of January 11, 2006. Specifically, I demonstrate that Dr. Makhijani's claims regarding cylinder washing and cost of capital do not call into question the adequacy of LES's cost estimate for private section deconversion of DUF_6.

II. LES VIEWS REGARDING THE COST OF DUF_6 CYLINDER MANAGEMENT AND THE COST OF CAPITAL FOR A PRIVATE DECONVERSION FACILITY

A. Response to Direct Testimony Regarding Empty DUF_6 Cylinder Management Costs

Q3. Have you reviewed the prefiled direct testimony as it pertains to the "cylinder washing" issue raised by NIRS/PC?

A3. Yes.

Q4. In Answer 8 of his prefiled direct testimony, Dr. Makhijani attempts to summarize prior Staff and LES testimony on cylinder washing. Does he omit any important component of that testimony?

A4. Yes. I have consistently testified, both during the October 2005 evidentiary hearings and in subsequent testimony, that empty DUF_6 cylinders would be valuable operational

commodities because such cylinders could be continuously reused or recycled for storing and/or transporting radioactive material. *See* Tr. at 1965-77. Moreover, following the removal of any DUF_6 for deconversion, the emptied and recertified cylinders would still retain their intrinsic commercial value. Nevertheless, LES does not take any credit for the reuse or resale of the cylinders to offset the cost of dispositioning any of the DU from the NEF.

Q5. In Answer 9, Dr. Makhijani notes that the cost data from the Urenco business study gives the cost of "refurbishment" of cylinders, but then claims there are two "problems" with that data. With regard to his first argument that the Urenco business study only addresses European standards, do you agree with Dr. Makhijani that there are problems with those estimates?

A5. No. Dr. Makhijani claims that the Urenco business study numbers address a washing process designed to meet European, not U.S., standards. However, Urenco washes and recertifies cylinders to meet the American National Standards Institute ("ANSI") N14.1 standard for uranium hexafluoride packaging. That same standard is also used in both the United States and Canada when washing and recertifying DUF_6 cylinders. *See* LES Exhs. 123, 124 at 1.1-6; Staff Direct at A.10.

LES has confirmed that Cameco routinely performs cylinder washing and recertification for external customers to conform with the ANSI N14.1 standard. LES Exh. 123. As the Staff noted in Answer 13 of its prefiled direct testimony, Cameco has extensive experience with such activities. *See* "NRC Staff Prefiled Testimony Concerning Information Related to Cost Estimate of Deconversion" (Dec. 30, 2005) ("Staff Direct"). Based on that experience, Cameco has advised LES that the cost of performing those activities is about $2,500 per cylinder, or $0.29 per kgU. LES Exh. 123. According to Cameco, the $2,500 per cylinder

cost quotation includes overhead and profit margin. LES Exh. 123. LES has therefore confirmed, based on actual commercial experience, that its cylinder washing estimate of $0.60 per kgU is conservative.

Q6. Do you agree with Dr. Makhijani's second argument that LES must account for the cost of disposing of the cylinders as low-level waste?

A6. No. Dr. Makhijani incorrectly claims that LES must account for the cost of disposing of the cylinders as low-level waste. Makhijani Direct at A.9. This view is not consistent with industry practice or with the NRC's financial assurance requirements. It is not LES's expectation that cylinders, after their use for temporary storage of UF_6, would be disposed of as waste, as such a practice would squander a valuable commercial resource. As discussed above, following the removal of UF_6 for deconversion, the emptied cylinders would still retain their intrinsic commercial value. Also, the fact that Cameco routinely performs cylinder washing and recertification for outside customers reflects the obvious commercial interest in reusing -- as opposed to disposing of -- used UF_6 cylinders. LES Exh. 123. As the Staff noted in Answers 7 and 9 of its prefiled testimony, once the cylinders are washed and recertified, they can be re-used or recycled by another party and hence, disposal costs are not required to be included in the decommissioning cost estimate. *See* Staff Direct at A.7, A.9.

Q7. Is there anything else in Dr. Makhijani's testimony that would cause you to question the validity of the LES cylinder washing cost estimate of $0.60?

A7. No. None of the objections that Dr. Makhijani raises in his most recent testimony are new or different from those heard during the October evidentiary hearing. Indeed, as I discussed above, it turns out that the cost of cylinder washing and recertification is actually

considerably less than the cost described in the Urenco business study. For these reasons, $0.60 per kgU is a conservative cost estimate for cylinder washing and recertification.

B. Response to Direct Testimony Regarding Cost of Capital

Q8. Have you reviewed the prefiled direct testimony as it pertains to the "cost of capital" issue raised by NIRS/PC?

A8. Yes.

Q9. Based on that review, has your conclusion changed with respect to LES's compliance with the Commission's decommissioning financial assurance requirements?

A9. No. In fact, the Staff's prefiled direct testimony on this issue actually reinforces my conclusion that, by financially assuring the necessary funds during the operating life of the NEF to pay for the deconversion of UF_6 to U_3O_8, there would be no need to include a cost of capital. The Staff's expert witnesses stated that:

> If it is assumed that the flow of funds is designed to result in the collection of a sum of money *at the end of the lifetime* of the NEF that is sufficient to finance $88 million in construction, licensing, and engineering costs to build a plant to carry out [UF_6] tails deconversion, then we believe that there would be no need to include the $0.40 [per kgU cost of capital] figure at all.

See Staff Direct at A.15 (emphasis added). For the reasons set forth in my prefiled direct testimony, this assumption is a correct one. *See* LES Direct at A.20-A.23. Dr. Makhijani, for his part, wrongly assumes that funds would need to be borrowed to pay for a deconversion facility as part of the funding assurance for the disposition of depleted uranium, a view that is necessarily based on the position that a deconversion facility *must* be built at some point during the operating life of the NEF.

Q10. Much of Dr. Makhijani's prefiled direct testimony challenges the separate notion that there is sufficient margin in LES's estimated operational and maintenance ("O&M") costs

for a private deconversion facility to account for any future cost of capital. *See* Makhijani Direct at A.2-A.3. In view of the position expressed above, and in your December 29, 2005 prefiled direct testimony, is this issue material to LES's financial assurance showing?

A10. No, it is not. While LES previously testified that there is margin in LES's estimated O&M costs (*see, e.g.*, Tr. at 2007, 2016, 2277), the issue on which Dr. Makhijani focuses is actually immaterial. As I testified above, LES does not need to calculate a cost of capital to demonstrate compliance with the NRC's decommissioning financial assurance requirements. Accordingly, whether LES's O&M cost estimate would result in sufficient excess funds to cover a future "cost of capital," or whether such an assumption comports with "elementary norms of costing," really has no bearing on the regulatory showing of concern here.

Q11. In the event that LES should decide to build a deconversion facility at some point during the operating life of the NEF, what impact would this decision have on how you would approach financial assurance for this facility?

A11. As I testified previously, any decision by LES or another commercial entity to build a deconversion facility during the operating period of the NEF is fundamentally a business matter, and should not be confused with the financial assurance showing that LES is required to make to obtain an NRC license. Indeed, there is no NRC regulatory requirement that deconversion occur before termination of the license.

Q12. What assurance exists that the necessary funds would be available to disposition the DUF_6 generated by the NEF in the event that the NEF shuts down prematurely and no private sector deconversion facility is available?

A12. To the extent there are concerns about the possibility of premature facility shutdown and its financial assurance implications, I would respond by emphasizing that there

would be sufficient funding in LES's financial assurance instrument to pay for the backup Department of Energy option to disposition any DUF_6 generated up to that point by the NEF. *See* LES Direct at A.29.

Q13. Does this conclude your testimony?

A13. Yes.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 70-3103-ML
Louisiana Energy Services, L.P.	)	ASLBP No. 04-826-01-ML
(National Enrichment Facility)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the "SUPPLEMENTAL PREFILED REBUTTAL TESTIMONY OF ROD KRICH ON BEHALF OF LOUISIANA ENERGY SERVICES, L.P. REGARDING COST OF CYLINDER MANAGEMENT AND COST OF CAPITAL ISSUES" in the above-captioned proceeding has been served on the following by e-mail service, designated by **, on January 13, 2006 as shown below. Additional service has been made by deposit in the United States mail, first class, this 13th day of January 2006.

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MR. SMITH: At this time I will identify the LES exhibits associated with Mr. Krich's testimony. First we have LES exhibit number 118, it is a letter from Rod Krich to the NRC, dated November 23rd, 2005.

LES exhibit number 119 is entitled Financial Assurance for Materials Licensees, Final Rule, it is dated October 3rd, 2003.

LES exhibit number 120 is entitled: General Requirements for Decommissioning Nuclear Facilities, Final Rule, it is dated June 27th of 1988.

LES exhibit number 121 is an excerpt of NUREG 1827, which is the SER for the NEF. LES exhibit number 122 is a letter from Rod Krich, to the NRC, dated May 11th, 2005.

LES exhibit number 123 is a letter from Andrew Oliver of Cameco Corporation, to Rod Krich of LES, dated January 9th, 2006. And, lastly, we have LES exhibit number 124, it is an excerpt from the NEF SAR chapter 1, section 1.1.

CHAIR BOLLWERK: All right. Let the record reflect that LES exhibits 118 through 124, as described by counsel, have been marked for identification.

(Whereupon, the above-referenced to documents were marked as LES Exhibit Nos. 118-124 for identification.)

MR. SMITH: We would now like to admit these into the record.

CHAIR BOLLWERK: Any objection to the admission of

any of these exhibits?

(No response.)

CHAIR BOLLWERK: Hearing none then LES exhibits 118, 119, 120, 121, 122, 123, and 124, as described by counsel, are admitted into evidence.

(The documents referred to, having been previously marked for identification as LES exhibit Nos. 118-124 were admitted into evidence.)

MR. SMITH: And we have nothing more for Mr. Krich at this time, and he is ready for cross examination.

CHAIR BOLLWERK: All right. Does the Staff have any questions for this witness?

MS. CLARK: The Staff has no questions.

CHAIR BOLLWERK: Then we will turn to NIRS/PC and Mr. Lovejoy.

MR. LOVEJOY: Thank you, Your Honor.

EXAMINATION BY MR. LOVEJOY OF

ROD KRICH

MR. LOVEJOY: Good morning, Mr. Krich.

WITNESS KRICH: Good morning.

MR. LOVEJOY: Mr. Krich, let me just read you a quotation from your direct testimony, and then ask you a question about it.

In your supplemental direct, in answer A-27, you state: "It is clear that when LES' 2.67 per KGU cost estimate is multiplied by the total

number of kilograms to be generated by the NEF, during its nominal 30 year operational period, i.e., 133,942,000 KGU, and escalated in accordance with the required periodic adjustment, sufficient financial assurance will be available at the end of the facility's operating life to construct and operate a deconversion facility."

So it is now LES' position that the financial assurance is sufficient if it provides funds to deconvert the entire output of DUF-6 after the end of the operating life of the NEF, is that correct?

WITNESS KRICH: No.

MR. LOVEJOY: It is not?

WITNESS KRICH: No. Where were you reading?

MR. LOVEJOY: From A-27, pages 17 and 18 of your testimony.

WITNESS KRICH: No. Your characterization is incorrect. That has been our position from December of 2003. It is stated very clearly in the application, in chapter 10 of the SAR, and chapter 4.13 of the environmental report.

MR. LOVEJOY: So the position that I quoted is your position?

WITNESS KRICH: It is always our position, what you misstated was when that became our position.

MR. LOVEJOY: Okay. This quotation refers to periodic adjustments.

WITNESS KRICH: I'm still looking for the quotation.

MR. SMITH: Answer 27, at the bottom of page 17. I think

counsel for NIRS/PC is quoting Mr. Krich from the language at the top of page 18 of your prefiled direct.

WITNESS KRICH: I have it now.

MR. LOVEJOY: The language refers to periodic adjustments. Are these periodic adjustments going to be based on the cost of a private deconversion facility and disposal?

WITNESS KRICH: If you are familiar with the Rule and the Guidance from the NRC, which I'm not sure you are, the periodic adjustments are there to account for any inflation or changes that occur that no one, that are unforeseen and that need to be, then, accounted for in the amount that the coverage is covering.

MR. LOVEJOY: And they are, however, designed to address the cost of deconversion and transportation, and disposal here, is that right?

WITNESS KRICH: The periodic adjustment?

MR. LOVEJOY: Yes.

WITNESS KRICH: No. As I just said they are designed to cover inflation of costs, or changes to a cost in labor rates, but not to account for the base rate that was assumed in the original cost that was covered.

JUDGE ABRAMSON: Let me see if I can clarify this, Mr. Krich. If there is a change in one of those basic assumptions, change in, say, in the cost of transportation, that would or would not be accounted for in the periodic adjustment?

WITNESS KRICH: Yes, sir. If it was an unforeseen

change, for example, --

JUDGE ABRAMSON: So if you projected that the cost was going to go from 20 cents to 21 cents and, in fact, it went from 20 cents to 24 cents, that change would be accommodated?

WITNESS KRICH: It would be accommodated if it was unforeseen, something that is foreseen we would have to account for in our original base estimate. But if it is something that is --

JUDGE ABRAMSON: Well, I mean, let me make sure, we are getting a little off-track. What you foresee is what you put in your estimate, right?

WITNESS KRICH: Correct.

JUDGE ABRAMSON: So if it turns out to be different it was unforeseen?

WITNESS KRICH: Correct.

JUDGE ABRAMSON: Okay, thank you.

MR. LOVEJOY: Well, let me just make a distinction. Are you talking about adjustments in cost estimates based on deconversion and disposal being carried out by the Department of Energy?

WITNESS KRICH: I'm not sure I understand your question.

MR. LOVEJOY: Well, I'm just trying to make the distinction. You talk about periodic updates of, among other things, your deconversion costs. Now, are we talking about deconversion by a private deconversion plant?

WITNESS KRICH: No, we are talking about periodic

adjustments that are required by the Rule and the NRC Guidance that need to be made for anybody who is covering decommissioning costs, as time goes forward.

So it is not, it doesn't refer to any one specific area of decommissioning, it is a requirement that applies to any coverage, financial assurance that is applied for decommissioning.

JUDGE ABRAMSON: So for example, Mr. Krich, if in year 13 something happens in the private strategy, and causes that cost to, cost estimate, to go up and something happened in the DOE strategy that caused, in the DOE side, that caused the DOE charges to go down, the amount necessary for financial assurances would be determined by the Staff, based on what it thought was the appropriate amount necessary to fully decommission, including disposal, right?

And it would be based on what happened on all sides, on all the parameters, is that right?

WITNESS KRICH: That is correct, Judge. We would have to submit the tri-annual update, and the Staff has to agree on the changes that are made based on what has happened in the real world.

JUDGE ABRAMSON: And if at any point one strategy is less, the cost of using one strategy, say using a private strategy, is greater than the cost of using the DOE strategy, the Staff would be justified in saying that we are going to require that you use the DOE strategy?

There is no requirement for the Staff to require you to use the larger number, is that right?

WITNESS KRICH: That is exactly right. There is no

requirement that we use the more expensive strategy.

JUDGE ABRAMSON: There only is a requirement that there be reasonable assurances that the amount that is in the fund is sufficient to cover the cost?

WITNESS KRICH: That is exactly right.

JUDGE ABRAMSON: And the cost is going to be reassessed every three years, by you, submitted to the Staff, and the two of you are going to reiterate until you reach some sort of agreement on what the various strategies provide?

WITNESS KRICH: Yes, sir. And, in fact, we committed to do this on an annual basis.

MR. LOVEJOY: Mr. Krich, your testimony uses the term escalated. The testimony I quoted?

WITNESS KRICH: Yes, sir.

MR. LOVEJOY: Do you have in mind any particular rate or figure for escalation in that testimony?

WITNESS KRICH: No, as I think I just explained, that the escalated refers to the periodic adjustment and accounts for inflation, actual inflation. So it is running about three percent, I think that is the number that people use now, but whatever the actual inflation rate is, that is what the escalation would be.

MR. LOVEJOY: Have you done projections of the costs, as adjusted, that would be determined in these periodic adjustments, per LES?

WITNESS KRICH: Well, the purpose of the periodic

adjustments is to do just that, is to adjust it for actual inflation, actual changes in costs. So I'm not sure that I understand that there is any need to do any projections.

We are required, by the Rule, and by NRC Guidelines, to make those adjustments, whether we want to or not. So to make a projection doesn't really matter, because we are going to have to make those adjustments anyway.

MR. LOVEJOY: But have you made projections going forward of how the costs would be adjusted?

WITNESS KRICH: I'm not sure I can say that we have or haven't. We have certainly looked, in terms of our business case, what we do for our business case, we look at what the costs are going to be for us, going into the future. But that is not done to meet any regulatory requirements.

MR. LOVEJOY: Well, you have certainly not presented any projections in support of your testimony?

WITNESS KRICH: Well, I'm not required to.

MR. LOVEJOY: Well then you haven't?

WITNESS KRICH: No, I'm not required to. We have done projections in the business case, because we need to do that for business purposes. But as far as what I need to meet the requirements to show that I have adequate financial assurance for decommissioning, that part I have done.

MR. LOVEJOY: Well, whether you call them business or regulatory projections, if there are no expenditures made on deconversion,

during the NEF's operating life, what funds will be available at the end of the NEF's operating life to deconvert?

WITNESS KRICH: I guess I'm a little surprised at the question, I guess. The way that financial assurance works is that it is there should LES become unable to pay for the decommissioning.

Otherwise LES, as a business matter, pays for the decommissioning and the handling of the tails as an operational matter. And so the funds, as any good business would do, would put aside, or protect certain funds such that at the end of its life it could pay for the decommissioning and the disposition of the tails.

That is normal business practice, Mr. Lovejoy. And, again, the amount that we are financially assuring is only brought into play if LES, for some unknown reason, and it would be surprising that LES wouldn't be able to do this.

But if for some unknown reason they weren't able to perform the decommissioning, then those funds, the surety bond would be called, it would be put into a standby trust, and then the NRC would decide, via the decommissioning plan, where that money would be expended. That is how it works.

MR. LOVEJOY: Well, have you projected how much money either would be required at the end of the NEF's operating life, or would be available to LES?

WITNESS KRICH: No, it is not available. The money is not available. We are talking at cross purposes here. That money won't be available to LES, it is available to the standby trust fund.

MR. LOVEJOY: And what is the figure you have for that?

WITNESS KRICH: The figure I have for that is what is in chapter 10 of the safety analysis report.

MR. LOVEJOY: Well, that is in 2004 dollars, is that correct?

WITNESS KRICH: That is correct. And, as required by the Rule, we are going to have to escalate that figure, going forward, to account for actual inflation, and actual changes to costs.

MR. LOVEJOY: Well, do you have a number for 2036?

WITNESS KRICH: I'm sure in the business phase there is a number, but I don't know it offhand.

MR. LOVEJOY: Okay.

WITNESS KRICH: There is no requirement.

MR. LOVEJOY: So, is that correct that, in so far as you're testifying about cost of capital for a private deconversion plant, you're stating that sufficient funds would be available to follow that strategy at the end of the NEF operating life?

But you're not making any statement about any time during the operating life of the NEF, is that right?

WITNESS KRICH: No, that's not right.

MR. LOVEJOY: Okay.

WITNESS KRICH: Do you want me to -- I'll explain if you like.

MR. LOVEJOY: Please.

WITNESS KRICH: The amount of money that we are

going to financially assure is based a very -- based on actually cost to build the deconversion plant, to operate it, and to decommission it and includes profit to the operator.

So, that's the money that we're going to financially assure over the 30 year life of the NEF such that, at the end of the 30 year period, there will be more than enough money to pay for the construction, operation and decommissioning of a deconversion facility that will be capable of deconverting the entire 30 years worth of depleted uranium tails.

No cost of capital is needed since the amount of money that would be financially assured at that point would cover the entire amount of money that's needed, as I said, to build, operate, and decommission the deconversion facility.

So, we don't need to account for cost of capital at that point in time.

MR. LOVEJOY: You said that the financial assurance will provide for the cost to build, operate, decommission a deconversion facility and would include a profit to the operator. How much profit to the operator is included?

MR. CURTISS: Mr. Chairman, let me interject an objection here. We have now spent the last 15 minutes reviewing the periodic adjustment mechanism, which was discussed in detail in October.

Now we're going to discuss apparently another issue of the underlying cost estimate profit, apparently is the direction this is going. I know this is going to be tied up, I hope, at some point to the cost of capital issue.

But my understanding of the issues that we were addressing here didn't involve the underlying estimate, those were discussed in October, including the profit question that's now being raised.

And I thought we were focusing on the issue of what the cost of capital would be assuming the underlying estimate. And we seem to be tracking back over issues that were discussed in detail in October.

CHAIR BOLLWERK: Mr. Lovejoy?

MR. LOVEJOY: Yes, I'd like to respond. The idea that profit to the operator has no connection with cost of capital is an economic concept that I'm unfamiliar with.

JUDGE ABRAMSON: Let me just speak to this for one second. When we look at cost of capital -- and I think we should all take well Mr. Curtiss' comment, let's not repeat things we've been over before on the basics.

But, cost of capital includes cost of equity and cost of debt. Cost of equity can be characterized in terms of profit. It can be characterized in terms of -- in a number of ways -- but in terms of profit is really what does the equity inspector expect for return on his investment?

And that's the sort of profit we're talking about. So, when we think about cost of capital, we should think about what return on investment does the equity investor want, and what return on investment does the debt investor want.

And those are the numbers we should be focusing on.

MR. LOVEJOY: Do you have the question?

WITNESS KRICH: No, you'll have to repeat it.

MR. LOVEJOY: Well, you said that the assurance by the end of the operating life of the NEF would include funds to build, operate, decommission a deconversion plant and a profit for the operator. How much is the profit to the operator?

WITNESS KRICH: The estimate that we used --

CHAIR BOLLWERK: By the way, the objection was overruled, that was sort of implicit in Judge Abramson's question.

JUDGE ABRAMSON: In parts accepted and parts not.

MR. CURTISS: Well, let me just -- now that the question has been made precise, renew the objection. I think Judge Abramson is absolutely correct that if there is a profit, that the financial institutions might incorporate in their debt or equity, however that's going to be structured, fair question.

We aught to get to that. The question that's being asked of this witness at this point is, did the estimate that was provided for a deconversion facility -- two dollars and 67 cents -- by through the Urenco business study and by AREVA, did they include the profit in their estimate?

And that was addressed in the transcript of 1996 to 2000, pages 1996 to 2000. And the profit issue that I thought we were going to address in this proceeding is exactly the one Judge Abramson just mentioned, not the profit that AREVA might have insisted upon if it's going to build this deconversion facility, two different issues.

JUDGE ABRAMSON: Yes, let's let Mr. Krich answer this question. But, Mr. Krich, perhaps it's best if you can characterize your answer in terms of what return on investment you're seeing for equity and

debt when you looked at it.

That to me is an appropriate way to deal with the question of profit, not X dollars, but what assumptions were incorporated or what allowances are built into your numbers in terms of a percentage return for equity and for debt.

That would be the easiest way for me to comprehend it and perhaps for Dr. Makhijani to comprehend it because, when he was talking, he was talking about a percentage, an average percentage of equity and debt return on investment, is that right?

DR. MAKHIJANI: That's right, Your Honor. That's exactly what I was talking about.

WITNESS KRICH: The answer, I think, and we discussed this, I think in October, Judge, was that the figures that we received from Cogema was a response to an RFP, a Request for Proposal from Urenco.

And we used those numbers to estimate how much money we had to financially assure. So, those numbers already include what Cogema consider they needed to include for their return.

So, we don't have it broken out as a separate item. But it represents a third party's cost to do the deconversion. And I think that's what we said in October.

JUDGE ABRAMSON: Back to you.

MR. LOVEJOY: Well, I did not ask about Cogema. Cogema is a contractor that is going to build this thing and make a profit in the project and then leave.

I asked not about what was in the estimate that LES

subrnitted to the Staff. I asked about a word that Mr. Krich used in his testimony here this morning, profit to the operator.

And I want to know what he meant by that because I've got to start somewhere.

WITNESS KRICH: I guess I'm going to have to say that I may have misused that word. But, what I meant to imply or what I meant to say was that the estimate that we used to determine how much financial coverage we had to cover is based on a number that we got from a vendor, from a third party, from a person who is going to come in, who has the potential, who has been operating a deconversion plant in France for over 20 years.

They provided us an estimate of how much it costs to build, operate, and decommission a facility. And those are the numbers that we use in our estimate.

That clearly includes what they considered they need to get in terms of a return. And that's what it says in our application. And that's what it says in our testimony.

MR. LOVEJOY: So, when you said profit to the operator, you didn't mean profit to the operator of the deconversion plant, right? You meant profit to Cogema.

WITNESS KRICH: I meant return to whoever is building the facility and whoever is operating the facility, that's already accounted for in our estimate.

MR. LOVEJOY: Well --

WITNESS KRICH: You can shake your head -- you can

continue to shake your head, but you asked for my answer. And that was my answer.

MR. LOVEJOY: Well, you gave me an answer, and I have to follow-up. You said return to whoever builds the facility and also a return to whoever operates it. And those are different entities.

WITNESS KRICH: Not necessarily. We haven't decided that Mr. Lovejoy. And so, to say that is not exactly accurate.

MR. LOVEJOY: Okay.

WITNESS KRICH: It may be in fact the same entity.

(Pause.)

MR. LOVEJOY: I think you just said that there would be a profit in the financial assurance by the end of the operating life of the NEF, financial insurance would include profit to the builder of a deconversion plant and also a profit to the operator. And I know, because I heard that.

WITNESS KRICH: Well, I --

MR. LOVEJOY: And I want -- let me finish.

WITNESS KRICH: Let me correct you though, because I want to make sure I'm clear. If I misspoke, I want to make sure I correct it because, if you're going to keep on this line, it's based on a misunderstanding or misspeaking.

What I'm saying is that the estimate that we used to determine the amount of financial coverage that we have to provide, as required by the regulations, is based on figures that are provided by vendors who provide this service or who operate the plant.

And therefore, those figures include whatever return they

consider they need to make. And therefore, that is already included in our cost estimate for financial assurance. That's my answer.

MR. LOVEJOY: Okay, well I have to follow-up, Mr. Krich, because you said that the estimates include a profit to the ones who provide the service or operate the plant. Is Cogema offering to provide the service of deconversion?

WITNESS KRICH: I'm not sure I understand your question, Mr. Lovejoy.

MR. LOVEJOY: I see. Is Cogema proposing to operate a deconversion plant in the United States to serve NEF?

WITNESS KRICH: I don't think there's any proposal from anyone regarding the operation of the develop plant.

MR. LOVEJOY: They haven't given you an estimate, not even a non-binding estimate?

JUDGE ABRAMSON: Let's not get down that path. We understand. We've been there.

MR. LOVEJOY: We have been there, Your Honor. And I'm afraid that, you know, what was clear at one time is becoming unclear.

JUDGE ABRAMSON: Let me see if I've got -- let me try to summarize what I think we have heard. And let's see if it's right or not. I think Mr. Krich is advising us that they have relied on a number Cogema gave them based on Cogema's view of what it would cost to build and operate this facility and that, in relying on that number, they have assumed that any party which built and operated or had built and then operated, had built for it and then operated that facility, would provide this deconversion

service for this price. Is that accurate?

WITNESS KRICH: Yes, Judge, that's exactly it.

JUDGE ABRAMSON: So, I think what I'm hearing is that, although they -- initially this looked to me like it was an estimate of what it cost to build it and then broken down to a per-pound service charge.

Now I think what I'm hearing is that this number is a number they believe Cogema has provided which is a reliable number to use for the price that a third party would charge them. Is that correct?

WITNESS KRICH: That is correct. And that's what we always intended it to be.

JUDGE ABRAMSON: And your challenge has been from the get-go that this was a cost to build not that didn't incorporate cost of capital. And we understand that challenge.

So, if you want to narrow that specifically, please do. But I think I understand what Mr. Krich is saying. And we're not going to hear anything different unless you go down the path that gets you to something different.

MR. LOVEJOY: Well, the Cogema estimate -- and we can go look at it if we need to. But, it included a figure of approximately 88 million dollars to the engineer, license, and construct a deconversion plant, right?

WITNESS KRICH: No, I don't think Cogema had it in 88 million dollars. They tend to give their prices in Euros.

MR. LOVEJOY: Excuse me, you're correct. It was translated through Urenco and through the Americanization Analyses that

you all did. And it evolved into a figure of 88 million dollars to engineer, license, and construct a deconversion plant, correct?

WITNESS KRICH: We added five million on to that. So that's how we arrived at the 88 million.

MR. LOVEJOY: And the estimate which you provided to staff, which included operating and maintenance costs, decommissioning costs as well did not include a number so identified for return on investment.

WITNESS KRICH: I guess again I'll go back to the fact that, since this is a number from a vendor who is providing it to somebody else, it includes what they consider that they need their return.

JUDGE ABRAMSON: Let's remember where we are. We we're supposed to be focusing on today is what is the proper number for cost of capital, not whether they did or didn't include it in this estimate.

What is an appropriate number for the cost of capital? It can include equity and it can include debt. But let's focus on that, please. The rest of this we've been down.

WITNESS KRICH: Right.

MR. LOVEJOY: We have. And I beg Your Honor's tolerance. The difficulty I'm facing here is that, when the Board called for a hearing on cost of capital, we got testimony describing a strategy which was different from the one we'd been hearing before.

So, we must pursue that as well in the direct testimony.

MR. CURTISS: I'll object here. I think Mr. Krich has testified, and it was clear, I think, in the opening remarks, that this change strategy that we're being accused of, this notion of accumulated financial

assurance in the event that the licensee doesn't carry out its responsibility, was in the application the pages that Mr. Krich referenced.

And, if Mr. Lovejoy has a different strategy that he'd like to pursue, that's fine. But it was in the application to begin with. The broader point here is we've now spent a half an hour talking about issues that go to the underlying cost estimate, whether they involve the adjustment of this cost estimate or now the profit that's included in the underlying cost estimate, not what the banks or financial institutions might imbed in their -- in borrowed funds that might be required for this deconversion facility.

And we're going back over all of the issues, apparently, that go to the underlying cost estimate. I'll object again, perhaps only for the record.

But we're going down a path that this hearing, in my view, did not contemplate. Taking an estimate, whatever it includes -- and the view is that 267 is a starting point -- escalated over time it gives you 113 million KgUs times that 267.

That's the base estimate. Now, what sort of cost to capital, if any, is required for that base estimate? And we've yet to get to the cost of capital issue.

CHAIR BOLLWERK: Do you want to respond, Mr. Lovejoy?

MR. LOVEJOY: Well, it really is what I said a few moments ago. We've been presented with a new strategy. And so, perhaps we either have to find out what the cost of capital is to pursue that strategy or --

JUDGE ABRAMSON: Why don't you advise the Board, enlighten the Board what's new about the strategy?

MR. LOVEJOY: The strategy as described by Mr. Krich is to commence deconversion at the end of the operating life of the NEF. The strategy we talked about in October involved following up on a memorandum of understanding with Areva which would put a deconversion plant into operation, construction beginning in 2012 operating full tilt in 2016.

The cost of capital for those ventures is very different.

JUDGE ABRAMSON: If we have a number that the Applicant would like to use for the cost of deconversion, can't that number be applied at any point in the license cycle? What am I missing here?

MR. LOVEJOY: If we --

JUDGE ABRAMSON: I'm assuming that you would properly adjust periodically.

MR. LOVEJOY: Well, there would need to be the adjustments. Your Honor, if you're speaking of a number in say '04 dollars --

JUDGE ABRAMSON: We are, that was the agreement as I recall to begin with, that you were all going to talk in '04 dollars.

MR. LOVEJOY: But this has been lost, it's been lost because we have been -- I mean, it's clearly going to be more expensive to commence operation earlier as opposed to later.

And they're saying essentially they face no costs, no costs of capital because they're going to put off the whole project for 30 years. And so, we're not talking about a figure you can apply.

JUDGE ABRAMSON: I guess I didn't understand them to be saying they were putting it off. My understanding was -- and Mr. Krich perhaps you should enlighten us -- we have a number that you've provided us and the Staff that is an estimate of what it will cost to deconvert based on all this information you got from other parties.

Is there anything that tells us that this will or won't be done at some particular point that this number is better at 30 years out than it is at three years out or ten years out?

WITNESS KRICH: No, Judge, you're right, there is no difference. In fact, there's no requirement for us to start deconversion at any point in time during the life of the plant.

What we put in our application, because of the difficulty in trying to figure some interim number in terms of how much does the person who is deconverting need to charge, that's a very difficult problem.

And so, from the beginning we have always done our estimate, if you look at our application, assuming that at the end of 30 years. It's just a conservative assumption.

If you remember, during the hearing in October we all talked about this being a very conservative assumption. We assume that we operate for 30 years, produce tails for 30 years, don't do anything with the tails.

And then at the end of 30 years then we process 30 years worth of tails. And that's the basis upon which we did our overall calculation. But the answer to your question is no, that figure, the per-kilogram U figure doesn't change depending on when in time you apply.

JUDGE ABRAMSON: If a third party comes along to build a deconversion facility at year X --

WITNESS KRICH: Right.

JUDGE ABRAMSON: -- and you will have accumulated Y tons of material that needs deconverting at that point and then there'll be some projected amount that will be continued to be converted, that facility would be designed to operate at a certain capacity and run for X years, right?

WITNESS KRICH: Yes.

JUDGE ABRAMSON: And the amount of money you might need at year X would be different than the amount you would need at 30 years or 15 years, I assume, depending on how you size the facility and all those parameters, is that correct?

WITNESS KRICH: That is correct, Judge.

JUDGE ABRAMSON: So --

WITNESS KRICH: That's why we do the 30 year, because it's so hard to pinpoint a number. But we know that we're covered at 30 years.

JUDGE ABRAMSON: So let's see, Mr. Lovejoy, if we can drag this back. I think that the Board understands all the ramifications of the uncertainties here and what's being built, when it's being built, and what the cost is.

Let us please come back to the central issue for today, which is what's an appropriate number for the amount of equity returned and the amount of borrowed debt interest?

MR. LOVEJOY: Well, I have two lines I can follow. I can ask Mr. Krich that direct question. But I feel, in order to get a valid answer, we have to find out what the strategy is, because the plausible strategy is the situation that we are supposed to be costing out.

So, with the Board's permission, I'll just ask him a couple questions to pinpoint that so that we can see if we're on the same wavelength here. Mr. Krich, under the strategy that LES has for decommissioning, when would construction of a deconversion plant start?

WITNESS KRICH: I guess, Mr. Lovejoy, I'd first have to correct some statements that you've made since they don't reflect what's in our application.

We have not changed the strategy one iota since December of 2003. The application has always talked in terms of what we would do. We've looked at the what we call the 30 year scenario.

That was what I just described to Judge Abramson, which is you assume that the plant runs for 30 years, shuts down, goes bankrupt, and then the financial assurance, which goes into a trust fund, which is then decided upon by the NRC as to where that money gets spent.

At that point in time then a deconverter would have to be -- we assume they build a deconversion plant, operate it, deconvert 30 years worth of tails.

And the money that we've assured clearly covers all that cost without the need to borrow funds. If you follow the derivation of our cost estimate, you can easily see that, if you assure that amount over the 30 years, accounting for the required escalation due to inflation or other cost

charges that are required by the Rule, that at the end of 30 years you will have more than enough money to pay cash for building the plant, to pay for the operation of the facility, and then the decommissioning of the facility, which in a facility sized to decovnert the entire 30 years worth of tails, without having to borrow a red cent.

Now, that strategy has been in place since we submitted the application. The Areva MOU that you keep referring back to was entered into this. It was not submitted on the docket.

It was not put into our application. You can keep looking at me, but it's not. If you go back and check the application, that document, that Areva MOU is not referenced in our application at all.

And it was entered into this hearing in order to show that, as we said in our application and discussions with Cogema were ongoing, it was entered into this hearing to show that in fact this strategy of having a private company come in and do deconversion is in fact plausible.

And that was the sole purpose that it was entered into this hearing.

MR. LOVEJOY: So, the strategy you are addressing in speaking of financial assurance involves commencing construction of the deconversion plant at the 30 year point in say 2036, right?

WITNESS KRICH: The strategy is as described in our application, Mr. Lovejoy. And that would be that is the 30 year strategy.

MR. LOVEJOY: And the plant would, what, take four years to construct?

WITNESS KRICH: I don't know, Mr. Lovejoy. At that point

in time the technology may be such that you can construct the plant in one year. I don't know.

MR. LOVEJOY: And what would be the thru-put of this plant?

WITNESS KRICH: I don't know that either. I do know that we are -- it is based on a cost estimate for a plant that will process 7,000 metric tons a year, which is a fairly good thru-put.

But again, I'd like to remind you that what we're doing here is a plausible strategy. In other words, we're doing cost estimates based on what is a plausible strategy.

I'm not doing a decommissioning cost estimate where I'm doing detailed cost estimating for every single step in the process of decommissioning.

This is a different basis upon which we are estimating cost. And you need to look at the guidance to see what that means.

MR. LOVEJOY: Now, under your assumptions, does it take 16 years to deconvert the depleted uranium?

WITNESS KRICH: I don't know. But we haven't -- it depends on the size of the plant, the efficiency of the plant. That could change.

MR. LOVEJOY: I thought you said it was going to be a 7,000 metric ton --

WITNESS KRICH: It is based -- no. What I said Mr. Lovejoy, is that the cost estimate is based as you well know, because we discussed this in October, it's based on a 7,000 metric ton plant.

Now, there are certainly going to be efficiencies and improvements that will be realized over the 30 years that the NEF is in operation.

MR. LOVEJOY: Have you had any discussions with Cogema about whether it's -- the underlying cost estimates will be valid in 2036, 2040?

MR. CURTISS: Objection, Your Honor. Notwithstanding the good guidance of the Board ten minutes ago to get on with the cost of capital, we're still now 40 minutes into this talking about the base estimate and what Cogema provided.

JUDGE ABRAMSON: Let me see if I can --

MR. CURTISS: We haven't talked about a financial institution yet in this proceeding.

JUDGE ABRAMSON: Let me see if I understand where Mr. Lovejoy is going with this. Maybe we can speed this up a little bit. Mr. Lovejoy, is your point that cost of capital will be different if it's in year 17 than it is in year 30, and that the amount of interest incurred during construction will vary depending on how long construction goes? Is that where you're going with this?

MR. LOVEJOY: Well, those points will be true. There is also the fact that the cost does change when you are talking about doing it sooner rather than later. And --

JUDGE ABRAMSON: And do we have some reason to believe that that's relevant here when we're talking about the cost of capital and we've already been through the issues of the periodic updates and we

understand what they are to accommodate?

MR. LOVEJOY: Well, I'm not quite sure we've been fully through the periodic updates. But, perhaps --

MR. CURTISS: Let me just add, before we go on here, the parties in this proceeding jointly stipulated with this Board that the basis for the cost estimate was in 2004 dollars, A, B over a nominal 30 year operating life of the facility with the 132 million in change KgUs.

And that was a joint report that the Board asked us to submit so that we could provide a basis for comparison in 2004 dollars. Now, the numbers have been presented in 2004 dollars.

Mr. Krich has been asked to project what the cost of inflation is 30 years from now. That was the question 15 years ago. Can you project what the periodic adjustment is going to lead to?

And he said no. And now we're going back to the same question. Isn't it going to be more expensive 30 years from now? And I submit that that, with all due respect, was the basis for the Board saying could we provide a basis for comparison in 2004 or whatever year we jointly agreed?

And we agreed it was 2004. So, he won't know what the interest rate is 30 years from now. He won't know what the inflation rate is and the periodic adjustment is 30 years from now, much less five years from now.

And that's why we agreed to discuss this in 2004 dollars. And, as he's explained with the periodic adjustment accounting for whatever that inflation rate is, that allows us to look at this in 2004 dollars and get to

the cost of capital issue.

JUDGE ABRAMSON: Mr. Lovejoy?

MR. LOVEJOY: Well, looking at something in 2004 dollars is, I would say, a brave experiment. But, in the October hearings, we discovered that the effect way to look at it essentially was to do spreadsheets projecting the operating life of the facility and look at the cash flows and determine what the cost of capital would be to sustain that venture.

JUDGE ABRAMSON: Yes, and I understand. And both parties presented some spreadsheet analyses. But, let's try to confine ourselves again to what we're trying to do here today, which is to explore what's an appropriate number for the cost of capital.

And I'd like to ask you, Mr. Lovejoy, to be direct now. Let's not try to lead into it. Let's hear exactly what's on your mind.

MR. LOVEJOY: Okay. Mr. Krich, do you have a figure for the cost of capital in percentage terms to construct and run a deconversion plant?

WITNESS KRICH: What I have is an estimate for financial assurance that covers the construction, the operation and decommissioning of a deconversion plant that would be able to deconvert the entire inventory of depleted uranium produced by the NEF at the end of the life of the NEF. That's what's in my application.

JUDGE ABRAMSON: May I ask, does that specify anywhere in it the cost of either equity or debt?

WITNESS KRICH: No Judge, because it's unneeded at

that point.

JUDGE ABRAMSON: And we understood that point from the get-go. So --

MR. LOVEJOY: So his cost of capital is zero.

JUDGE ABRAMSON: Well, it's not laid out by any line item.

WITNESS KRICH: In an effort to answer the questions during the October hearing we did try to answer the question of if you needed to pay for the cost of capital, here's various ways you could calculate.

We understand very well before we did that is that there are lots of justified ways of calculating cost of capital depending on what assumptions you use. There's lots of different ways to do that.

JUDGE ABRAMSON: I don't need you to rehash what we heard and I don't need Mr. Lovejoy to rehash what we heard. What I want to know, and I think we've heard the answer now, which is clear, Mr. Lovejoy, as it was in October, that that number didn't specifically have a cost of capital.

We're here to talk about cost of capital. We've heard the same answer from them. If you'd like to pursue this, let's keep it brief, because we know what the answer is.

MR. LOVEJOY: Okay. You talk parenthetically, and you did earlier, about the DOE alternative. Have you made any projections of the cost of exercising the DOE alternative any time during the lift of this facility?

WITNESS KRICH: Well, Mr. Lovejoy, I have a letter from March of last year which gives me exactly what the DOE would charge us in 2004 dollars to disposition the tails.

So, that's the basis for my cost estimate for the DOE option. And it's not parenthetically. If you go back again to the application, section 4.13 of the environment report, it says very clearly that there are two options that are considered.

One is preferred, but the DOE option, which is the second option, is still an option that is identified for the plausible strategy.

MR. LOVEJOY: So, my question really is, have you projected -- I understand you have a 2004 dollars figure for DOE. Have you made any projections in the period between the present day and 2036 of what the cost under the DOE option --

JUDGE ABRAMSON: What does that have to do with the cost of capital, Mr. Lovejoy?

MR. LOVEJOY: Well, he's saying it's the option. And it may be -- it may require significantly more money to finance exercising the DOE option. And there may be significant --

JUDGE ABRAMSON: But that's not what's at issue right now. I'm not sure. Can you tie that to the cost of capital, please? We're talking about the cost of capital for the construction of something.

We have a DOE number that came from DOE. What's the cost of capital have to do with the DOE number?

MR. LOVEJOY: If they're seriously talking about employing that option -- and he did refer to it in his direct and rebuttal

testimony --

JUDGE ABRAMSON: No, it is on the table. The DOE option has been on the table. You've had plenty of opportunity to challenge it. We are now talking about the cost of capital.

MR. LOVEJOY: Begging Your Honor's pardon, we have been advised that we could not challenge the numbers in the DOE option. However, the DOE cost estimate does say that the numbers in that estimate should be appropriately escalated, that's --

JUDGE ABRAMSON: Yes.

MR. LOVEJOY: -- LES Exhibit 91.

JUDGE ABRAMSON: Yes.

MR. LOVEJOY: And I'm wondering if this witness has escalated those numbers to see --

JUDGE ABRAMSON: What's that got to do with the cost of capital?

MR. LOVEJOY: Well, if you're going to have to obtain funds to exercise that option, you would want to know what it would cost to move forward.

JUDGE ABRAMSON: You --

MR. LOVEJOY: LES.

JUDGE ABRAMSON: I assume -- and I don't want to be argumentative with you here. But I'm trying to understand. Let us posit that the decommissioning fund were to be funded assuming the DOE option.

We have a number from DOE. We'd use that number for the first -- what's your bond going to be? A three year bond?

WITNESS KRICH: The Surety Bond?

JUDGE ABRAMSON: Yes.

WITNESS KRICH: Three years. We're going to put up for three years.

JUDGE ABRAMSON: And then you're going to roll -- adjust it on an annual basis, rolling annual basis.

WITNESS KRICH: Yes.

JUDGE ABRAMSON: So, the first bond will be to cover the cost of decommissioning for three years, whatever it needs to be disposed of that's created during that three year period, or maybe it's from year three to six.

Let's talk about when there's some actual generation of byproduct. What in the DOE number is related to the cost of capital? We understand the periodic adjustments.

And that's not at issue here. The question is, what's at issue with relationship to the cost of capital? What's cost of capital got to do with an estimate of what DOE's going to charge?

MR. LOVEJOY: Bear with me for just a second.

JUDGE ABRAMSON: Sure.

(Pause.)

MR. LOVEJOY: Okay. Well, maybe I was mistaken by some of the theories that I heard before being abandoned. And I better go back and check on those points.

We heard some testimony in October, Mr. Krich, about how the cost of capital could be covered by provisions in the cost estimate in

2004 dollars that you provided.

And you say -- and this is a quote from your supplemental direct testimony in this proceeding, this hearing. You say in answer 24, page 15, that the bases for LES' DU disposition and cost estimate -- the adequacy of which NIRS/PC have challenged in this proceeding -- are set forth in detail in the prefiled testimony and proposed findings submitted by LES in connection with the October 2005 evidentiary hearings. Do you see that testimony?

WITNESS KRICH: You say answer 24?

MR. LOVEJOY: Yes, page 15.

WITNESS KRICH: Page 15?

MR. LOVEJOY: Yes.

CHAIR BOLLWERK: I think he's referring to the top of the page, four lines down.

WITNESS KRICH: Yes, I've got it. Thank you, Judge.

MR. LOVEJOY: Now, do you have that?

WITNESS KRICH: I do.

MR. LOVEJOY: Is LES contending now that the funds necessary to pay a return on investment would come from a supposed excess allowance for operations and maintenance costs in the existing cost estimate?

WITNESS KRICH: I think we're saying the same thing that we said in October, Mr. Lovejoy. And that was that, in answer to the question of how much do you need to cover cost of capital if you needed to pay cost of capital, we identified various ways of doing that calculation.

One way was to use the excess in the O&M cost estimate. Another was to use the excess that would result because the whole estimate is -- has a large margin in it.

And escalating that large margin could result in extra money. So, we haven't dropped anything by the wayside, as you put it.

JUDGE ABRAMSON: Mr. Krich, let me interrupt again. Did you say anything new in this testimony --

WITNESS KRICH: No, Judge.

JUDGE ABRAMSON: -- related to the cost of capital? Or was it merely a reflection or a repetition or a reference to what was said in October?

WITNESS KRICH: It's exactly that, Judge.

JUDGE ABRAMSON: So, there was nothing new about cost of capital added by you in this proceeding, is that correct?

WITNESS KRICH: That is correct, thank you Judge. I appreciate that.

JUDGE ABRAMSON: I think, Mr. Lovejoy, that summarizes it. There was nothing new added about the cost of capital.

MR. LOVEJOY: Except this in the supplemental rebuttal. And you can look at answer 10, page six, Mr. Krich. There you state -- this may be paraphrasing it a little -- that whether there is sufficient margin in LES' estimated operating and maintenance costs to account for cost of capital is not material.

It is not necessary to calculate the cost of capital to comply with NRC requirements. Whether the O&M estimate would cover cost of

capital has no bearing.

Is that your position as far as an excess amount in the O&M estimate?

WITNESS KRICH: No.

MR. LOVEJOY: It's not your position?

WITNESS KRICH: You're misreading this. What this is saying, if you read the whole thing and put it in proper context is that we don't need the excess in O&M or the excess -- I should say the excess in the O&M to cover the cost of capital since we don't need, in order to meet the regu atory requirements, to cover the cost of capital.

Because, at the end of 30 years, as I've explained, we have covered all the money that's needed to build, operate and deco nmission a facility. So no, this is no change from what we said.

MR. LOVEJOY: So, you're essentially saying that what the cost of capital would be to construct and operate a deconversion plant is really none of the Commission's business?

WITNESS KRICH: No, I didn't say that, Mr. Lovejoy. What I said was that there's a requirement in 10CFR 70.25 that we assure funds to decommission the facility.

Decommissioning the facility in our case includes the disposition of tails. We've done an estimate for that dispositioning. And we've assumed that either the money that we financially assured, the estimate that we said we will financially assure, will either pay for dispositioning all 30 years worth of tails at the end of 30 years of operation, or it will pay for the Department of Energy to disposition the tails at any point

during the 30 years of the plant operation.

In that regard, Mr. Lovejoy, I consider that we've met the requirements of 70.25.

JUDGE ABRAMSON: If I correctly understand this answer, Mr. Krich, it in essence is a -- what's the right word? As I used to train people when they were doing political, learning how to deal with the press, it's a bridge.

The question is, where's the cost of capital? And your answer is it doesn't matter because we're complying with the requirements. Is that --

WITNESS KRICH: We've shown how we met the requirements without having to include --

JUDGE ABRAMSON: Without having to detail the capital?

WITNESS KRICH: That's right.

JUDGE ABRAMSON: Mr. Lovejoy, I think we understand what LES' position is on this. If you want to pursue this, it was sort of flogging a very tired, if not dead animal.

WITNESS KRICH: Thank you, Judge.

(Pause.)

MR. LOVEJOY: In support of your position, Mr. Krich, you say -- and this is another quote from your testimony -- that there is no NRC requirement that LES commence DU dispositioning activities before the end of the NEF operating period.

This is in your supplemental direct testimony, answer 28, page 19. So, that is another part of LES' position here, right? There's no

requirement to commence dispositioning before the end of the operating period.

WITNESS KRICH: Which answer are we referring to?

MR. LOVEJOY: Answer 28.

WITNESS KRICH: That's my testimony. And it's consistent with the testimony from the NRC staff.

MR. LOVEJOY: Okay. And you say also that, assuming LES is still engaged in enrichment operations, any decision to begin dispositioning DU from the facility before the end of the license period would be LES' prerogative as a business matter, correct?

WITNESS KRICH: I'm looking to see where it says that.

MR. LOVEJOY: That is, I think, on the previous page, page 18, at the bottom of the page.

WITNESS KRICH: I'm reading from my testimony. Assuming that LES is still engaged in the enrichment operations, any decision to begin dispositioning DU from the facility prior to the end of the license period would be LES' prerogative as a business matter.

As you know, we're required by the end of the plant operation to decommission it, which would include the dispositioning of the tails.

MR. LOVEJOY: In fact, the settlement agreement between LES and the state of New Mexico imposes certain constraints on LES' ability to store DU at the NEF site, is that true?

WITNESS KRICH: It sets limits for storage at the NEF site. And I have a copy here. It's NIRS/PC Exhibit 262, if you want to refer

to it. But you may know these matters from memory. Under paragraph two --

WITNESS KRICH: Excuse me, Mr. Lovejoy, which Exhibit?

MR. LOVEJOY: It's 262.

WITNESS KRICH: Okay.

MR. LOVEJOY: Now, under paragraph two, is it correct that there is an on-site storage limit of 5,016 type 48Y cylinders?

WITNESS KRICH: Provision two says on-site storage of DUF6 generated at the NEF shall be limited to a maximum of 5,016 48Y cylinders or the equivalent amount of uranium stored in other NRC accepted and Department of Transportation certified cylinders types of DUF6.

MR. LOVEJOY: Now, during its operating life, the NEF may generate as much as 133 million 942 thousand Kgs of U and DUF6, is that right?

WITNESS KRICH: Actually, that is a very overly conservative number. That assumes that the plant continues to operate at full power or full capacity all the way up until the end of the 30 years. So, that's a very conservative number.

MR. LOVEJOY: Okay. And you expect though that you will be generating 110 million 27 thousand 923 Kgs of U?

WITNESS KRICH: The 110 is a number that we've used to be more realistic. Actually, it is conservative in the sense that you're dividing by a smaller number.

MR. LOVEJOY: And that would fill about 13,000 cylinders,

right?

WITNESS KRICH: Let's see, I believe it's about that.

MR. LOVEJOY: Would you like to borrow a calculator?

WITNESS KRICH: No, that's quite all right.

MR. LOVEJOY: And, under the settlement with the state, LES would not be allowed to store the NEF's lifetime output of DUF6 at the NEF site?

WITNESS KRICH: I'm sorry, could you repeat that?

MR. LOVEJOY: Well, the limit is 5,016 cylinders and the lifetime output would be in the range of 13,000 cylinders. So, under the settlement agreement, LES would not be allowed to store the total output of the NEF at the site, right?

WITNESS KRICH: Yes, we wouldn't be able to store it in the State of New Mexico, that is correct.

MR. LOVEJOY: And you have to find another storage location somewhere else --

WITNESS KRICH: If --

MR. LOVEJOY: -- if you postpone deconversion to the end of the operating life of the NEF?

WITNESS KRICH: If we were to -- this is a business matter. And, if we were approaching the 5,016 limit, there's a number of options that the company can take.

If you read on further in the settlement agreement, Mr. Lovejoy, you will see that we can continue to store DUF6 on the site if there's an application for a deconversion facility that's been approved by an

agency responsible for reviewing the application or if an application to construct or operate a deconversion facility outside of New Mexico has been docketed.

So, there's a number of conditions that, if met, would allow us to continue to store DUF6 on the NEF site.

MR. LOVEJOY: And there's also a provision saying that any one cylinder may only be stored for 15 years, correct?

WITNESS KRICH: That is provision three, I believe.

MR. LOVEJOY: So --

WITNESS KRICH: It says that the on-site storage of any one cylinder of DUF6 generated at the NEF shall be limited to a maximum of 15 years beginning from the date that each cylinder is filled in accordance with LES' standard procedure.

MR. LOVEJOY: Okay. So, this and the other restriction on 5,000 cylinders, they're also agreed to be made part of the NEF landscape, is that right?

WITNESS KRICH: These two will become license conditions.

MR. LOVEJOY: Okay. Now, doesn't your plausible strategy need to meet these conditions?

WITNESS KRICH: Well, this would be an operational matter. If condition A, which is to have a docketed application for a deconversion facility was not met, or that an application for deconversion facility had been approved is not met, then we have an alternative method for removing DUF6 stored on site and we could exercise that option.

MR. LOVEJOY: You could remove it and store it at another location?

WITNESS KRICH: We could, that's one alternative. And, if that was the case, then we would be paying for that movement and that storage out of operating funds because obviously we would be in operation producing DUF6.

So, any cost of transportation or storage would be paid out of operating funds.

MR. LOVEJOY: So, you don't consider that part of your decommissioning cost?

WITNESS KRICH: Well, I don't think any operating funds are part of decommissioning cost, Mr. Lovejoy.

MR. LOVEJOY: Do you have a storage site in mind?

WITNESS KRICH: No.

MR. LOVEJOY: Okay.

WITNESS KRICH: Because we haven't even gotten to the point of whether we've reached condition C.

MR. LOVEJOY: Okay.

JUDGE ABRAMSON: Can we connect the dots, Mr. Lovejoy? What's this got to do with cost of capital?

MR. LOVEJOY: Well, it's basically the fact that --

JUDGE ABRAMSON: I assume it's not related to cylinder washing.

MR. LOVEJOY: It's not cylinder washing, Your Honor. It has to do with the strategy, the fact that one can't really determine -- focus

on the cost of capital unless you establish a strategy and what's going to be followed.

JUDGE ABRAMSON: I thought what was at issue was the cost of capital with respect to the deconversion facility.

MR. LOVEJOY: Precisely, Your Honor. And we got some testimony describing strategies which are different from the strategies previously presented.

And so, cost of capital may well be different. And, in addition, the entire cost of the strategy may be different.

JUDGE ABRAMSON: The cost of the strategy is not the purpose of this hearing. This hearing is to talk about cost of capital for the deconversion piece.

So, please connect this dot. I understand that you, as you said in your preliminary statement, that you're concerned about the cost of moving stuff off-site to store it.

MR. LOVEJOY: Yes.

JUDGE ABRAMSON: The cost of storing. And what we heard from Mr. Krich is that's an operating cost. It's not related to decommissioning. So, if you have something that you want to connect this dot to the cost of capital for a deconversion facility, we welcome it now.

MR. LOVEJOY: Well, if --

(Pause.)

MR. LOVEJOY: Going back to the discussion we had in October, just to see what is still in the record and what is no longer presented by LES, there was testimony previously that there was some

escalation in the revenues received for deconversion that would pay for the cost of capital no matter, you know.

This is the testimony in October. And I think Ms. Compton was the primary witness in supporting that. Is LES still claiming that the return on investment for a deconversion plant would be paid out of the escalation of revenues earned by that plant?

WITNESS KRICH: I guess it's the same answer as I gave before, Mr. Lovejoy. First of all, I think I need to correct something you said. We did not present a different scenario in the October hearings.

We've always presented this, what I call 30 year scenario. We, as a result of questions that you raised, I believe, got into a discussion of a different scenario and talked about cost of capital.

And, in answering the questions, in trying to answer the question as to what might be the cost of capital, how we might cover the cost of capital for that different scenario, we identified various means that we felt were justified to cover that cost of capital.

One of them was the excess O&M. One of them was escalation of the amount that we're going to financially assure. In our opinion, those are still valid answers to your question.

MR. LOVEJOY: Didn't Ms. Compton in her calculations assume that the deconversion plant would be in operation in the year 2016?

WITNESS KRICH: I'm not sure I know which calculations you're referring to, Mr. Lovejoy.

MR. LOVEJOY: Well, she talked about spreadsheet that she made projecting revenues and costs for a deconversion plant.

WITNESS KRICH: The only --

MR. LOVEJOY: She assumed that 2016 was the operating date. Do you remember that?

WITNESS KRICH: The only spreadsheet that I'm aware of is the one that's been entered into this hearing. And that was the -- there are a number of assumptions made in doing that calculation.

Again, we were answering a question about what would be the cost of capital. The NRC staff had asked us after the hearing to identify as a separate line item the cost of capital.

And so we did that analysis doing a pretty pro-forma calculation of cost of capital. But the scenario was presented to us. It was not a scenario that we presented to anyone else.

JUDGE ABRAMSON: Is there something new that's outside the record that we haven't seen in this regard?

WITNESS KRICH: No, Judge.

JUDGE ABRAMSON: Then I think we understand the record. I don't see a value in rehashing what's in the record, particularly in trying to recall what's in the record.

If there's something in particular related to the cost of capital you want to bring to our attention, let's get at it.

MR. LOVEJOY: Well, the spreadsheet you referred to Mr. Krich, the one that was dated and was produced, I think, in December of last year, is that the one you're talking about?

WITNESS KRICH: I don't know, Mr. Lovejoy. I'd have to see it. It's the only spreadsheet I'm aware of.

MR. LOVEJOY: The NIRS/PC Exhibits, three copies of them are on the table behind you. And the spreadsheet --

WITNESS KRICH: Not anymore.

MR. LOVEJOY: Okay. Would you look at NIRS/PC Exhibit 281?

CHAIR BOLLWERK: Why don't you go ahead and identify it quickly and let's mark it for identification?

MR. LOVEJOY: It's a spreadsheet marked draft and LES PRO 01324 on it. Do you have that Exhibit?

WITNESS KRICH: I do.

CHAIR BOLLWERK: All right, let the record reflect -- I'm sorry, go ahead.

MR. LOVEJOY: Well, we offer it for identification and for admission.

CHAIR BOLLWERK: All right. Let the record reflect that LES -- I'm sorry, NIRS/PC Exhibit 281, a spreadsheet produced by Counsel for LES December 22nd 2005 had been marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 281 for identification.)

CHAIR BOLLWERK: And there's been a request to have it admitted into evidence. Any objections?

MR. CURTISS: No objection.

CHAIR BOLLWERK: Hearing none, then the NIRS/PC Exhibit 281 is admitted into evidence.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 281 was admitted in evidence.)

MR. LOVEJOY: Mr. Krich, you have not made this exhibit part of your testimony, is that correct?

WITNESS KRICH: No, I don't believe we have.

MR. LOVEJOY: And LES hasn't offered this to the Commission as something that any decision should be based upon, is that right?

WITNESS KRICH: Not this spreadsheet, no.

MR. LOVEJOY: Is there another spreadsheet?

WITNESS KRICH: No, Mr. Lovejoy, not to my knowledge, there's no other spreadsheet.

MR. LOVEJOY: Okay.

WITNESS KRICH: We usually include everything in the -- when we send in discovery packages it usually includes all the pages.

MR. LOVEJOY: Okay. In the October hearings Ms. Compton said that she did spreadsheets all the time and had done spreadsheet calculations in a early part of the year.

And that's about the time the LNI report came in, which was in the middle of '05. Do you remember any spreadsheets from that time period?

WITNESS KRICH: No, Mr. Lovejoy, I don't know. No, I do not remember spreadsheets at that time.

MR. LOVEJOY: Do you remember Ms. Compton making spreadsheet calculations on a computer?

WITNESS KRICH: Ms. Compton's job is to make spreadsheets.

MR. LOVEJOY: Okay. Well --

WITNESS KRICH: She works on the business end of this, the business study. So, she's doing spreadsheets continuously.

MR. LOVEJOY: So, none of those have been produced?

WITNESS KRICH: That are having to do with the business study for LES, not with the contentions or with the regulatory issues.

MR. LOVEJOY: Do they concern a deconversion plant?

WITNESS KRICH: Not to my knowledge.

MR. LOVEJOY: Are you sure, Mr. Krich?

MR. CURTISS: Let me jump in here. We were asked this question at the last -- in a letter that Mr. Lovejoy sent. And Counsel for LES, which would be me, went back and reviewed all of our files and timely disclosed all of the information in our files relevant to this.

This is the spreadsheet on precisely the point that he's interested in pursuing, which is the cost of capital with the assumption set forth therein.

Now, if he has a concern that LES or Counsel at LES hasn't been fully disclosive of information, he's entitled to file a motion. But we went back and reviewed all of our files, spreadsheets were iterated and updated, and changed, and not necessarily kept in the computer.

And this reflects the relevant information that we've determined. And, from this point forward, if he's alleging that we have not disclosed something, which I take great offense at, he's entitled to file a motion with this Board and we can take it up in that manner, but not at this proceeding.

MR. LOVEJOY: We've taken this up in conference calls and other context. I have no hope that emotion is going to produce any additional production.

I'm just concerned because there was testimony -- definitely testimony from Ms. Compton during the October hearings about the spreadsheets she generated repeatedly.

And we have about -- and about how the cost of capital would be fully accounted for if we just saw these spreadsheets. And we haven't seen them.

JUDGE ABRAMSON: I understand your point. And you've asked the question and you've gotten an answer.

MR. LOVEJOY: Okay. Is there -- well, I'm constrained to inquire the witness directly whether he knows of spreadsheets showing the application of a supposed surplus of O&M cost estimates and how that would account for cost of capital.

Does he know of any such thing whether it's in electronic form or printed in hard copy?

WITNESS KRICH: Can you ask your question, Mr. Lovejoy?

MR. LOVEJOY: Do you know of a spreadsheet

addressing the issues of a supposed surplus, a supposed four million dollars extra allowance for operation and maintenance costs and showing how that would apply in whole or in part to the return on investment for cost of capital?

WITNESS KRICH: The only spreadsheet that I'm aware of, Mr. Lovejoy, is the one that is your Exhibit 281.

MR. CURTISS: And I think the witness has explained. I'm going to object again or at least make sure that the record is complete on this. The witness has testified that when the O&M issue, the cost of capital issue came up during the proceeding, the LES witnesses, including Ms. Compton, testified as to the basis for how the O&M margin could be viewed as relevant to where the cost of capital was included.

And, if Mr. Lovejoy is looking for the basis for LES' position on that, I would direct his attention to LES Exhibits 93 and 94, answer 37 of the LES prefiled direct testimony and transcript pages 2007, 2019, 2022, 2042 and 2277.

That's the basis for the LES position as testified to in October with respect to the margin that's inherent in a dubbing of the O&M. There are no separate spreadsheets that we've been able to identify.

But that aught to be an ample basis to explore this issue if we're going to go back to the October hearing on this issue too.

MR. LOVEJOY: So, I've got a number representations from counsel and testimony from the witness that there's no other spreadsheets.

WITNESS KRICH: No, that's not what I said.

MR. LOVEJOY: Oh, there are other spreadsheets?

WITNESS KRICH: No, that's not what I said either. What you asked me is if I was aware if there were other spreadsheets. What I'm telling you is I have not ever seen any other spreadsheets.

JUDGE ABRAMSON: Well, I think the question was more specific than that.

CHAIR BOLLWERK: Definitely.

MR. LOVEJOY: It was.

JUDGE ABRAMSON: So let's not -- I mean, I'm sure you've seen other spreadsheets. The question was much more specific than that.

WITNESS KRICH: Sorry, Judge, you're right. I have not seen the spreadsheets that you're referring to.

MR. LOVEJOY: Okay, here was the testimony I asked. Did you -- Mr. Krich, you were testifying and so was Ms. Compton. Did you in those exercises account for some portion of the O&M --

JUDGE ABRAMSON: Would you tell us where you're reading from?

MR. LOVEJOY: This is transcript 2305 through 08. These are extracts from those pages. Did you in those exercises account for some portion of the overhead that was available to pay debt service.

I'll find the exact pages after I read this. Witness Krich: I think that we testified just a little while ago that we didn't identify this as a specific line item.

We just added enough margin that it would cover those

types of costs. But we, neither Ms. Compton or I, identified that as a specific line item.

And Ms. Compton said, as we just talked about today, just looking over time, if you assume we just spoke about with Dr. Abramson, if you look over time at the escalation of the 267 or actually just the construction piece, there is a, you know, that continues to escalate after you've paid for it and that would cover your cost of capital conceivably.

So this is talking about the construction cost escalation also, which is another argument they made. Then I said, did you just do that in your head?

Did you do that in your computer? How did you calculate that? Ms. Compton said, I just plugged it into a spreadsheet very quickly. Mr. Lovejoy, when did this take place?

Witness Krich: Mr. Lovejoy, I can't tell you exactly when. We did these calculations we did this analysis back in the early part of the year. We haven't seen this.

These are arguments that they're making for covering the cost of capital.

JUDGE ABRAMSON: I think we are all well aware of what the record indicates from the October hearing about the information about cost of capital, Mr. Lovejoy.

So, please don't dwell on that. If you have something new that's been introduced here, let's talk about it.

MR. LOVEJOY: Okay. May I have an answer from the witness?

WITNESS KRICH: I'm not sure what the question is.

MR. LOVEJOY: Do you know where those spreadsheets are that were referred to in those quotes?

WITNESS KRICH: Mr. Lovejoy, as I testified already, I am not aware of any spreadsheets.

MR. LOVEJOY: Okay. There was one other theory that we heard through Ms. Compton, and that was the idea that escalation in the revenues received for deconversion would pay the cost of capital.

And, first I'll ask you, this argument does not appear in the LES prefiled testimony, does it?

WITNESS KRICH: I'd have to go back through the testimony and check.

MR. LOVEJOY: The escalation that Ms. Compton was talking about was applied to revenue projections, right?

WITNESS KRICH: My recollection is that the scenario that was being discussed at the time was that a deconversion plant would be built at some point while LES was operating and that, as we continued to assure the funds which would be escalated over time, there would be more than enough money to pay cost of capital.

Judge, if you remember, I think that we talked about it would be, you know, once they build a plant, they're no longer spending money and now you're making money.

So I believe that was the gist of the discussion.

MR. LOVEJOY: So, there was escalation applied to the revenue projections, right?

WITNESS KRICH: That's my recollection.

MR. LOVEJOY: And the escalation was intended to reflect anticipated inflation, is that right?

WITNESS KRICH: Again, my recollection was that we were -- that someone -- or we estimated three percent.

MR. LOVEJOY: That was to account for inflation, right.

WITNESS KRICH: Mr. Lovejoy, I do not remember the details of that whole discussion. My recollection was that we applied a three percent -- we talked about applying a three percent escalation.

MR. LOVEJOY: Okay. Have you done some projections specifically addressing how escalation in revenues would cover cost of capital, do you remember

WITNESS KRICH: To my knowledge, Mr. Lovejoy, again we -- our position is that we don't need to cover the cost of capital because we are going to assure funds such that at the end of 30 years of the NEF plan there would be sufficient more than enough money to pay for the building, operation and decommissioning of a deconversion facility outright.

So, therefore, we were providing information regarding the cost of capital in answer to questions that we received during the hearing.

MR. LOVEJOY: So, you're not asserting in this proceeding that the cost of capital would be accounted for by escalating the revenues received for deconversion?

WITNESS KRICH: No, Mr. Lovejoy, I'm not asserting anything in this hearing that I haven't asserted in the previous hearing. And that was in answer to a question about the cost of capital.

There were various scenarios that were postulated. And, in going through those scenarios, we gave what we felt were reasonable estimates for how the cost of capital would be covered.

That's not to say that those are our scenarios. But we were trying to answer the question.

JUDGE ABRAMSON: May I make just one observation and see if I've got this right? Because this is, I think, a relevant point on the cost of capital, and that's what you just said, Mr. Krich, which is your financial assurances would provide enough cash to build outright a deconversion facility at year 30 or at the end of the license if none had been built before then.

WITNESS KRICH: That is correct.

JUDGE ABRAMSON: And therefore, because there's enough cash, there's not debt or equity involved and therefore no cost of capital. And that's more than you said. But, did I hear that right?

WITNESS KRICH: Yes, Judge. And, just to put a point on it, if the deconversion facility is built at some point in the interim, that's a business matter.

That wouldn't be paid for out of our decommissioning funds.

MR. LOVEJOY: Well, having heard that exchange, I'm not quite sure I got an answer to my previous question, which is basically whether or not LES is claiming that the cost of capital at any time would be covered by escalation in revenues from deconversion.

WITNESS KRICH: Is that your question?

MR. LOVEJOY: That's my question.

WITNESS KRICH: And my answer is the same as it was in October and just a few minutes ago, which is, presented with that scenario, we still think that the answer that we gave accounting for escalation is one way that the cost of capital could be covered if the cost of capital needed to be accounted for.

Again, as the Judge said better than I, the cost of capital in our scenario is not needed.

MR. LOVEJOY: Well, since I think you haven't given up the point, I have to ask you about it. If you're a lending bank and it's the general view that there's three percent inflation anticipated, wouldn't it be your policy to increase your interest rates by three percent or so to offset the impact of inflation?

WITNESS KRICH: What's your question, Mr. Lovejoy?

MR. LOVEJOY: I thought I just said it.

JUDGE ABRAMSON: You're implying that the interest rate would go -- let's say that the inflation rate this year is two percent so that the Federal funds rate should go from four to six next year and from six to eight the year after that and that the banks are going to increase their lending rate by the inflation rate every year?

MR. LOVEJOY: Again, to offset the effect of inflation -- anticipated inflation.

JUDGE ABRAMSON: That's in interest and principal. Do you have some expert -- well, you've asked it of Mr. Krich. So, let's hear what Mr. Krich says.

WITNESS KRICH: Mr. Lovejoy, I --

JUDGE ABRAMSON: I'm not sure I understood the question.

WITNESS KRICH: Yes, me too. I was having the same problem.

MR. LOVEJOY: Let me present the witness with a kind of elementary economics statement that was available. Actually, this one came from the internet.

I think it's in a lot of textbooks. This would now be, I think, 285.

CHAIR BOLLWERK: That's the correct number.

JUDGE ABRAMSON: Mr. Lovejoy, give us an idea of how much longer we're going to take on this, whether we should be taking a break soon. I'd like to break at a sensible point here. We would like to break at a sensible point.

MR. LOVEJOY: We can certainly break after this exchange. And then maybe we can accelerate the rest of it.

JUDGE ABRAMSON: How much is the rest of it? What's your estimate for the time for the rest of it?

MR. LOVEJOY: I would say right now I have about an hour more.

JUDGE ABRAMSON: Okay.

CHAIR BOLLWERK: Let's go ahead and identify this briefly if we could. This is Exhibit 285.

MR. LOVEJOY: This is an extract from an elementary

economics discussion that I got from the internet. And it's explaining -- the date is down below.

It is explaining the operation and formulation of interest rates.

CHAIR BOLLWERK: All right. Let the record reflect that NIRS/PC Exhibit 285 an internet document from a website www.getobjects.com has been marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 285 for identification.)

MR. LOVEJOY: Mr. Krich, I'll just draw your attention to a couple of sentences in here. It starts saying interest is the cost of borrowing money. You agree on that, right?

WITNESS KRICH: Yes, Mr. Lovejoy. I don't think we need to be that basic here unless you think we need to be.

MR. LOVEJOY: It goes on. It says, the prevailing market rate is composed of one, the real rate of interest that compensates lenders for postponing their own spending during the term of the loan. Do you agree with that as a component interest?

WITNESS KRICH: I guess I'd have to spend some time looking at this whole document and its context to tell you whether I agree or disagree with anything written here. This is the first time I'm seeing this.

MR. LOVEJOY: Well, let me ask you about item two, because that's of interest here. It says the second element is an inflation premium to offset the possibility that inflation may erode the value of the

money during the term of the loan.

A unit of money, dollar, peso, etcetera, will purchase progressively fewer goods and services during a period of inflation. So the lender must increase the interest rate to compensate for that loss.

And my question is, do you agree with that statement?

WITNESS KRICH: In general I would agree with that statement.

MR. LOVEJOY: Okay. There's no reason that shouldn't apply to LES if it's borrowing money?

WITNESS KRICH: I don't know, Mr. Lovejoy. You know, again, I'd have to look at the context in which this whole thing is being presented.

MR. LOVEJOY: If the panel wishes to take a few minutes, this would be a fine time.

CHAIR BOLLWERK: All right. Then we'll go ahead and take a five minute break. It's currently a little after 11:30. Why don't we come back at, let's say, 11:40. Maybe we'll take a little bit more. We'll until 11:40.

JUDGE ABRAMSON: And then let's plan when we come back on finishing with this witness, Mr. Lovejoy, before we break for lunch.

(Whereupon, the above-entitled matter went off the record at 11:30 a.m. and went back on the record at 11:45 a.m.)

CHAIR BOLLWERK: Let's go back on the record then.

MR. CURTISS: Mr. Chairman, I had one administrative matter.

CHAIR BOLLWERK: All right.

MR. CURTISS: In discussing the issue of the use of the Surety Bond in our discussions we thought Mr. Krich may have misspoken. I wanted him just to clarify what he intended to say when he would or wouldn't be using the Surety Bond because that may or may not have come across clearly on the record.

WITNESS KRICH: The statement should be --

CHAIR BOLLWERK: Mr. Lovejoy, do you have any objection to this? This could be --

MR. LOVEJOY: If he has to clarify some testimony, he should do that.

CHAIR BOLLWERK: All right.

WITNESS KRICH: Sorry, Judge.

CHAIR BOLLWERK: Go ahead.

WITNESS KRICH: What I wanted to say, and I may have misspoken or it may not have come across well, is that if a decision is made to build a deconversion plant at some point during the operating life of the NEF, that that's a business matter and the funds for that wouldn't come out of the Surety Bond, out of the decommissioning funding assurance. That's not what that money is there for.

MR. CURTISS: Thank you.

MR. LOVEJOY: Okay. We will get to that in a second. Mr. Krich, you know, I can't ignore the fact that previously in your testimony we were talking about the spreadsheets in October and you said we did this analysis back in the early part of the year, this being an explicit discussion of

the spreadsheet.

And you testified to that analysis back in October. We see no evidence of it. Are you absolutely sure that there is none?

JUDGE ABRAMSON: You asked this question, Mr. Lovejoy. I don't think there's any reason to just keep beating this. We understand that you're concerned.

We understand that you've asked Counsel for it. We understand Counsel's objection. We've allowed you to ask the witness the question once. And I think we don't need to pursue this line any more.

MR. LOVEJOY: Okay.

JUDGE ABRAMSON: Its inappropriate, we think.

(Pause.)

MR. LOVEJOY: Very well. You were just saying in answer to Mr. Curtiss' questions that any decision to commence decorversion at an earlier date before the end of the NEF's planned operating life is strictly LES' business decision.

And that's in your direct testimony as well. But, one possibility is, is it not, that the NEF might cease operations before the end of its license term and have to be decommissioned?

That's one possibility we have to bear in mind, is it not?

WITNESS KRICH: Well, if there is some reason why LES decides to cease operations before the end of their license period, that's certainly -- again, that's a business decision.

MR. LOVEJOY: Well, it might be on account of a business failure, is that not right?

WITNESS KRICH: It potentially could be.

MR. LOVEJOY: And, the NEF would then cease enrichment operations and it would be necessary to decommission the facility, right?

WITNESS KRICH: We would be required to fulfill our obligation under the requirements to decommission the facility and disposition whatever tails existed at that point in time.

MR. LOVEJOY: There could be a tails inventory of 5,000 tons or 30,000 tons or anywhere up to the maximum amount, correct?

WITNESS KRICH: No. If it was up to the maximum amount then we would have operated for the 30 years, Mr. Lovejoy.

MR. LOVEJOY: Okay, slightly short of.

JUDGE ABRAMSON: What's your point Mr. Lovejoy?

MR. LOVEJOY: In that event, a third party, if there was a business failure, could have the obligation to take over the decommissioning, including dispositioning of the depleted uranium, correct?

WITNESS KRICH: It doesn't quite work that way, Mr. Lovejoy. The way this happens is, if LES was unable to fulfill its obligations and if we were to have a stop or if we were basically to shut down prior to the end of the license period, that doesn't mean that LES wouldn't have the money to pay for the decommissioning dispositioning of the tails.

If LES was unable, which I think is a remote possibility, but if LES was unable to fulfill its obligations under 10CFR 70, then the Surety Bond would come into effect.

And the way that works, Mr. Lovejoy, is it goes into a

standby trust, an example of which is in our application. That standby trust then is essentially the trust fund from which the money comes from to do the decommissioning and the dispositioning of the depleted uranium tails.

And the way that money is spent is based on decommissioning plan, which the NRC reviews and approves. And so, in essence the NRC gets to decide where that money gets spent.

It has to be an approved plan based either on LES preparing an approved plan or some third party that the NRC accepts developing that decommissioning plan.

MR. LOVEJOY: Okay. But, the amount contained, the amount that's available to the standby trust is the amount of financial assurance which is in effect at that point, is that right?

WITNESS KRICH: The amount that the NRC would have in the standby trust would be what we had been financially assured at whatever point in time.

MR. LOVEJOY: And the way it's going to work now under the proposed license, the financial assurance would contain only a prorata share based on the expected DUF6 inventory going forward, only a prorata share of the cost of building and operating a deconversion plant, correct?

WITNESS KRICH: I think that what we have said here and in our testimony and in the application is that, if at any point in time during the operation of the NEF that LES was unable to fulfill its obligation for the decommissioning and dispositioning of the depleted uranium tails, that it could be taken care of.

The NRC could then use the DOE option because the

funds that are financially assured, as we show in our application, are sufficient to cover the DOE costs.

In fact, it's more than sufficient because we've added another 60 cents on here.

MR. LOVEJOY: But you've made no forward going projections of the DOE costs, have you?

WITNESS KRICH: Mr. Lovejoy, as I have explained a number of times, there is no requirement to do a projection. Any changes to the amount of money that needs to be financially assured is covered as required by the regulations by the periodic update.

JUDGE ABRAMSON: Gentlemen, can we stop this dialogue and get back to the point, which is what's the cost of capital related to the deconversion facility and what's the cost of dealing with these cylinders?

MR. LOVEJOY: Okay. If -- and setting aside for the moment the DOE option and focusing on what you called your preferred strategy, which is the private deconversion and disposal option.

You have not tried to show the panel that the panel that the prorata financial assurance that would be available in the interim before the end of the NEF's life would be enough to build and operate a private plant to deconvert, let's say, five years of DUF6 output.

JUDGE ABRAMSON: Is that at issue today?

MR. LOVEJOY: It is, Your Honor, because they haven't tried to show it. And, at those interim points there won't be enough funds to build a private plant.

And, whoever takes on the job of deconverting this material is going to need to borrow money.

JUDGE ABRAMSON: Well, I don't think that's what's at issue here. But, perhaps you can explain to me how the cost of capital ties into that.

What we're talking about is the cost of capital to build the deconversion plant, I thought. And we understand that the record is replete with references to what happens under the DOE option.

But what we're talking about here is the cost of capital.

MR. LOVEJOY: Yes.

JUDGE ABRAMSON: And I understand your point. So, if you want to say something more about it, please. But let's keep it short. I understand your point.

I think we understand your point that this is being funded incrementally and that year X is only X percent.

MR. LOVEJOY: Yes. Well, say at year five, if the NEF shut down and a third party had to take over decommissioning. For private deconversion, the third party would need to borrow funds, wouldn't he?

WITNESS KRICH: No, Mr. Lovejoy. You're not following the sequence here. If we were unable to fulfill our obligation at any point in time during the life of the plant then, just as it would at the end of the 30 years, the money from the Surety Bond would go into the trust, the NRC would essentially decide where that money gets to be spent.

The way this works is you have to go out and look to see how much it's going to cost to disposition the tails at that point in time. The

DOE option is always available at any point in time to disposition the tails.

So, if the NRC finds that they can get the tails dispositioned commercially for the amount of money that's been financially assured, they can do it that way.

Or, if the NRC decides that it's cheaper to go to the DOE, then they can go to the DOE and use that option. But, the critical point here is that the amount of money that we financially assured is more than sufficient to cover the DOE option at any point in time.

MR. LOVEJOY: And one of the situations we have to foresee is the NEF shutting down after five years and a third party, NRC, being faced with deconversion of 35,000 metric tons of uranium, much smaller than the end of life inventory, correct?

JUDGE ABRAMSON: We understand your point, Mr. Lovejoy.

MR. LOVEJOY: And there's no provision --

JUDGE ABRAMSON: We understand your point, that this is being funded on the basis of a dollar amount that's projected from private strategy or proposal and that the private strategy number is on a per-kilogram basis larger than the number that DOE would charge to take it.

So, we understand from the DOE estimate. So, we understand your point, that there wouldn't be enough money prior to getting close to the end of life to actually -- it wouldn't be enough money available through the decommissioning fund to cause the building of a facility.

WITNESS KRICH: Go to a private.

JUDGE ABRAMSON: Yes.

WITNESS KRICH: But there is enough to go to DOE.

JUDGE ABRAMSON: That's right. So, we understand this point. I think it's only remotely connected to the cost of capital. So let's move on.

MR. LOVEJOY: So you can't think of any option other than DOE that would work in the interim before the end of the NEF's life, is that right?

WITNESS KRICH: Yes, I can. But, what we have shown is that the money that we are financially assuring, that the NRC then would decide on how it gets spent, is more than sufficient to cover the DOE option should the NEF shut down at any point before the end of the 30 years.

But I can think of lots of scenarios where there's other deconverters out there that decide to go into business and are offering deconversion at a lower price.

But that's purely, you know, I could come up with all kinds of scenarios.

JUDGE ABRAMSON: But --

WITNESS KRICH: What I do know -- let me finish the answer. What I do know is that the amount that we financially assured, based on documented estimate from the DOE, the amount that we're financially assuring covers the documented estimate from the DOE.

MR. LOVEJOY: As of --

WITNESS KRICH: On an incremental basis.

MR. LOVEJOY: As of 2004 dollars?

WITNESS KRICH: In 2004 dollars. That's what we're

required to do. And that's why there's a periodic adjustment, Mr. Lovejoy.

JUDGE ABRAMSON: Gentlemen, let's stop this bickering over this issue which is not in front of us. And let's come back, both of you, to dealing with the cost of capital.

And Counsel, Mr. Curtiss, if you can keep your witness to the point, it would be helpful. It's not just Mr. Lovejoy who is going down this path necessarily.

MR. CURTISS: Fine, fine.

MR. LOVEJOY: Now, let's go back and identify the contents of the cost estimates that you've been using, not to question any of the matters we talked about in October, but simply to identify what's in there. Do you have the LES exhibits there?

MR. CURTISS: Mr. Krich, in an effort to adhere to the guidance that we've been given by the Board, if matters are -- the response to Mr. Lovejoy's question is addressed in the record previously, and if the line of questioning that he propounds is to have you simply review that information, I think the Board is making it clear that it is sufficient to say that it was asked and answered in the previous hearing and you have nothing further to add here.

We're not here to re-litigate issues that were addressed in the October hearing.

CHAIR BOLLWERK: All right. We have a statement by Counsel to the witness. We also have a question about an exhibit.

MR. LOVEJOY: Do you have the LES exhibits?

WITNESS KRICH: Yes, I do.

MR. LOVEJOY: Would you look -- you may not need this. But, the Cogema estimate that I'm talking about is in LES Exhibit 90. And my question is simply, is it a fact that the Cogema estimate on cost for a deconversion plant essentially gave the cost of constructing the plant and staffing it with hourly employees?

WITNESS KRICH: I have Exhibit 91 is the business thing.

MR. LOVEJOY: Ninety is, I think, the Cogema.

CHAIR BOLLWERK: Exhibit 90 is marked as a letter from Bridget Lamotis. And 91 is the Urenco business study, at least with the list that I have.

MR. LOVEJOY: Yes, 90. Ninety is the communication with Cogema about containing the estimate.

WITNESS KRICH: So, which one are you referring to?

MR. LOVEJOY: Ninety.

WITNESS KRICH: Ninety, all right.

MR. LOVEJOY: And, do you have the question?

WITNESS KRICH: I don't have the question.

MR. LOVEJOY: Okay. Isn't it a fact that the Cogema estimate -- and I'm looking in particular at the page LES PRO 00609 in the lower right corner. Did the Cogema estimate address cost of constructing the facility and costs of staffing it with the hourly workers?

MR. CURTISS: Mr. Krich, it is sufficient to answer this question if it's been addressed previously by referring to the record previously so that we can accelerate the discussion pursuant to the Board's request.

MR. LOVEJOY: I object to Counsel coaching the witness.

MR. CURTISS: The Board asked me --

JUDGE ABRAMSON: I asked Counsel to keep his witness to this so that we don't get into this bickering.

CHAIR BOLLWERK: Right. Having said that, he needs to respond to the question about the Exhibit.

WITNESS KRICH: Yes, Judge. I have to look at this more closely. I know that we covered this during the previous hearing.

JUDGE ABRAMSON: What's your point, Mr. Lovejoy, that this does not itemize cost of capital?

MR. LOVEJOY: No. Well, it certainly doesn't. But, it's a greater point about the management of the facility. This estimate essentially shows the cost to put in place a turnkey plant and a forward going estimate of labor costs.

It doesn't include any of the costs of operating and --

JUDGE ABRAMSON: Yes. And I think we had plenty of opportunity to discuss that at the prior hearing.

MR. LOVEJOY: Well, okay. So, in giving the estimate, it's a fact that Cogema assumed that Urenco would own the plant and manage the operation, is that right?

WITNESS KRICH: Again, following the Board's recommendation, we covered that in the previous hearing. If you go to Exhibit 91, this is in LES' exhibits, this is a Urenco business study.

And the costs for operating the facility are discussed there. And again, that was, I thought, fairly well discussed during the previous

hearing.

MR. LOVEJOY: So, if LES, say at the end of the operating life of the NEF, if LES said, look, we're done, somebody else needs to clean this thing up, a third party, do you know who would manage the construction and then the operation of a deconversion plant?

WITNESS KRICH: Well, we wouldn't have the opportunity. Judge, please excuse me. If I go off track, please remind me. But, we don't have that option.

Again, as I said, the money goes into a standby trust. If the NRC approves us to do the decommissioning, then we would have to come up with the decommissioning plan.

That plan would have to have costs in it. And the NRC has to approve that decommissioning plan. So, all that would happen as part of the decommissioning effort.

MR. LOVEJOY: Are you finished?

WITNESS KRICH: Yes.

MR. LOVEJOY: I do want to cut this short. Can we just assume that in these scenarios LES has failed as a business matter and third party must take over the job?

WITNESS KRICH: No, because it may be -- I guess what I'm saying, Mr. Lovejoy, is that --

JUDGE ABRAMSON: I think he's asking you to assume that. So, take it as an assumption and then answer his question.

WITNESS KRICH: Okay, all right. I thought he was saying that --

JUDGE ABRAMSON: If I understand the question, he's asking you to make an assumption. That's what he's asking you to do.

WITNESS KRICH: So, the scenario you're providing is that LES is not selected by the NRC to conduct decommissioning, some third party is?

MR. LOVEJOY: Yes.

WITNESS KRICH: Yes.

MR. LOVEJOY: In the event of failure of LES.

JUDGE ABRAMSON: And, where are we going with this? Are we pursuing the issue of financial assurances generally and how they are applied by the Commission? Or are we sticking to the knitting here?

MR. LOVEJOY: This goes to where, you know, what cost of capital is not covered by the financial assurance and what would that cost be if it had to be paid in relevant hypothetical situations.

CHAIR BOLLWERK: Let's have him answer the question. Let's see where he goes.

JUDGE ABRAMSON: Well, can we ask it that way? I mean, if you want to focus on cost of capital, which is what we're supposed to be here to do, then ask please the question about the cost of capital.

MR. LOVEJOY: Well, this is the compensation that normally comes to an investor. In the hypothetical I'm posing there would be a trustee in power, which itself could be compensated.

And this is not provided. Let me make an analogy. Let me show an analogy. Mr. Krich, part of the decommissioning fund is decommissioning financial assurance is committed to facility

decommissioning, is it not?

WITNESS KRICH: The decommissioning funding assurance covers -- in chapter 10 of the safety analysis report, it covers both the decommissioning of the part of the facility that's contaminated as well as the dispositioning of the depleted uranium tales.

MR. LOVEJOY: Okay. Now, I have some documents, but maybe you'll remember this from your own recollection. Originally LES proposed a facility decommissioning cost based on Urenco's experience in Europe.

And LES stated that it would act as its own prime contractor. Do you remember that?

WITNESS KRICH: In the application we have done both cases in order to meet NRC guidance. We have done both cases where we said we would act as the prime contractor.

And we've included cost estimates if in fact a third party had to come in and do the work, in other words, be the prime contractor. So that's included, that's reflected in the cost estimate.

MR. LOVEJOY: Actually, the Staff pointed out to LES that LES might not be able to act as prime contractor and that a third party might be the one to plan and manage decommissioning, and that the additional costs of using that third party contractor should be incorporated in the cost estimate, didn't they?

WITNESS KRICH: We had used -- for the facility decommissioning we had used costs from Urenco. This was their internal numbers. And so, we understood the NRC guidance.

And we understood that we needed to reflect if a third party had to come in and do that work. And the costs were adjusted accordingly.

MR. LOVEJOY: And LES --

WITNESS KRICH: So the original estimate -- you need to understand, Mr. Lovejoy, that the original estimate came from internal Urenco costs, which we then needed to account for a third party.

It's just the same as the third party giving us the cost estimate for building, operating and decommissioning a deconversion facility. That's already from a third party.

MR. LOVEJOY: And what LES did was to revise its cost estimate to account for a third party conducting the planning, preparation, decontamination, dismantling of radioactive facility components, essentially being the prime contractor, the restoration of contaminated areas, and the final radiation survey.

You added overhead on staff of 110 percent and profit on labor, etcetera. And it added up to an additional 41 million dollars, other than the contingency, do you remember that?

WITNESS KRICH: Is there a question here, Mr. Lovejoy?

MR. LOVEJOY: Do you remember that?

WITNESS KRICH: I do. And you're mischaracterizing it. We had estimated the cost of a third party to do that work. The NRC had indicated that they felt that what we had estimated was not enough.

And so, we increased it to 110 percent. Now, 110 percent is, in our opinion, a very high number to account for a third party's profit in

their cost of doing business. But we went ahead and did that.

JUDGE ABRAMSON: Can I make sure I understand this, Mr. Krich? And then I'd like to see how this relates to what we're doing. But, since you've answered this and we now have this information in the record, you had a number from one of your partners, one of your owners, what their internal cost would be to do this service.

And you then tried -- you were advised by the Staff that they needed to know what a third party would charge you to do it. And so you took the internal cost and you added 110 percent of the internal cost.

WITNESS KRICH: Over 200 percent, yes.

JUDGE ABRAMSON: And wound up with 200 percent -- so it was 210 percent of the original number, okay. And that's how you came up with a third party cost to do this.

WITNESS KRICH: Yes.

JUDGE ABRAMSON: Okay. Now, understanding that, can we please get back to what's this got to do with the cost of capital? We are not here to address the general issues of decommissioning funding.

MR. LOVEJOY: But, in the present financial assurance, there's no allowance for compensation to the one who stands in the shoes of a manager and operator of a deconversion plant, is there?

WITNESS KRICH: No, that's not true, Mr. Lovejoy. The figures that we used to come up with the estimate were from a third party, were from a vendor.

And so, we didn't need to adjust it any further since this is the cost that a vendor is saying to us, this is what we would charge if you

wanted to buy our service.

MR. LOVEJOY: And the estimate included no allowance for the management of the facility, is that right?

WITNESS KRICH: I thought I just answered that question.

MR. LOVEJOY: Well, let me move to another area. We -- can you assume for the moment that there was a situation where LES is bankrupt, has failed and the decommissioning of the plant needs to be taken over and deconversion needs to be taken over by a third party and it's going to be done through a private deconversion facility and it's necessary to obtain external funding, for example, when the amount in the decommissioning fund isn't adequate?

WITNESS KRICH: No, that's not a valid scenario.

MR. LOVEJOY: That would never be so?

WITNESS KRICH: It would not be valid because the NRC, as I said, the NRC gets to decide how that money gets spent. They are going to have a pod of money, that's the money that was financially assured.

And then they're going to have it -- a decommissioning plan which says here's what we have to do and here's how much it costs. And it's their job, well, it's basically the requirement that whatever gets selected, what gets approved as I understand it in the decommissioning plan, is what will fit within the money that has been assured if adequate money has been assured.

And that's the whole point of what we started out with. So, if the money that's available to the NRC at the point in time that LES goes bankrupt is enough to cover the DOE option, then the NRC obviously will

select the DOE option.

If it's enough to cover commercial deconverter and it's a private deconverter, and it's less money, then they might select that one. But they're not going to select an option where they're going to have to go out and get additional money. That's not the NRC's job.

JUDGE ABRAMSON: We'd like to caution the parties again, again, again, please don't continue to rehash what's going to happen with the decommissioning fund or with the trust.

We understand that. It's not at issue here. If you had a problem about how decommissioning funding was to have been dealt with, it should have been dealt with in a proper procedural manner earlier in this proceeding.

We are here to address the cost of capital associated with a private deconversion facility only.

WITNESS KRICH: Sorry, Judge.

JUDGE ABRAMSON: Well, you were responding to the question. But I want you both to get off talking about what's going to happen with decommissioning fund.

If you want a tutorial on that, talk to the Staff. But it's not an issue in this proceeding.

MR. CURTISS: In fact, now that we've spent two hours not talking about cost of capital, it's clear to me that the discussion of how financial assurance will work and how it's going to be triggered, and whether it goes to the Surety Bond, and all the mechanics of that, recalling the contentions that were first offered in this proceeding back in April of 2004,

there is not a contention in this proceeding -- one of the other parties sought to raise one, but it was rejected as not specific.

And this whole discussion is an effort to bootstrap an inadmissible issue, the financial assurance mechanics, on the basis that it doesn't have anything to do with the cost of capital into this proceeding.

So, I'm not sure what the appropriate remedy or objection is. But I'll lodge it here and urge the Board to disregard the line of discussion that focuses on an inadmissible issue that's not the subject of a contention.

CHAIR BOLLWERK: Anything you want to say, Mr. Lovejoy?

MR. LOVEJOY: Well, I was going to ask him what the cost of capital would be if there were going to be a borrowing in the hypothetical situation.

But, if I understood his answer, he refuses to consider that. So, I think I have my answer.

CHAIR BOLLWERK: All right.

MR. LOVEJOY: Let's move to the subject of cylinder management. So, Mr. Krich, do you agree that if the enrichment plant shuts and there's an inventory of cylinders containing DUF6 on site or elsewhere, that the costs of cleaning, if necessary, those remaining cylinders, and disposing if necessary, of any cylinders that must be disposed of, would be decommissioning costs that LES should fund?

WITNESS KRICH: Not exactly.

MR. LOVEJOY: Why don't you give me your position on

it?

WITNESS KRICH: Well, I was going to do that. I just want to make sure this is an area we could talk about.

JUDGE ABRAMSON: That's an issue here.

WITNESS KRICH: Okay. What we have agreed to as a result of the hearing in October is that we would add 60 cents to cover the cost of washing and recertifying cylinders, however many cylinders it takes.

If it's the entire inventory, 30 years worth of cylinders, that's what we would cover. And so, that, I think, addresses the issue of covering the cost of cylinder management, even though we feel very strongly that cost really doesn't need to be included since there's an ongoing need for these cylinders and there's a foreseeable need for these cylinders.

MR. LOVEJOY: So, the 60 cents you've spoken of is -- I think you say in your rebuttal testimony that this corresponds to the cost of cleaning and recertifying cylinders to meet the standards of ANSI, American National Standards Institution, N14.1. Is that what you're talking about?

WITNESS KRICH: I guess you'd have to point me to my testimony.

MR. LOVEJOY: It's in your rebuttal, answer five, page three.

WITNESS KRICH: Answer five?

MR. LOVEJOY: Yes.

WITNESS KRICH: Answer five says that Urenco washes and recertifies cylinders to meet American National Standards Institution N14.1 standard for Uranium Hexafluoride packaging.

This same standard is also used in the United States and Canada when washing and recertifying DUF cylinders.

MR. LOVEJOY: Okay. So, N14.1 is a -- it's a standard issue by the Institution that addresses the cleaning and preparation of cylinders basically for transportation under DOT standards and for reuse in the industry, is that right?

WITNESS KRICH: The ANSI standard is we are committed to conforming to the ANSI standard. And it covers a wide range of activities regarding the cylinders used for transporting uranium hexafluoride.

MR. LOVEJOY: And it's addressed to the use of these cylinders in the nuclear industry, is it not?

WITNESS KRICH: It's addressed to the use of these cylinders, yes.

MR. LOVEJOY: Now, you've also given us with your rebuttal testimony the letter from Cameco, LES Exhibit 123.

WITNESS KRICH: I think you're referring to Cameco.

MR. LOVEJOY: Cameco, okay. Do you have it near in case you want to refer to that?

WITNESS KRICH: What was the number of that Exhibit?

MR. LOVEJOY: One, twenty-three.

WITNESS KRICH: Okay.

MR. LOVEJOY: And it says first that Cameco can wash and recertify cylinders pursuant to ANSI N14.1. And this is the same kind of cleaning for transportation and reuse that Urenco does, correct?

WITNESS KRICH: That is correct. If you look at ANSI standard N14.1, section 6.3.2, periodic inspections and tests, that's what we're referring to.

MR. LOVEJOY: And, if I read your testimony correctly -- and I can give you the citations if you need it -- it's your position that cleaning and recertifying cylinders under ANSI N14.1 is sufficient action for cylinder management because it's your position that the cylinders could be put back into use in the nuclear industry, correct?

WITNESS KRICH: Well, Mr. Lovejoy, today and for the last 50 years, cylinders have been washed and recertified according to the ANSI standard and are continually being reused.

In fact, discussions -- I just had a recent discussion with a transporter of uranium hexafluoride and cylinders. And they are now moving cylinders that are 50 years old.

And, so long as the meet the requirements of the ANSI standard, then you can continue to transport uranium hexafluoride in that cylinder.

MR. LOVEJOY: Okay.

WITNESS KRICH: So, there's no reason to believe why the industry wouldn't continue to do that.

MR. LOVEJOY: Now, if LES stored it's DUF6 in cylinders the whole operating life of the NEF and began tails dispositioning at the end of that life, how many cylinders would there be that LES would be responsible for?

WITNESS KRICH: Well, I think you stated -- I don't have

the exact number, but I think you stated that it was on the order of 13,000 cylinders.

MR. LOVEJOY: And this would be in the year 2036, right?

WITNESS KRICH: Well, we would begin operations, yes, 2036 because the license would be issued in 2006, so 30 years from then.

MR. LOVEJOY: And the deconversion process would take how long?

WITNESS KRICH: Some period of time.

MR. LOVEJOY: You don't know?

WITNESS KRICH: I don't know.

MR. LOVEJOY: Maybe 20 years from 2036, is that a reasonable estimate to talk about a four year construction period and then 16 years of operation of a deconversion plant?

WITNESS KRICH: I think I testified earlier that that's the current schedule in the Areva MOU but that certainly there are efficiencies and improvements that I would expect to occur over the 30 years that the NEF is operating.

MR. LOVEJOY: And, over this time period some of them would be 20, 30, 40 years old, these cylinders?

WITNESS KRICH: Some of them could be as old as 30 years.

MR. LOVEJOY: Do you have any study of the nuclear industry that projects that there is going to be a demand for 13,000 used DUF6 cylinders at that time?

WITNESS KRICH: I have a number of things, Mr.

Lovejoy. First of all, I have the testimony of Dr. Harding at the last hearing. Dr. Harding is the manager of the Capenhurst facility for Urenco.

Dr. Harding deals with the movement of cylinders on a daily basis cylinders on a daily basis. And, if my recollection is correct, he said that the thought of not being able to continue to reuse cylinders was ludicrous.

I also have the Cameco letter which you referred me to. And that says that basically the industry -- they rarely ever dispose of cylinders because they reuse them all the time.

The industry has been reusing these cylinders for 50 years. And in fact, Mr. Lovejoy, when the Sequoia Nuclear Fuels facility shut down in, I believe it was the early 90's, all the usable cylinders were snapped up by the industry.

In fact, Cameco has told us that they got as many of these cylinders as they could from the Sequoia plant. So, there's absolutely no reason -- this is a repeat and I apologize for that.

There's no foreseeable reason to believe that the cylinders won't continue to be reused well into the future. There's going to be enrichment plants, our enrichment plant.

The USEC is going to have an enrichment plant. The nuclear industry is going to continue to operate nuclear plants well into the future. There is going to be worldwide need for these cylinders.

So, to think that for some reason cylinders won't be reused and recycled as we go into the future, is not based on anything that we see today.

MR. LOVEJOY: Well, what we see today is different than what's going to exist in a time period 30 to 50 years from then.

WITNESS KRICH: So, you're postulating that there won't be any enrichment done in 30 years from today and there won't be any nuclear power plants 30 years from now?

MR. LOVEJOY: Well, Mr. Krich, my question is, what are you postulating? What enrichment plants will be in operation in that time frame?

JUDGE ABRAMSON: Perhaps we can focus this a little bit. The decommissioning fund is adjusted every three years, and in this case annually, as I understand it.

So, the initial estimate is that these cylinders will be washed and reused. If at some time in the future the Commission decides or believes that that's not a viable option, would not we expect -- should not we expect there to be an adjustment to the amount in the decommissioning fund to accommodate that change in circumstance?

WITNESS KRICH: That's exactly what the triennial update is for. If there's a change of condition, then the financial assurance has to be adjusted accordingly.

JUDGE ABRAMSON: So, let us not pursue trying to speculate what's going to happen 50 years from now. And let us assume that the triennial update will deal with changes in circumstances.

Now, Mr. Lovejoy, if you'd like to pursue the cost of some of not eating it and whether you think that there should be -- is that better, I had my finger in the wrong place.

If you'd like to discuss the initial estimate and whether there should be some number other than the 60 cents, let's pursue that.

MR. LOVEJOY: Well, Your Honor, I think we can agree on the 60 cents for what it does. There are additional steps beyond that. And, with all respect, I would have hoped to pursue the question of what market this witness projects to see absorbing 13,000 used cylinders.

JUDGE ABRAMSON: Well, perhaps there's one alternative that's worth pursuing. And that I think is addressed a little bit in the supplemental testimony.

And this point is -- and that is, what does it cost to dispose of them if you're not going to reuse them?

MR. LOVEJOY: An excellent question. Mr. Krich, what does it cost to dispose of them if you're not going to use them?

WITNESS KRICH: Well, I think you have to go back to the Cameco letter for that. And, in fact, Cameco looked at -- they talked in here about disposing, which is something they rarely do.

They only do it with damaged cylinders and have indicated that the 60 cents per KgU that we gave them, the figure we gave them, would be sufficient to cover the cost of cleaning a cylinder to meet the release standards. That's in their letter.

MR. LOVEJOY: Now, Cameco is a Canadian corporation, they're not speaking about U.S. standards, are they?

WITNESS KRICH: Yes, they are, in terms of the ANSI N14.1, if that's what you're referring to.

MR. LOVEJOY: I'm talking --

WITNESS KRICH: That's the standard they used to wash and recertify cylinders.

MR. LOVEJOY: We talked about that. And that's the standard for continuing to use the cylinders in the nuclear industry. I'm not talking about that now.

I'm talking about cleaning to free-release standards. And I see in the last paragraph on the first page of the Cameco letter a reference to Canadian free release standards.

So that's what they're talking about, isn't it?

WITNESS KRICH: That's what it says in the letter, yes.

MR. LOVEJOY: They don't have a viewpoint on U.S. standards?

WITNESS KRICH: Well, we have a viewpoint, Mr. Lovejoy. The standard that Cameco claims to -- in the rare cases when they will clean up a cylinder for release is .4 Becquerels per centimeter square averaged over 300 centimeters.

If you look at that relative to the standards that the NRC has established in the brash technical position, it's well below that. By the way, that's .4 Becquerels for both alpha and beta.

JUDGE ABRAMSON: I'm sorry, this is below the NRC standard or --

WITNESS KRICH: Below the BTP standard for release for free -- basically the standard that's in place for decommissioning facilities.

MR. LOVEJOY: So, these data are not items that show up in the Cameco letter, are they?

WITNESS KRICH: Yes, they are. The Cameco letter states clearly that the clean to the release standards. We've told you what the release standard is.

And they've said that, in cleaning it to that standard, it's covered well within the 60 cents. I'm not sure what's missing.

MR. LOVEJOY: Well, they don't cite the standards in this letter.

WITNESS KRICH: Well, the standards can be found in the Canadian regulations. But the standard they're using is the .4. It's also the IAEA standard, Mr. Lovejoy.

MR. LOVEJOY: So, what this letter says is that they are familiar with the steps. It doesn't actually say he's done it. It says, based on our knowledge of these activities, he's confident that 60 cents per KgU would be sufficient.

WITNESS KRICH: Do you have a question here?

MR. LOVEJOY: Let me finish. Are you testifying that there's a mass production method available, tested and confirmed, that could be used to clean 13,000 cylinders to free release standards?

WITNESS KRICH: I really can't answer that question. Nobody is saying that we're going to mass release 13,000 cylinders. What I can point you to is the paragraph above that.

It says, throughout our -- and this is Cameco talking. It says, throughout our operation's history, Cameco has only disposed of a very few damaged cylinders.

So, you can see the need the scrap some of this is rare.

Our standard practice -- so that means that they actually do this -- is to wash and recertify cylinders every five years so that they may be used.

For these reasons I cannot give you a going rate. However, they have told us, and they clearly in this letter, that they have scrapped some cylinders because they were damaged.

Now, I think that what we've said here is that it is foreseeable, and I think the Judge has pointed out that if that condition changes, then we would have to change our cost estimate.

But I think what we've said is that, based on today's conditions, it's nothing but foreseeable that these cylinders will be continued to be reused. If some cylinders need to be scrapped because they're damaged, I think that would be a small number.

And, in any event, what this says from Cameco, the information we have from Cameco, who has scrapped cylinders, is that the 60 cents is more than enough to cover that.

MR. LOVEJOY: And the information also contained in the letter from Cameco is, quote, I cannot quote you a going rate for cylinder decommissioning by Cameco, isn't that right?

WITNESS KRICH: What he has given me is a rate that they would charge me if I sent them a damaged cylinder that needed to be scrapped. As I've said, Mr. Lovejoy, he's not talking about -- he can't give me a rate for scrapping 13,000 cylinders because nobody, especially Cameco, could ever plan on scrapping 13,000 cylinders since they're such a valuable commodity.

JUDGE ABRAMSON: Let me pursue this just for a

mornent. At the end of year five, Mr. Krich, approximately how many cylinders would LES have generated?

WITNESS KRICH: In five years of production there's a ramp-up. So, it would be on the order of about 4,000-4,500 cylinders.

JUDGE ABRAMSON: And, at the end of year ten?

WITNESS KRICH: At ten it would be 5,016 cylinders. This is assuming --

JUDGE ABRAMSON: Okay. So, at ten years out we will have had nine periodic adjustments?

WITNESS KRICH: Yes.

JUDGE ABRAMSON: And will have had nine times to look at this and decide whether they're going to be recycled. And, at that point you will have 5,000 cylinders, not 130,000 cylinders.

Is there any reason to believe that we don't have reasonable assurances today that 5,000 cylinders would recycle in the market? Is that clear?

Is there any reason to believe we don't have reasonable assurances today, which is a standard that I believe the Commission needs to use in establishing the size of its decommissioning trust fund, is there any reason to believe that we don't have reasonable assurances today that 5,000 or 10,000 cylinders would be -- I'm sorry, what was it -- yes, 5,000 cylinders would be recycled into the industry?

WITNESS KRICH: There's no reason not to believe that. The manufacturer continues to manufacture new cylinders because there is a market for it.

MR. LOVEJOY: Your Honor, the witness has, in his prefiled testimony, stated the strategy of waiting until 2036 to start the decommissioning and deconversion process.

JUDGE ABRAMSON: Mr. Curtiss, do you want to say something?

MR. CURTISS: No, I don't have anything further to say. I'll redirect on this issue.

JUDGE ABRAMSON: I understand where you're going, Mr. Lovejoy. But I have to remind you that we're aware and that the focus here is what is an appropriate assurance at this point?

What do we need to have in the fund now as the reasonable best estimate that gives us comfort, reasonable assurances I think is the language that's in the reg, that we funded enough to cover what the bond covers, which is the first three years?

And that will be adjusted periodically. So, I think a focus on what happens 30 years out is inappropriate at this point or not related to the system operates, to the way our regulatory system operates.

MR. LOVEJOY: Well, what is the market -- what is the size of the market even today for used DUF6 cylinders?

WITNESS KRICH: I don't know what it is, Mr. Lovejoy. I'm not in that market. But I do know that the manufacturer -- one of the manufacturers, the only manufacturer I'm aware of in the United States, is continuing to manufacture at close to its capacity.

MR. LOVEJOY: And, how much do they -- well, what do they contribute to the market?

WITNESS KRICH: I believe they manufacture 2,500 cylinders a year.

MR. LOVEJOY: Who is the manufacturer?

WITNESS KRICH: Westman.

CHAIR BOLLWERK: I'm sorry, can you say that again or spell it?

WITNESS KRICH: Westman. I believe it is spelled W-E-S-T-M-A-N.

CHAIR BOLLWERK: All right. Thank you.

MR. LOVEJOY: Would you indulge me in just a moment?

WITNESS KRICH: I guess I would also point out maybe just another piece of information. The cylinders that are coming from DOE, because when they go through their deconversion, those cylinders will not go back in to be reused, because they are going to be buried with the uranium oxide.

So, you won't be getting those cylinders back into circulation as well.

(Pause.)

MR. LOVEJOY: Okay, I can pass the witness at this point.

CHAIR BOLLWERK: All right. Let me see if there's any redirect then.

MR. CURTISS: I have about five minutes. And I can do that at the Board's, whatever you would prefer.

CHAIR BOLLWERK: Let's go ahead and finish up the witness.

EXAMINATION BY MR. CURTISS OF:

ROD KRICH

MR. CURTISS: Mr. Krich, a couple of questions on the procedure of the cylinder washing questions first. You just commented that the DOE cylinders that you referred to would not be coming back onto the market. How many cylinders are there?

WITNESS KRICH: On the order of about 56,000 cylinders.

MR. CURTISS: Okay. Second question, do you assume in your financial assurance estimate that any revenue that you might get from a reuse or by your others, particularly others, would offset your financial assurance estimate?

WITNESS KRICH: No, not at all. That's not included in any of the financial estimate.

MR. CURTISS: Is it reasonable to assume in the preparation of your financial assurance estimate for the cost of cylinder washing that the cylinders would be regularly damaged?

WITNESS KRICH: No.

MR. CURTISS: All right.

WITNESS KRICH: In fact, we're required by our commitments in our license and as reflected in the SER to have a cylinder management program which requires that we survey and repair any damage to the cylinders.

MR. CURTISS: All right. Just to be clear here, you have committed to 60 cents per KgU for the cost of cylinder washing and

recertification, is that correct?

WITNESS KRICH: That is correct.

MR. CURTISS: And how does that compare to the actual number in the Cameco letter?

WITNESS KRICH: Cameco, who does this washing and recertification for U.S. customers, charges, as they said in their letter, about 29 cents, less than half per KgU.

MR. CURTISS: Okay. I'd like to return to the cost of capital just for a very few number of questions. Mr. Krich, there's been a lot of discussion of the Areva MOU.

And I have a couple questions to ask you about this MOU. Was it your intent in that MOU to commit to a specific time frame for constructing a deconversion facility during the operating life of the NEF as a central element of your showing that you've satisfied the NRC financial assurance requirements?

WITNESS KRICH: No, it was not.

MR. CURTISS: Is there any reference in your application to a schedule for constructing a deconversion facility?

WITNESS KRICH: No, there is not.

MR. CURTISS: Is there any NRC requirement that the deconversion facility must be constructed and in operation at any specific point during the operation of the NEF?

WITNESS KRICH: There is no such requirement that I'm aware of.

MR. CURTISS: And you previously describe the financial

assurance that you will establish over a 30 year life. Is it the case, Mr. Krich, that if you follow that approach there's no need to borrow funds to finance a deconversion facility?

WITNESS KRICH: That is correct. It would be more than enough money to pay for a deconversion facility.

MR. CURTISS: What was the purpose of the Areva MOU?

WITNESS KRICH: The purpose, I think I stated earlier, was to address the contention about the fact that someone would come in and build a deconversion plant was mere speculation.

And so, following the Commission's guidance that we have to have more than mere speculation but less than a contract, we pursued an MOU with Areva.

MR. CURTISS: You noted earlier that the Areva MOU was offered and admitted as an exhibit in this proceeding. Did you place the Areva MOU on the docket?

WITNESS KRICH: No, I did not.

MR. CURTISS: I don't have any further questions.

CHAIR BOLLWERK: All right, any recross?

MR. LOVEJOY: Yes.

EXAMINATION BY MR. LOVEJOY OF:

ROD KRICH

MR. LOVEJOY: I'd like to mark, it's probably 286 --

CHAIR BOLLWERK: Yes.

MR. LOVEJOY: -- a letter from February 11th, 2005 on

the letterhead of National Enrichment Facility in connection with a response to NRC request for additional information relating to preparation of the EIS for the National Enrichment Facility. And I offer this document in evidence.

CHAIR BOLLWERK: All right. Let the record reflect Exhibit 286 as described by Counsel, a February 11th, 2005 NEF REI response has been identified for the record.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 286 for identification.)

CHAIR BOLLWERK: Any objections to its admission?

(No verbal response.)

CHAIR BOLLWERK: Hearing none, then NIRS/PC Exhibit 286 is admitted into evidence.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 286 was admitted in evidence.)

MR. LOVEJOY: Do you have Exhibit 286, Mr. Krich?

WITNESS KRICH: I'm assuming that this is Exhibit 286.

MR. LOVEJOY: February 11, 2005?

WITNESS KRICH: Yes.

MR. LOVEJOY: And, is this signed by Daniel Green on your behalf?

WITNESS KRICH: Yes, it is.

MR. LOVEJOY: I'm looking now at page 15 of the

attachment. And let me just ask you if I'm accurately reading the text in the LES response. It says, as discussed in response to item 4-5A, a memorandum of agreement between LES and Areva concerning the eventual construction of a deconversion facility to be located near the NEF but outside the state of New Mexico, is described in the attached press release, attachment 4.5A1.

It is LES' intent to use such a facility to deconvert the depleted uranium byproduct to U3O8, dispose of it, and the text continues on. Did I read that correctly?

WITNESS KRICH: Yes.

MR. LOVEJOY: So, you communicated to the Staff of the NRC that LES' intent was to use a facility as described in the MOU with Areva, correct?

WITNESS KRICH: No, the answer that we provided here was our intent to provide to the Staff that it was our business intent to enter into agreement with Areva.

And, in fact, we included the -- not the MOU itself, so there's discussion of time frames here. But we included the press release announcing -- it's a public press release, of course -- announcing that Areva and LES had signed this agreement.

There's nothing in the press release or in the answer that said that we were counting on this scenario for our preferred option. This was discussing -- this was really talking about what we were pursuing in terms of a business strategy.

MR. LOVEJOY: And you advised the Staff that it was

LES' intent to use such a facility?

WITNESS KRICH: No, what we told the Staff is what we said in the response, that we were pursuing this with Areva.

MR. LOVEJOY: Okay. I have no more questions.

CHAIR BOLLWERK: All right, anything further?

(No verbal response.)

CHAIR BOLLWERK: All right. And again, I haven't asked the Staff about any questions since you didn't do any cross. My assignment is you didn't have any questions.

MS. CLARK: No questions, thank you.

CHAIR BOLLWERK: All right. At this point I think we're ready for our lunch break. When we return we will have the Staff witnesses sworn in and subject to cross examination. It's currently quarter to one. Why don't we come back at quarter to two, 1:45 from our lunch break. Thank you every one.

(Whereupon, at 12:45 p.m. the above-entitled matter was recessed for lunch.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

1:45 p.m.

CHAIR BOLLWERK: A couple procedural matters. The first one is a question regarding an Exhibit which was marked for identification as NIRS/PC 285, which was the web page that you showed us.

Did you want that admitted into evidence?

MR. LOVEJOY: Yes.

CHAIR BOLLWERK: All right. Is there any objection to that?

(No response.)

CHAIR BOLLWERK: Hearing none, then, NIRS/PC exhibit 285 is admitted into evidence.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 285 was admitted in evidence.)

CHAIR BOLLWERK: The second thing that I thought we would go ahead and put on the record is a brief discussion that the Board had with the Staff about the question of DOE's, the RAIs that had been sent to the Department of Energy.

Do you want to say something about that, briefly?

JUDGE ABRAMSON: Well, I was asking the Staff what they thought their time frame was for getting some -- for firming up their view of the DOE numbers, and maybe Mr. Johnson, you can just give us a short --

WITNESS JOHNSON: We have been reviewing the DOE cost estimate since it came in, in June of 2005. And there have been a series

of questions that have come up. And I think we are pretty close to the end of getting those resolved.

There still are a couple of questions that are outstanding, that we are waiting input from LES to resolve those. But I'm hopeful that we can get those resolved, you know, in the next couple of weeks.

But LES has gone to DOE and asked them to provide this information, and not all of it has been provided, as of right now.

CHAIR BOLLWERK: All right. If there is nothing else, procedurally, that the parties have at this point, why don't we go ahead and deal with the Staff panel, then.

Whereupon,

TIMOTHY JOHNSON

JENNIFER MAYER

JOHN COLLIER

CRAIG DEAN

were called as witnesses by counsel for the Staff and, having been duly sworn, assumed the witness stand, were examined and testified as follows:

MS. CLARK: Could you each please state your names for the record?

WITNESS MAYER: I'm Jennifer Mayer.

WITNESS JOHNSON: I'm Timothy Johnson.

WITNESS COLLIER: John Collier.

WITNESS DEAN: Craig Dean.

MS. CLARK: Thank you. Do you have, before you, a document entitled NRC Staff Prefiled Testimony Concerning Clarifying Information Relating to Cost Estimate of Deconversion, dated December 29th, 2005?

WITNESS DEAN: Yes.

WITNESS COLLIER: Yes.

WITNESS JOHNSON: Yes.

WITNESS MAYER: Yes.

MS. CLARK: Did you assist in preparing that testimony?

WITNESS JOHNSON: Yes.

WITNESS COLLIER: Yes.

WITNESS MAYER: Yes.

WITNESS DEAN: Yes.

MS. CLARK: Do you have any corrections or revisions to that testimony, to make at this time?

WITNESS JOHNSON: No.

WITNESS MAYER: No.

WITNESS COLLIER: No.

WITNESS DEAN: No.

MS. CLARK: Do you adopt this testimony as your sworn testimony in this proceeding?

WITNESS MAYER: Yes.

WITNESS JOHNSON: Yes.

WITNESS DEAN: Yes.

WITNESS COLLIER: Yes.

MS. CLARK: I now move to have the Staff's direct testimony be admitted into the record.

CHAIR BOLLWERK: Any objections?

(No response.)

CHAIR BOLLWERK: All right. Hearing none then the NRC Staff Prefiled Testimony Concerning Clarifying Information Relating to Cost Estimate of Deconversion will be adopted into the record as if read.

(Whereupon, the direct prefiled testimony of Mr. Johnson, Mr. Dean, Ms. Mayer and Mr. Collier was bound into the record as if having been read.)

December 29, 2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
LOUISIANA ENERGY SERVICES, L.P.	)	Docket No. 70-3103
	)	
(National Enrichment Facility)	)	ASLBP No. 04-826-01-ML
	)	

NRC STAFF PREFILED TESTIMONY CONCERNING CLARIFYING INFORMATION RELATING TO COST ESTIMATE OF DECONVERSION

Q.1. Please state your name, occupation and by whom you are employed.

A.1. (TJ) My name is Timothy C. Johnson. I am the U.S. Nuclear Regulatory Commission (NRC) Project Manager overseeing the licensing of the proposed Louisiana Energy Services, L.P. (LES) uranium enrichment facility near Eunice, New Mexico. I have been the PM for the project since its inception in January of 2002, when LES initiated discussions with NRC for the project.

A.1. (JM) My name is Jennifer Mayer. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

A.1. (CD) My name is Craig Dean. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

A.1. (JC) My name is John Collier. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

Q.2. Please describe your current job responsibilities in connection with the Staff's review of the decommissioning funding plan proposed in the LES application to build and construct a uranium enrichment facility in Lea County, New Mexico, to be known as the National Enrichment Facility (NEF).

A.2. (TJ, JM, CD) Our statement of job responsibilities related to the Staff's review of the decommissioning funding plan and our professional qualifications were submitted with our previous testimony, dated September 15, 2005, in this proceeding.

A.2. (JC) I have assisted the NRC Staff in evaluating LES's evaluation of the cost of capital, which I refer to here as debt service, which would be associated with the construction of a private deconversion facility. In order to assess the cost estimate provided by LES, I reviewed the analysis at pages 49-50 of "Louisiana Energy Services, L.P.'s Proposed Findings of Fact and Conclusions of Law Concerning Contentions NIRS/PC EC-3/TC-1, EC-5/TC-2, EC-6/TC-3, and EC-5 (As Remanded)" (Findings of Fact). I prepared spreadsheet analyses based on LES' assumptions contained in the Findings of Fact dated November 30, 2005, and supplemented by discussions of its assumptions as described in the record of a teleconference between LES and NRC of December 19, 2005, concerning financial assurance for disposition of the tails to be produced by the NEF. A statement of my professional qualifications is attached.

Q.3. On November 23, 2005, LES submitted a letter containing clarifying information related to the cost estimate for the deconversion of DUF_6 which will be necessary before ultimate disposal of the depleted uranium tails generated by the NEF. Have you reviewed the information in the letter?

A.3. (TJ, JM, CD, JC) Yes, we have.

Q.4. In Section I of the letter, LES discusses cylinder washing and disposal associated with deconversion. In your opinion, is this a necessary element of the deconversion process?

A.4. (TJ, JM, CD) Yes.

Q.5. LES states that the DUF_6 cylinders are a valuable operational commodity and can be continuously reused or recycled for storing and/or transporting radioactive material. Accordingly, LES states that fully serviceable cylinders would not be cut up and disposed of as a routine matter. Do you agree with these conclusions?

A.5. (TJ, JM, CD) Yes. Cylinder washing and/or re-certification of serviceable cylinders may be carried out under two scenarios.

Q.6. What is the first scenario?

A.6. (TJ, JM, CD) Under the first scenario, tails are processed during the operational life of the NEF. Cylinders would be reused by being sent back to the NEF to store and transport additional tails. If the cylinders require washing and/or re-certification prior to reuse, the reuse and/or re-certification would be an operational cost, rather than a decommissioning cost, and thus not subject to financial assurance.

Q.7. Under the first scenario, will there be any costs for which financial assurance is required?

A.7. (TJ, JM, CD) Yes. Under this scenario where tails are deconverted during the operational life of the facility, there will still be some cylinders at the end of the NEF life that will not be reused (by the NEF), because they contain the "final batches" of tails. Washing and/or re-certification of these final cylinders would appropriately be considered a decommissioning

cost subject to financial assurance, in order for them to be released. Once washed and/or re-certified, these cylinders could be re-used by another party or recycled. Hence, disposal costs for the cylinders would not be required. This is consistent with the financial assurance requirements, which look to being released from regulatory control as the end-point, rather than knowing the exact final disposition. This is similar to the fact that buildings being decommissioned must meet free-release levels, but do not need to be torn down and hauled away.

Q.8. What is the second or alternative scenario?

A.8. (TJ, JM, CD) Under the second scenario, tails are processed at one point at the end of the operational life of the NEF. Under this scenario, all of the tails would be processed at the same time, and this would not be available for reuse by the NEF. This is the "worst case" scenario.

Q.9. Under the second scenario, will there be any costs for which financial assurance is required?

A.9. (TJ, JM, CD) Yes. In this scenario, all of the cylinders would be similar to the "final batch" described above. Thus, all of the cylinders would require washing and, as necessary, re-certification in order to meet the release levels. The cost of washing and re-certification necessary for a sufficient number of cylinders to accommodate all of the tails would need to be considered in determining the required financial assurance. As described above, once these cylinders are washed and/or re-certified, they could be re-used by another party or recycled, and disposal costs will not need to considered.

Q.10. What requirements are you aware of that apply to the reuse of these types of cylinders?

A.10. (TJ) Certification requirements for UF_6 cylinders are specified in ANSI N14.1, "American National Standard for Nuclear Materials - Uranium Hexafluoride - Packaging for Transport," Section 6.3.2. This standard requires that all cylinders be periodically inspected and tested throughout their service life at intervals not to exceed 5 years, except that cylinders already filled prior to the 5-year expiration date need not be tested until the cylinder has been emptied. These periodic inspections include an internal and external inspection by a qualified inspector along with a hydrostatic test and an air leak test. All couplings, valves, and plugs are also inspected.

Q.11. What conclusions can you make regarding the number of cylinders whose washing and re-certification should be accounted for with regard to decommissioning financial assurance?

A.11. (TJ, JM, CD) NRC does not require that the worst case situation be assumed for purposes of financial assurance. LES has stated that they intend to follow the first scenario of reusing and recycling cylinders throughout the life of the plant, and this is a reasonable assumption. However, the number of cylinders that should be accounted for with respect to financial assurance will depend on the rate at which they are recycled, and that rate is not known at this time.

Q.12. LES has estimated the cost of washing and re-certification at $0.58 to $0.60 per kgU based on the Urenco business study. Do you know the source of this information?

A.12. (TJ, JM, CD) LES has testified that it based this cost on information from the

Urenco business study and from information obtained from Cameco, a company that mines uranium and converts to yellow cake for eventual enrichment for use in nuclear power reactors. Subject to confirmation that the information is adequately documented, I believe that these sources would be sufficient to document the price used by LES.

Q.13. LES has committed to include an additional cost of cylinder washing of $0.60 per kgU. In your view, is this a reasonable estimate of the cost of this aspect of the deconversion process?

A.13. (TJ, JM, CD) The appropriate cost per kgU depends, in part, on assumptions about the amount of tails contained in a typical cylinder and on whether cylinder washing or disposal is assumed. The Urenco business study estimated slightly more than $0.60 for washing and slightly less than $0.60 for disposal for a cylinder holding 8500 kgU. We would consider $0.60 reasonable, if confirmed and documented by Cameco, which has extensive experience with such activities in the United States. Since these are third party sources for this information we believe that the information supplied, if properly documented, would be an appropriate basis on which to estimate the cost for this service.

Q.14. In Section II of the letter, LES has stated that it is prepared to commit to an additional $0.40 per kgU to account for the cost of capital, assuming a borrowing rate of 10 percent and an amortization period of 17 years for a facility to deconvert the tails from the NEF. LES provided a mathematical formula by which it calculated this cost in its Findings of Fact filed on November 30, 2005. What is your opinion of the calculations provided by LES for this cost?

A.14. (TJ, CD, JC) LES calculated the $0.40 per kgU figure by (a) calculating an annual debt service payment of approximately $8.399 million, (b) dividing this annual debt service payment by the maximum annual throughput (7,000,000 kgU) of the hypothetical deconversion facility to yield a debt service cost of $1.20 per kgU, and then (c) subtracting from this $1.20 cost per kgU the amount of $0.80 per kgU which corresponds to the per kgU cost of construction plus licensing and engineering.

We identified several issues with the calculation presented in the Findings of Fact. First, the calculation of the $8.399 million figure assumes that the total amount borrowed, which includes the estimated cost of construction plus licensing and engineering, is $88 million. However, this does not account for any escalation in costs during the four year construction period over which the funding will be borrowed. Second, the $8.399 million figure is calculated using an interest rate of 6%, which was stated to be the after-tax equivalent of a 10% interest rate. We could not confirm the validity of the LES assumption that a 10% interest rate would translate into a 6% after-tax rate. In general, capital costs (including capitalized interest) can reduce income taxes only through the interactive effects of depreciation, company-specific marginal tax rates, and the taxable entity's earning sufficient income to obtain the full tax benefit. Given these factors, we question the validity of equating a 10% interest rate to a 6% after-tax rate.

Q.15. LES provided further information regarding the expected allotment of construction costs and ramp up of the deconversion facility during a teleconference with the Staff on December 19, 2005. Specifically, LES stated that construction costs would be allocated at a rate of 10% the first and second years and 40% the third and fourth years. In

addition, LES stated that the plant would be able to operate at full capacity nearly immediately after construction was complete. Based on the information provided, have you reached a determination has to whether the $0.40 per kgU is a reasonable estimate of the debt service which would be incurred?

A.15. (TJ, CD, JC) Our analysis indicates that the adequacy of the $0.40 per kgU depends on the assumptions made regarding the ultimate disposition of the tails. If it is assumed that the flow of funds is designed to result in the collection of a sum of money at the end of the lifetime of the NEF that is sufficient to finance $88 million in construction, licensing, and engineering costs to build a plant to carry out tails deconversion, then we believe that there would be no need to include the $0.40 figure at all. If, on the other hand, it is assumed that the $0.40 per kgU would help cover debt service to finance the construction of a deconversion plant to begin in 2012 and be operating by 2016, then our analysis using the assumptions described in LES' proposed findings of fact of November 30, 2005, and the telephone conversation of December 19, 2005, indicates that the flow of funds would not be sufficient to pay for debt service for the deconversion facility in any year except one (2030) out of the 17-year repayment period.

Q.16. On what basis did you base that conclusion?

A.16. (TJ, CD, JC) In order to determine whether the deconversion facility would have sufficient funds to pay for debt service, John Collier prepared a spreadsheet in order to assess the flow of funds. Based on information provided by LES, the analysis was based on the following assumptions: (1) The borrowing rate would be 10%, the inflation rate 3%, and the repayment schedule would be over 17-years, (2) construction would begin in 2012 and be

completed in 2015, with operations to commence in 2016, (3) the borrowing of funds for construction and licensing and engineering would be incurred at the rate of 10% in year 2012 and in year 2013 and 40% in year 2014 and in year 2015, and (4) the facility would operate at full capacity beginning in 2016. The analysis also assumed the facility had no customers other than LES. As the spreadsheet shows, assuming that the deconversion facility receives income based on the figures estimated by LES, the facility's collections for debt service under these assumptions will not be adequate except in the year 2030.

Q.17. Are these conclusions dependent on the assumptions you have discussed?

A.17. (TJ, CD, JC) Yes, this analysis is highly dependent on the assumptions we have mentioned. For example, if LES is able to obtain financing at a lower rate or on special terms, these factors would have to be accounted for in the calculation. I have used assumptions such as a 10% interest rate simply because it was used by LES in its Findings of Fact, not based on any analysis on my part of what the appropriate rate would be.

Q.18. Have you done any independent research to determine whether the assumptions you have used are correct for this analysis?

A.18. (TJ, CD, JC) No, I have relied on information I have obtained from LES representations and have not performed any independent research to obtain this information. In this regard, we note that the determination of an adequate debt service amount is dependent on a number of factors that are uncertain, including the likely rate of interest that would be charged, whether that rate of interest would be affected by tax credits and, if so, when such credits could be taken and their size, and possibly other factors.

Q.19. Does this conclude your testimony?

A.19. (TJ, JM, CD, JC) Yes.

JOHN R. COLLIER **ICF CONSULTING**
Principal

EDUCATION

1987	M.B.A., Finance, University of Chicago Graduate School of Business
1983	B.A., with honors, Economics, University of Chicago

EXPERIENCE OVERVIEW

Mr. Collier is a Principal with more than 15 years of experience in NRC financial assurance programs, financial analysis, and cost estimation. He serves as the lead financial consultant on ICF's financial advisory support contract with the U.S. Nuclear Regulatory Commission (NRC). Mr. Collier, who holds an MBA in finance, has conducted numerous economic and financial analyses of entities in both the public and private sectors. He has provided regulatory and economic support for the development, implementation, and analysis of a wide variety of financial assurance programs, including those of the NRC and other federal agencies. His specific experience includes the following:

PROJECT EXPERIENCE

Financial Analysis

Viability Analysis of USEC and its Uranium Enrichment Operations. Managed an NMSS-commissioned 150-page quantitative financial analysis of USEC's ability (post-privatization) to provide a reliable and economical source of domestic enrichment services. The study's objectives were to examine the economic, financial, and business characteristics of USEC, to evaluate USEC's ability to generate positive cash flows, and to assess USEC's ability to profitably enrich uranium at its two gaseous diffusion plants or at a future gas centrifuge facility. As part of this study, ICF developed a detailed assessment of the financial condition and prospects of the privatized USEC Corporation. Developed a comprehensive cash flow model addressing numerous alternative operating scenarios and spanning the period 2000-2010.

Expert Testimony on Ability to Pay for Decommissioning. Provided expert witness testimony for the Maryland Department of the Environment (MDE) in a case involving clean-up and decommissioning of a firm/facility that operates four business lines, including two large irradiators and the manufacture of sealed sources, related to the use of Cobalt-60. Evaluated the company's ability to contribute funds for decommissioning. Reviewed bankruptcy documents, tax returns, financial statements, and internal financial documents. Evaluated the firm's business prospects and likely free cash flows, as complicated by the fact that MDE had suspended certain operations under one of its licenses.

Financial Capability Assessment of Group II Sites. For the U.S. Nuclear Regulatory Commission, evaluated eight corporations and one public authority and classified each entity relative to its capacity to fund the full amount of estimated decommissioning costs. Obtained and reviewed financial data and other company and industry information. Identified financial trends, environmental liabilities, industry trends, and other aspects of financial condition.

NRC Casework on Corporate Viability and Ability to Pay. Supported NRC in casework for various low-level waste disposal facilities, uranium recovery and/or enrichment facilities, and sealed source manufacturers. Cases included Sequoyah Fuels, Safety Light, Parks Township, Envirocare, Advanced Medical Systems, Energy Fuels Nuclear, and American Nuclear. Conducted analyses of corporations, partnerships, and other entities to assess viability of the entity in the short- and/or long-term. Issues have included insolvency, contingent liabilities, financial interdependence between a corporate parent and its subsidiaries, applicability of coverage under existing insurance policies, and others.

Financial Viability Criteria for NRC Material Licensees. Analyzed criteria for potential use in a self-guarantee mechanism for demonstrating financial assurance for decommissioning licensed facilities. Developed a database of NRC licensees and related financial information, and evaluated licensees relative to potential self-guarantee criteria including net worth and bond ratings.

Development of Financial Assessment Guidance. Prepared guidance on evaluating the financial condition of firms using financial ratios and size measures. The guidance presented and described important financial measures, provided benchmark data, and discussed other considerations relevant to a financial evaluation.

NRC Financial Criteria for Non-Profit Hospital and University Licensees. Evaluated the feasibility of self-guarantees for hospitals and universities. Researched and analyzed relevant accounting practices and financial measures. Developed database of hospital and university licensees along with relevant financial information, and analyzed relative to potential criteria.

Effect of Deregulation on Nuclear Reactor Decommissioning Funding. Managed an NRC analysis of the deregulation of the electric utility industry and its impact on decommissioning funding for power reactors. Research included potential deregulatory scenarios, the financial condition of the industry, and the status of decommissioning funding for individual firms and reactors. Prepared a regulatory analysis of a proposed rule amending the financial assurance requirements for the decommissioning of nuclear power plants, which required the collection and analysis of information on reactor decommissioning costs, current status of decommissioning trust funds, practices and requirements of public utility commissions, and potential impacts of electric utility deregulation. Carried out complex financial modeling of the impacts of alternative deregulation scenarios.

Financial Assurance Regulations of 10 CFR Parts 30, 40, 50, 70, and 72

NRC Decommissioning Funding Plan Reviews. Since 1989, supported NRC in reviewing more than 300 non-standard decommissioning funding plans and certifications of financial assurance submitted by nuclear materials licensees. These reviews entailed detailed evaluations of financial mechanisms, decommissioning cost estimates, and descriptions of the methods to be

used to periodically adjust the site-specific cost estimate. Cost estimates are reviewed for completeness, accuracy, level of detail, and magnitude of estimated costs. Financial mechanisms are evaluated for their validity and effectiveness in assuring decommissioning costs. Managed this support for 10 out of the last 15 years. Successfully managed the simultaneous detailed review of 100 company submissions (each of which required approximately 18 hours to review) in only 45 calendar days.

Evaluation of NRC's Financial Assurance Programs Applicable to Waste Brokers. Developed an issues paper that characterizes the atypical features of NRC-licensed waste brokers and evaluates the effectiveness of NRC's regulatory programs for assuring funding for decommissioning of waste broker facilities. Estimated the number of waste brokers licensed by NRC and Agreement States. Identified areas where existing regulations appear inadequate, assessed the associated financial risks, and recommended ways in which problems might be corrected.

Estimating the Degree of Assurance Provided by Alternative Financial Assurance Mechanisms. To assist NRC in addressing a petition for rulemaking, developed a methodology to estimate the relative degree of financial assurance provided by allowable financial assurance mechanisms, including trust funds, escrow accounts, letters of credit, surety bonds, insurance, and parent company guarantees. Collected data on the solvency status of manufacturing companies and of several categories of financial institutions including sureties, banks, savings and loans, insurers. Also assessed the assurance provided by a self-guarantee mechanism proposed by petitioners. Contributed to NUREG/CR-5845.

Workshops on NRC Decommissioning Funding Plan Reviews. Prepared and presented workshops on the review process for evaluating decommissioning funding plans and financial responsibility mechanisms applicable to NRC materials licensees. Presented workshops to State and NRC Regional staff across the country. Managed preparation of all necessary materials including case studies, briefing notebooks, and full-color slides.

Decommissioning Costs and Technology

Estimating Decommissioning Costs for Group II Sites Under Restricted and Unrestricted Release Scenarios. For NRC, managed the estimation of two sets of decommissioning costs for 10 sites. Each site's cost estimate for unrestricted release included activities needed to allow free release of the site. Cost estimates for restricted release provide for some radioactive materials to remain at the site under appropriate institutional controls; the amount of material remaining on a given site depends on whether the lower-cost option for that site entails (1) removing and disposing of only "hot spots" off site, leaving at the site any lesser contamination, or (2) disposing of all contaminated materials in an on-site cell.

Cost Estimate for Designing, Licensing, Constructing, and Operating an Independent Spent Fuel Storage Installation (ISFSI). As part of ICF's litigation support for a private client, managed the estimation of costs associated with storing spent nuclear fuel from a power reactor. Estimated the amount of spent fuel to be stored, along with the cost to design, license, construct, and operate a suitable ISFSI.

Decommissioning Cost Study of Nuclear Materials Licensees. Managed an analysis of the decommissioning costs of nuclear material licensees to evaluate the adequacy of the certification levels specified in regulations. Estimated costs for a representative reference sample of licensees across applicable NRC program codes. Analyzed the reference data to model cost relationships across limited licensee characteristics, and applied the model to estimate costs for all relevant licensees. The analysis served as the basis for an NRC rulemaking revising the certification levels.

Reactor Cost Analysis. Designed an approach for evaluating decommissioning costs incurred by nuclear power reactors.

Estimating Replacement Power Costs for a Non-Operating Power Reactor. As part of ICF's litigation support for a private client, managed the estimation of replacement costs associated with the temporary shutdown of a nuclear power reactor.

Preparation of Rulemaking and Guidance Documents

Estimating Decommissioning Costs Under Restricted and Unrestricted Release Scenarios. For NRC, managed the development of methodologies for estimating decommissioning costs of contaminate sites under both restricted and unrestricted release scenarios. Although developed for particular sites, NRC had distributed the methodology internally as guidance for project managers. Cost estimates for restricted release provide for some radioactive materials to remain at the site under appropriate institutional controls; the amount of material remaining on a given site depends on whether the lower-cost option for that site entails (1) removing and disposing of only "hot spots" off site, leaving at the site any lesser contamination, or (2) disposing of all contaminated materials in an on-site cell.

Review and Revision of NRC Financial Assurance Guidances. For NRC, evaluated existing NMSS financial assurance guidance documents, including guidances applicable to low-level radioactive waste disposal facilities, materials licensees, and uranium recovery facilities. Guidances reviewed included NUREG-1337, Regulatory Guide 3.66, NUREG-1199, NUREG-1200, and "Technical Position on Financial Assurances for Reclamation, Decommissioning, and Long-Term Surveillance and Control of Uranium Recovery Facilities." Also led a comprehensive revision of NRC's Standard Format and Content guides and Standard Review Plans addressing decommissioning cost estimates and financial assurance submittals. The revised guidance provides licensees with detailed instructions, checklists, and recommended forms for each of 14 different financial assurance mechanisms.

NRC Decommissioning Cost Estimation Guidance and Worksheets. Developed guidance for NRC materials licensees on how to prepare decommissioning cost estimates that will be found acceptable by NRC. The guidance, which was incorporated in NUREG-1727, contains a series of 15 detailed worksheets that licensees may use in preparing and documenting their cost estimates.

Development of Financial Assessment Guidance. Prepared guidance on evaluating the financial condition of firms using financial ratios and size measures. The guidance presented and described important financial measures, provided benchmark data, and discussed other considerations relevant to a financial evaluation.

PUBLICATIONS

Group II Cost Estimates and Financial Capability Assessment for Staff Response to SRM-SECY-00-180, prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, January 11, 2002.

Analysis of Decommissioning Certification Amounts For Materials Licensees (Parts 30, 40, And 70), prepared for the U.S. Nuclear Regulatory Commission, Office Of Nuclear Materials Safety And Safeguards, December 1, 2000

Assessment of the Financial Assurance Requirements for Waste Broker Material Licensees, prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, July 1999.

"Workshop on Financial Assurance for Decommissioning," prepared for the U.S. Nuclear Regulatory Commission, August 1998.

NUREG/CR-6514, June 1997, Analysis of Potential Self-Guarantee Tests for Demonstrating Financial Assurance by Non-Profit Colleges, Universities, and Hospitals and by Business Firms That Do Not Issue Bonds, P. Bailey, C. Dean, J. Collier, V. Dasappa, W. Goldberg

NUREG/CR-5845, June 1997, Analysis of Assurance Provided by Current and Proposed Financial Assurance Mechanisms, P. Bailey, J. Collier, V. Dasappa, C. Dean, S. Essak, R. Nevin.

Regulatory Analysis on Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, June 1997.

Regulatory Analysis on Decommissioning Financial Assurance Implementation Requirements for Nuclear Power Reactors, prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, April 1997.

Regulatory Analysis of Decommissioning Financial Assurance Self-Guarantee Options for Materials Licensees, prepared for the U.S. Nuclear Regulatory Commission, November 1992.

Report on Analysis of Criteria for Self-Guarantee by NRC Licensees, submitted to the U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, March 1991.

Louisiana Energy Services, L.P., Docket No. 70-3103-ML
February 2006 Evidentiary Hearing on Contested Issues
Prefiled Hearing Exhibits

Party Exh. #	Witness/ Panel	Description
Staff 47	Deconversion (cost estimate)	Spread Sheet Concerning Clarifying Information Related to Cost Estimate for Deconversion. **[Proprietary]**

NRC STAFF
PREFILED HEARING
EXHIBIT 47

*All costs in 2004 dollars

Borrowing rate	10%
Inflation rate	3%
Years of repayment	17

Build

		2012	2013	2014
Year of Operation				
KgU Processed		0	0	0
Assumed inflation rate		3%	3%	3%
DEBT COMPUTATIONS				
Construction + L&E		$ 88,000,000	$ 90,640,000	$ 93,359,200
Percent Borrowed		10%	10%	40%
Dollars Borrowed on Jan 1		$ 8,800,000	$ 9,064,000	$ 37,343,680
Interest Accrued in Current Year		$ 880,000	$ 1,874,400	$ 5,796,208
Total Debt at End of Year	-	$ 9,680,000	$ 20,618,400	$ 63,758,288

		Cost per KgU			
Constr.	$ 70,000,000	$ 0.64	$ 0.64	$ 0.66	$ 0.67
L&E	$ 18,000,000	$ 0.16	$ 0.16	$ 0.17	$ 0.17
Interest		$ 0.40	$ 0.40	$ 0.41	$ 0.42
Annual O&M	$ 12,500,000	$ 1.79	$ 1.79	$ 1.84	$ 1.89
D&D	$ 8,800,000	$ 0.08	$ 0.08	$ 0.08	$ 0.08
Price		***$ 3.07***	***$ 3.07***	***$ 3.16***	***$ 3.25***

Capacity per year	7,000,000	KgU/year
Total processed (20 years)	110,027,923	KgU

Operational Status		2012	2013	2014
	Year of Operation			
	KgU Processed	0	0	0
A. Collections for Debt				
	Construction	$ -	$ -	$ -
	L&E	$ -	$ -	$ -
	Interest	$ -	$ -	$ -
	Total Collections for Debt	***$ -***	***$ -***	***$ -***
B. Payments	**Debt Service Payment**	$ -	$ -	$ -
C. A - B	Surplus (Deficit)	$ -	$ -	$ -

Operate

2015	2016	2017	2018	2019	2020	2021
	1	2	3	4	5	6
0	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
3%	3%	3%	3%	3%	3%	3%

$	96,159,976
	40%
$	38,463,990
$	10,222,228
$	112,444,506

$ 0.70	$ 0.72	$ 0.74	$ 0.76	$ 0.78	$ 0.81	$ 0.83
$ 0.18	$ 0.18	$ 0.19	$ 0.20	$ 0.20	$ 0.21	$ 0.21
$ 0.44	$ 0.45	$ 0.46	$ 0.48	$ 0.49	$ 0.51	$ 0.52
$ 1.95	$ 2.01	$ 2.07	$ 2.13	$ 2.20	$ 2.26	$ 2.33
$ 0.09	$ 0.09	$ 0.09	$ 0.10	$ 0.10	$ 0.10	$ 0.10
$ 3.35	***$ 3.45***	***$ 3.55***	***$ 3.66***	***$ 3.77***	***$ 3.88***	***$ 4.00***

2015	2016	2017	2018	2019	2020	2021
	1	2	3	4	5	6
0	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
$ -	$ 5,012,358	$ 5,162,729	$ 5,317,610	$ 5,477,139	$ 5,641,453	$ 5,810,696
$ -	$ 1,288,892	$ 1,327,559	$ 1,367,386	$ 1,408,407	$ 1,450,659	$ 1,494,179
$ -	$ 3,151,425	$ 3,245,967	$ 3,343,346	$ 3,443,647	$ 3,546,956	$ 3,653,365
$ -	***$ 9,452,674***	***$ 9,736,255***	***$ 10,028,342***	***$ 10,329,193***	***$ 10,639,068***	***$ 10,958,240***
$ -	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797
$ -	$ (4,565,123)	$ (4,281,542)	$ (3,989,455)	$ (3,688,604)	$ (3,378,729)	$ (3,059,557)

	2022	2023	2024	2025	2026	2027	2028
	7	8	9	10	11	12	13
	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
	3%	3%	3%	3%	3%	3%	3%
	$ 0.86	$ 0.88	$ 0.91	$ 0.93	$ 0.96	$ 0.99	$ 1.02
	$ 0.22	$ 0.23	$ 0.23	$ 0.24	$ 0.25	$ 0.25	$ 0.26
	$ 0.54	$ 0.55	$ 0.57	$ 0.59	$ 0.61	$ 0.62	$ 0.64
	$ 2.40	$ 2.47	$ 2.55	$ 2.62	$ 2.70	$ 2.78	$ 2.87
	$ 0.11	$ 0.11	$ 0.11	$ 0.12	$ 0.12	$ 0.12	$ 0.13
	$ 4.12	***$ 4.24***	***$ 4.37***	***$ 4.50***	***$ 4.64***	***$ 4.78***	***$ 4.92***

	2022	2023	2024	2025	2026	2027	2028
	7	8	9	10	11	12	13
	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
	$ 5,985,017	$ 6,164,568	$ 6,349,505	$ 6,539,990	$ 6,736,190	$ 6,938,275	$ 7,146,424
	$ 1,539,004	$ 1,585,175	$ 1,632,730	$ 1,681,712	$ 1,732,163	$ 1,784,128	$ 1,837,652
	$ 3,762,966	$ 3,875,855	$ 3,992,130	$ 4,111,894	$ 4,235,251	$ 4,362,309	$ 4,493,178
	$ 11,286,988	***$ 11,625,597***	***$ 11,974,365***	***$ 12,333,596***	***$ 12,703,604***	***$ 13,084,712***	***$ 13,477,254***
	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797
	$ (2,730,809)	$ (2,392,200)	$ (2,043,432)	$ (1,684,201)	$ (1,314,193)	$ (933,085)	$ (540,544)

Final

2029	2030	2031	2032	2033	2034	2035
14	15	16	17	18	19	20
7,000,000	7,000,000	5,027,923				
3%	3%	3%	3%	3%	3%	3%
$ 1.05	$ 1.08	$ 1.12	$ 1.15	$ 1.18	$ 1.22	$ 1.26
$ 0.27	$ 0.28	$ 0.29	$ 0.30	$ 0.30	$ 0.31	$ 0.32
$ 0.66	$ 0.68	$ 0.70	$ 0.72	$ 0.74	$ 0.77	$ 0.79
$ 2.95	$ 3.04	$ 3.13	$ 3.23	$ 3.32	$ 3.42	$ 3.52
$ 0.13	$ 0.14	$ 0.14	$ 0.14	$ 0.15	$ 0.15	$ 0.16
$ 5.07	***$ 5.22***	***$ 5.38***	***$ 5.54***	***$ 5.70***	***$ 5.87***	***$ 6.05***

2029	2030	2031	2032	2033	2034	2035
14	15	16	17	18	19	20
7,000,000	7,000,000	5,027,923	-	-	-	-
$ 7,360,816	$ 7,581,641	$ 5,609,072	$ -	$ -	$ -	$ -
$ 1,892,781	$ 1,949,565	$ 1,442,333	$ -	$ -	$ -	$ -
$ 4,627,973	$ 4,766,813	$ 3,526,597	$ -	$ -	$ -	$ -
$ 13,881,571	***$ 14,298,018***	***$ 10,578,002***	***$ -***	***$ -***	***$ -***	***$ -***
$ 14,017,797	$ 14,017,797	$ 14,017,797	$ 14,017,797	0	0	0
$ (136,226)	$ 280,221	$ (3,439,795)	$ (14,017,797)	$ -	$ -	$ -

Decon

2036	Total
-	110,027,923
3%	

2036	Total
-	110,027,923

$ -	98,833,483
$ -	25,414,324
$ -	62,139,673
$ -	*$ 186,387,480*
0	238,302,550
$ -	$ (51,915,069)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
LOUISIANA ENERGY SERVICES, L.P.	)	Docket No. 70-3103
	)	
(National Enrichment Facility)	)	ASLBP No. 04-826-01-ML
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF PREFILED TESTIMONY CONCERNING CLARIFYING INFORMATION RELATING TO COST ESTIMATE OF DECONVERSION" and "NRC STAFF PREFILED HEARING EXHIBIT 47" in the above-captioned proceedings have been served by Federal Express as indicated by a pound sign (#), and through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (*) on this 29th day of December, 2005.

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Lisa B. Clark
Counsel for NRC Staff

MS. CLARK: Thank you. Do you have, before you, a document entitled NRC Staff Prefiled Rebuttal Testimony Concerning Clarifying Information Relating to the Cost Estimate of Deconversion?

WITNESS JOHNSON: Yes.

WITNESS MAYER: Yes.

WITNESS DEAN: Yes.

WITNESS COLLIER: Yes.

MS. CLARK: And did you assist in preparing this testimony?

WITNESS JOHNSON: Yes.

WITNESS MAYER: Yes.

WITNESS DEAN: Yes.

WITNESS COLLIER: Yes.

MS. CLARK: Do you have any corrections or revisions to make at this time?

WITNESS COLLIER: No.

WITNESS JOHNSON: No.

WITNESS MAYER: No.

WITNESS DEAN: No.

MS. CLARK: Do you adopt this written testimony as your sworn testimony in this proceeding?

WITNESS MAYER: Yes.

WITNESS JOHNSON: Yes.

WITNESS DEAN: Yes.

WITNESS COLLIER: Yes.

MS. CLARK: I now move to admit the NRC Staff rebuttal

testimony into the record of this proceeding.

CHAIR BOLLWERK: Any objection from either LES or NIRS/PC?

(No response.)

CHAIR BOLLWERK: There being no objection then the NRC Staff Prefiled Rebuttal Testimony Concerning Clarifying Information Relating to the Cost Estimate of Decnnversion will be adopted into the record as if read.

(Whereupon, the prefiled rebuttal testimony of Mr. Johnson, Mr. Dean, Ms. Mayer, and Mr. Collier was bound into the record as if having been read.)

~~OFFICIAL USE ONLY - PROPRIETARY INFORMATION~~

January 12, 2006

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
LOUISIANA ENERGY SERVICES, L.P.	)	Docket No. 70-3103
	)	
(National Enrichment Facility)	)	ASLBP No. 04-826-01-ML
	)	

NRC STAFF PREFILED REBUTTAL TESTIMONY
CONCERNING CLARIFYING INFORMATION RELATING
TO THE COST ESTIMATE OF DECONVERSION

Q.1. Please state your name, occupation and by whom you are employed.

A.1. (TJ) My name is Timothy C. Johnson. I am the U.S. Nuclear Regulatory Commission (NRC) Project Manager overseeing the licensing of the proposed Louisiana Energy Services, L.P. (LES) uranium enrichment facility near Eunice, New Mexico. I have been the PM for the project since its inception in January of 2002, when LES initiated discussions with NRC for the project.

A.1. (JM) My name is Jennifer Mayer. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

A.1. (CD) My name is Craig Dean. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

A.1. (JC) My name is John Collier. I am employed as a consultant by ICF Consulting. I am providing this testimony under a technical assistance contract with the NRC.

Q.2. Have you previously submitted testimony regarding clarifying information submitted by Louisiana Energy Services, L.P. (LES) on the cost of deconversion of depleted uranium tails generated by the proposed enrichment facility to be known as the National Enrichment Facility (NEF) in a November 23, 2005 letter?

A.2. (TJ, JM, CD, JC) Yes. We submitted prefiled direct testimony regarding the clarifying cost information on December 29, 2005.

Q.3. What is the purpose of this testimony?

A.3. (TJ, JM, CD, JC) To provide our views on the prefiled direct testimony submitted on behalf of LES and Nuclear Information and Resource Service and Public Citizen (NIRS/PC).

Q.4. Have you read the "Supplemental Prefiled Direct Testimony of Rod Krich on Behalf of Louisiana Energy Services, L.P. Regarding Cost of Cylinder Management and Cost of Capital Issues" dated December 29, 2005?

A.4. (TJ, JM, CD, JC) Yes.

Q.5. In that testimony, Mr. Krich refers to the exemption to the financial assurance requirements in 10 C.F.R. § 70.25(e) to allow incremental funding for the disposition of the depleted uranium tails (DU) generated by the proposed NEF. In addition, Mr. Krich states that the Commission's financial assurance framework presumes that decommissioning activities are not required to commence until the end of the facility's operating period. Do you wish to make any clarification regarding the Staff's review in light of these statements?

A.5. (TJ, JM, CD, JC) Yes. As Mr. Krich also observes in his testimony, LES presented costs for decommissioning on a dollar per kilogram basis, accounting for the estimated costs of each component of the activities associated with decommissioning of the

estimated costs of each component of the activities associated with decommissioning of the NEF. One of those activities is the dispositioning of the DU to be generated by the NEF. The preferred plan for disposing of the DU presented by LES was deconversion at a private facility to be constructed within the United States for eventual disposal as low level waste. To support the plausibility of this option, LES submitted a Memorandum of Understanding between LES and AREVA, LES Exhibit 88, calling for completion of construction by 2016. The Staff accepted this option as plausible and relied on this option for the purpose of determining the acceptability of the cost of deconversion of DU. Thus, the Staff assumed that deconversion would begin during the operational life of the NEF, not after the end of the licensing period.

Q.6. Does this mean that LES is required to deconvert DU prior to the end of the operational life of the NEF?

A.6. (TJ, JM, CD, JC) No, there is no NRC regulatory requirement that deconversion occur before termination of the license. However, the Staff did rely on LES's preferred strategy in evaluating whether sufficient funding was provided for disposition of the DU tails. As presented by LES, a private entity would construct and operate a deconversion facility within the United States and would charge LES for that service. The amount that the private entity would charge LES for that service was derived from the estimated costs that would be expected to be incurred by the private entity responsible for constructing and operating the facility. These estimated costs were based on information in the Urenco business study, as well as information about estimated transportation and disposal costs associated with the disposition of the deconversion byproducts. The Urenco business study, however, did not account for the interest cost incurred from any need to borrow funds to construct the facility. Therefore, this

cost element was not included in the costs derived directly from the Urenco business study.

Q.7. How did you analyze LES's request that it be permitted to fund disposition of DU on an incremental basis?

A.7. (TJ, JM, CD, JC) As explained above, because LES stated that it would be obtaining deconversion services from a private facility, we based our analysis of the cost estimate for this service on an estimate of what that entity would be expected to charge LES for that service. Under this scenario, we determined that it was appropriate to permit LES to fund this element of decommissioning on an incremental basis provided that there was assurance that LES provided sufficient funding to disposition all tails expected to be generated prospectively on an annual basis.

Q.8. What is you opinion of the of the need to account for debt service in light the exemption?

A.8. (TJ, JM, CD, JC) Because the expense of deconversion was estimated based on the estimated costs to the entity responsible for constructing and operating the deconversion facility, all anticipated costs should be considered. Therefore, if that entity must borrow funds in order to begin operation of the facility, then the debt service associated with that debt should be accounted for. This is true regardless of whether funding is permitted on an incremental basis.

Q.9. Have you read the "Prefiled Direct Testimony of Dr. Arjun Makhijani in Support of NIRS/PC Contentions EC-3/TC-1, EC-5/TC-2, and EC-6/TC-3 Concerning LES's Deconversion Strategy and Cost Estimate (Costs of Capital and Cylinder Management)" dated December 30, 2005?

A.9. (TJ, JM, CD, JC) Yes.

Q.10. In his testimony, Dr. Makhijani claims that the Staff did not know what the capital cost to build the proposed NEF would be. Is this correct?

A.10. (TJ, JM, CD, JC) No. The Staff was aware that the capital cost of the deconversion facility was estimated to be about $80 million. The staff did not obtain an explanation of how that sum would be financed or the cost of financing.

Q.11. Does this conclude your testimony?

A.11. (TJ, JM, CD, JC) Yes.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
LOUISIANA ENERGY SERVICES, L.P.	)	Docket No. 70-3103
	)	
(National Enrichment Facility)	)	ASLBP No. 04-826-01-ML
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF PREFILED REBUTTAL TESTIMONY CONCERNING CLARIFYING INFORMATION RELATING TO THE COST ESTIMATE OF DECONVERSION" in the above-captioned proceedings have been served Federal Express as indicated by a pound sign; and through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (*) on this 12th day of January, 2006.

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MS. CLARK: Thank you. The panel is now ready for cross exarnination.

CHAIR BOLLWERK: We have one exhibit we need to take care of?

MS. CLARK: I'm sorry, yes. I have one exhibit. I understand it was erroneously identified as Staff exhibit 47. It should be identified as Staff exhibit 48.

This is a spreadsheet prepared by John Collier for the NRC Staff. I now ask that this be admitted into the hearing record.

CHAIR BOLLWERK: All right, let me just check one thing here. When you say erroneously, is it correct in the prefiled testimony?

MS. CLARK: It is attached to the testimony as exhibit 47, and it should be exhibit 48.

CHAIR BOLLWERK: All right. Staff exhibit 48, as identified by counsel, has been marked for identification.

(Whereupon, the above-referenced to document was marked as Staff Exhibit No. 48 for identification.)

CHAIR BOLLWERK: Are there any objections to its admission?

(No response.)

CHAIR BOLLWERK: No? There being none then Staff exhibit 48, which is a spreadsheet concerning clarifying information related to cost estimate for deconversion is admitted into the record.

(The document referred to, having been

previously marked for identification as Staff Exhibit No. 48 was admitted into evidence.)

CHAIR BOLLWERK: Anything further then, from staff counsel?

MS. CLARK: No, the panel is ready now.

CHAIR BOLLWERK: Does LES have any questions for these witnesses?

MR. CURTISS: We have no questions at this time.

CHAIR BOLLWERK: All right. Then I will turn to Mr. Lovejoy.

MR. LOVEJOY: Thank you, Your Honor.

EXAMINATION BY MR. LOVEJOY OF:

DEAN CRAIG

TIMOTHY JOHNSON

JENNIFER MAYER

JOHN COLLIER

MR. LOVEJOY: Good afternoon. I have some questions, first, about cost of capital. And I will ask you whether a statement which appears in your supplemental direct testimony, answer 15 at page 8, reflects your opinion.

Let me just read it to you. If, on the other hand, it is assumed that the 40 cents per KGU would help cover debt service to finance the construction of a deconversion plant to begin in 2012, and be operating by 2016, then our analysis, using the assumptions described in LES' proposed findings of fact, of November 30, 2005, and the telephone conversation of December 19, 2005, indicates that the flow of funds would not be sufficient to

pay for debt service for the deconversion facility, in any year except one, 2030, out of the 17 year repayment period.

So I take it you agree with that statement?

WITNESS COLLIER: That is my testimony.

MR. LOVEJOY: Okay. So even with 40 cents additional per KGU added to the 2 dollar and 67 cent provision for deconversion, the facility would not receive enough revenues to pay the cost of deconversion, including debt service and return on investment, is that right?

WITNESS COLLIER: Under the scenario described.

MR. LOVEJOY: Is it yes, under the scenario described?

WITNESS COLLIER: Yes.

MR. LOVEJOY: So changing the assumption then, is it your opinion that with the same scenario, with the facility beginning operations in 2016, and charging, getting revenues of 2.67 per KGU escalated at three percent, in that situation it would not receive enough revenues to pay for the cost of deconversion, including debt service and return on investment?

WITNESS COLLIER: You are changing the scenario by taking away the 40 cent line item?

MR. LOVEJOY: Exactly.

WITNESS COLLIER: That is correct.

MR. LOVEJOY: Okay. Can I show you an extract from the Staff's Proposed Findings of Fact and Conclusions of Law of November 30th? I'm going to ask that this be marked as exhibit 287. This is page 36. And I offer this material in evidence.

CHAIR BOLLWERK: All right, let the record reflect that an

excerpt, specifically page 36 from the November 30th, 2005 NRC Staff Proposed Findings of Fact and Conclusions of Law, concerning the safety contentions that were the subject, one environmental contention that was the subject of the October 2005 hearing has been marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 287 for identification.)

CHAIR BOLLWERK: Any objection to this being admitted into evidence?

MR. CURTISS: No objection.

CHAIR BOLLWERK: Any objection from the Staff?

MS. CLARK: No objection.

CHAIR BOLLWERK: No objection. Then NIRS/PC exhibit 287 is admitted into evidence.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 287 was admitted in evidence.)

MR. LOVEJOY: Now, I'm looking at paragraph 4.55 and it says, upon questioning by the Board the Applicant consultant, and I think that refers to Ms. Compton, explained that by multiplying the 2.67 figure, as escalated by three percent annually, by the KGU produced each year, one can determine the revenues expected to be generated by the deconversion facility.

When these revenues were compared to the expected costs identified by the LES over the life of the facility it was apparent that the

revenues would substantially exceed costs over the life of the facility, by as much as 200 million dollars.

Do you agree with that opinion?

WITNESS COLLIER: I'm not sure I understand the full context of what this testimony is describing. However, I stand by what I said a moment ago, which is that without the 40 cent increment, then the cost, the units of the so-called price, would not be adequate to finance the facility if it becomes operational in 2016.

MR. LOVEJOY: The price, are you talking about 2.67?

WITNESS COLLIER: Yes, 2.67.

MR. LOVEJOY: As escalated?

WITNESS COLLIER: As escalated.

MR. LOVEJOY: And it is not adequate with the 40 cents either, not in each year, is that right?

WITNESS COLLIER: Not under the assumption that the facility is built in 2012, and operational in 2016.

MR. LOVEJOY: Now, I'm also looking at the paragraph just after that. And I'm paraphrasing a little, you can read the paragraph.

Let me ask you, maybe this comes to the same thing, that if the deconversion facility begins operation in 2016, and the funds necessary for construction, licensing, and engineering, need to be obtained before operations could begin, and it has revenue at the rate of 2.67 per KGU, escalated at three percent annually, and it runs for 17 years, do you agree that the expected revenues generated by the facility would ultimately be more than enough to pay for the debt?

WITNESS COLLIER: I would like to take a moment and read this myself, please.

MR. LOVEJOY: Please.

(Witness reviews document.)

WITNESS COLLIER: I'm not sure I fully understand what she is saying here. In fact it looks like this last sentence is incomplete.

MR. LOVEJOY: Were you finished?

WITNESS COLLIER: Yes.

MR. LOVEJOY: So can you support --

WITNESS COLLIER: I'm sorry, I don't understand the paragraph, so I don't have an opinion on it.

MR. LOVEJOY: Have you made any calculations, you said before that 40 cents would not be sufficient under the other assumptions we are talking about, to finance the facility.

Have you made any calculations to determine how much would be sufficient?

WITNESS COLLIER: No, I merely evaluated the assumptions provided by LES through the Staff.

MR. LOVEJOY: And have you determined how much would be sufficient, say, having the 2.67 in 2004 dollars?

WITNESS COLLIER: No, I have not.

MR. LOVEJOY: Now, Mr. Dean, I think you testified about this before. You assumed, initially, that the Urenco business study included a cost of debt service in calculating the cost of deconversion, is that right?

WITNESS DEAN: I don't recall the exact words, but I believe you quote me to that effect, yes.

MR. LOVEJOY: Okay. Let's look at -- there is a binder of NIRS/PC exhibits somewhere up there. I would like to ask you to look at the one that has been marked as exhibit 284, which is a January 3, 2006 file memo, with a telephone summary attached.

CHAIR BOLLWERK: Do you want that marked for identification at this point?

MR. LOVEJOY: Yes, I request that it be marked for identification and also request that it be admitted.

CHAIR BOLLWERK: All right. Let the record reflect that NIRS/PC exhibit 284, which is a memorandum from Timothy Johnson to James Clifford, dated January 3rd, 2006, with an attached telephone call summary of December 19th, 2005, is marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 284 for identification.)

CHAIR BOLLWERK: Any objections to its admission into evidence?

(No response.)

CHAIR BOLLWERK: Hearing none then NIRS/PC exhibit 284 is admitted into evidence.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 284 was admitted in

evidence.)

MR. LOVEJOY: Now, on the first page of the telephone conference call summary, down in the bottom paragraph, the statement appears, the information reviewed by the Staff in order to determine the amount of funding necessary to ensure deconversion of the depleted uranium, related to the cost associated with the construction and operation of a private deconversion facility --

WITNESS DEAN: I'm sorry, where are you reading?

MR. LOVEJOY: On page 1 of the telephone conference call summary, bottom paragraph.

WITNESS DEAN: The pagination is somewhat different, and the text is somewhat different in the book of exhibits from whatever it is that you are reading.

You are talking about 284?

MR. LOVEJOY: Yes. Maybe we made an error. Without checking the other document, I would like to mark copies of this one, which is the hearing file memo. I apologize, I thought this was identical.

CHAIR BOLLWERK: Let's hold on a second.

(Pause.)

CHAIR BOLLWERK: Do you have a copy of 284? I don't want to mark the same thing twice.

JUDGE ABRAMSON: I'm looking at 284 that you submitted to us, and it looks the same. Yes, I think --

MR. LOVEJOY: I'm now looking at my copy of 284, it is the January 3 of '06 hearing file memo.

JUDGE ABRAMSON: This is the same.

MR. LOVEJOY: It seems to be the same.

JUDGE ABRAMSON: Right, it is.

MR. LOVEJOY: Leave it at 284. Do you have 284 now?

WITNESS DEAN: Yes, I believe I do.

MR. LOVEJOY: Do you have page one of the telephone conference call summary?

WITNESS DEAN: Yes, I do.

MR. LOVEJOY: Down at the bottom it has a paragraph that says as follows: The information -- do you have that?

WITNESS DEAN: Yes.

MR. LOVEJOY: The information reviewed by the Staff, in order to determine the amount of funding necessary to ensure deconversion of the depleted uranium related to the costs associated with the construction and operation of a private deconversion facility, as contemplated in the MOU.

Does the MOU referred to there, is that the Memorandum of Understanding with Areva?

WITNESS DEAN: I don't know, I didn't draft this letter.

MR. LOVEJOY: Well, the previous paragraph ends with the statement saying, a Memorandum of Understanding, MOU, between LES and Areva, documents an expectation that the private deconversion facility would be constructed by 2016.

WITNESS DEAN: Then I expect the next reference would be to the Areva MOU.

MR. LOVEJOY: You have that, is that right?

WITNESS DEAN: Yes.

MR. LOVEJOY: You had received that from LES?

WITNESS DEAN: Yes.

MR. LOVEJOY: Okay. The text then says, although the Staff believed that the cost information contained all necessary elements, during the hearing process the Staff learned that it had mistakenly assumed that the cost information included the cost of debt service.

Is that an accurate statement?

WITNESS DEAN: Yes, it is.

MR. LOVEJOY: And I see, in your rebuttal testimony, in answer 6 at page 3, the following statement. It says, the Urenco business study, however, did not account for the interest cost incurred from any need to borrow funds to construct the facility.

And that is accurate, isn't it?

WITNESS DEAN: As we learned in the hearing, yes.

MR. LOVEJOY: And so --

WITNESS DEAN: Although I understand that, from Mr. Krich's testimony today, that he might disagree with that.

MR. LOVEJOY: Well, Mr. Krich will speak for himself, I trust. This statement, your own statement, is accurate, is it not?

WITNESS DEAN: Yes, I believe so.

MR. LOVEJOY: And the Commission is now taking the position, as stated in answer 8 of your rebuttal, on page 4, that because the expense of deconversion was estimated based on the estimated costs to the entity responsible for constructing and operating a deconversion facility, all

anticipated costs should be considered.

Therefore if that entity must borrow funds, in order to begin operation of the facility, then the debt service associated with that debt should be accounted for.

This is true regardless of whether funding is permitted on an incremental basis. Is that now your position?

WITNESS DEAN: Yes.

MR. LOVEJOY: Actually are we talking of borrowing, strictly speaking, or isn't it a question of raising funds either by issuing debt, or equity, is that correct?

WITNESS DEAN: It could be either debt or equity, yes.

MR. LOVEJOY: And in general, in making judgements about financial assurance, the Staff had made the assumption that LES would put in place a deconversion facility during the operating life of the NEF, isn't that right?

WITNESS DEAN: I will defer to Mr. Johnson on that.

WITNESS JOHNSON: That was the scenario that we reviewed as part of their application, was that they would construct a deconversion facility in accordance with the Areva Memorandum of Understanding. MR. LOVEJOY: And in this memo of the phone call, exhibit 284, same page, it says in the middle of the first paragraph, under discussion, it says:

In its license application LES stated that its preferred option for dispositioning depleted uranium was to use commercial processing in disposal, rather than use U.S. Department of Energy, DOE facilities, for

dispositioning the depleted uranium, under provisions of the USEC Privatization Act.

Because LES presented the commercial option as its preferred strategy for dispositioning the depleted uranium tails generated by the proposed LES facility, the Staff evaluated the proposed decommissioning funding plan, based on that option, including the use of a private deconversion facility. Is that accurate?

WITNESS JOHNSON: Yes, that is accurate.

MR. LOVEJOY: And in determining, let me see the term you used here, in evaluating the proposed deconversion funding plan you were looking to the funding for the deconversion facility that was to be built during the operation of the NEF, is that right?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: And the funding which you were concerned with was to be decommissioning financial assurance, is that right?

WITNESS JOHNSON: I'm sorry, could you repeat that again?

MR. LOVEJOY: The funding was to become decommissioning financial assurance?

WITNESS JOHNSON: Well it is part of the decommissioning funding plan that we review as part of our licensing requirements. A uranium enrichment facility has to provide a decommissioning funding plan which includes a cost estimate and a mechanism for providing the amount of the cost estimate.

MR. LOVEJOY: And in your testimony you also state,

referring to a private deconversion facility, I'm looking at page 3 of the rebuttal, and answer 5.

It says, to support the plausibility of this option LES submitted a Memorandum of Understanding between LES and Areva, LES exhibit 88, calling for completion of construction by 2016. Is that not a fact?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: Okay. And it says, further, the Staff accepted this option as plausible, and relied on this option for the purpose of determining the acceptability of the cost of deconversion of DEU.

Thus the Staff assumed that deconversion would begin during the operational life of the NEF, not after the end of the licensing period. Is that true?

WITNESS JOHNSON: Yes, in our Safety Evaluation Report that is a basis for our review.

MR. LOVEJOY: Now, at one point LES requested an exemption from certain provisions of the decommissioning financial assurance requirements, did it not?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: And the exemption would allow them to -- well, let me refer you to a document. Do you have LES exhibit 122 near there? It is one of the recent exhibits.

WITNESS JOHNSON: Yes.

MR. LOVEJOY: Is LES exhibit 122 the request for the exemption from LES, the one you are talking about?

WITNESS JOHNSON: Yes, it is.

MR. LOVEJOY: Now, I'm looking over at some pages from the safety analysis report that are part of this exhibit. And I'm looking at page 1.2-6.

And it says as follows: Allowing the decommissioning funding assurance for the NEF to be provided in a forward looking incremental basis, continues to ensure that adequate funds are available at any point in time after licensed material is introduced onto the NEF site, to decommission the facility, and disposition any depleted uranium byproduct possessed by LES.

Let me ask you whether, in granting the exemption, Staff assumed that that statement was true?

WITNESS JOHNSON: When we did the review, and prepared the Safety Evaluation Report, we thought that that was correct.

MR. LOVEJOY: And do you have the NRC exhibits nearby? I'm going to ask you about number 37. Do you have NRC exhibit 37?

WITNESS JOHNSON: Yes, I do.

MR. LOVEJOY: Would you look at page 10-14? I'm going to ask you about the paragraph towards the bottom starting with the initial financial obligation.

I will just read you the text, it is short. It says, the initial financial obligation will be the entire facility decommissioning costs, 131 million dollars. The costs for dispositioning the first three years of generation of depleted uranium, 22.7 million, based on generating 4,861 metric tons of depleted uranium, in the first three year period, and the 25 percent contingency of 38.5 million, giving a total decommissioning obligation for this period of 192 million.

These estimates are in 2004 dollars. This approach to funding the financial assurance instrument is acceptable to the NRC Staff because the amount of financial assurance will be sufficient to cover the decommissioning obligation of the licensee at any point in time, in the event that the licensee is unable to complete decommissioning for any reason.

Does that latter sentence state the reasoning the Staff used in approving the exemption?

WITNESS JOHNSON: When we did the review and prepared the Safety Evaluation Report that was our position.

MR. LOVEJOY: And that was based on the assumption that there would be a private deconversion plant put into operation in approximately 2016, is that right?

WITNESS JOHNSON: Yes.

JUDGE ABRAMSON: Excuse me for a moment. Mr. Johnson, would the Staff's view of things change if the deconversion plant were to be put into operation at the end of the license life, and the fund were to be computed to grow the way the Applicant is currently proposing it?

WITNESS JOHNSON: I'm sorry, could you repeat that?

JUDGE ABRAMSON: Would the Staff's view that there be sufficient funds, which is what you said in the SAR, would that change if you were looking at the scenario which the Applicant described this morning, where the deconversion facility would not be operational until the end of the licensed life?

WITNESS JOHNSON: If the scenario where the deconversion facility was constructed, at the end of the 30 years, we believe

that there would be sufficient funds in there to construct the facility without borrowing.

JUDGE ABRAMSON: Thank you.

MR. LOVEJOY: That goes to the year 2036, is that right?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: Let me ask you, you still have NIRS/PC exhibit 284?

WITNESS JOHNSON: Yes.

MR. LOVEJOY: Over on the last page it says as follows, there is discussion carrying over from the previous page, of building and operating a deconversion facility at the end of the lifetime of the LES facility.

And the text says, in addition in the event that LES ceases operations prematurely, there would be sufficient funds in the decommissioning and financial assurance instrument to cover the cost of DOE disposition.

NRC Staff indicated that this assumption appeared to be a new approach that differed from that set out in the Areva MOU, where deconversion operations would begin in year 2016, not at the end of LES' operation.

NRC Staff indicated that in the event of premature shutdown of the LES enrichment facility, it would be expected that there would be sufficient funds for DOE dispositioning.

However, it was unsure if the preferred commercial approach applied as stated in the Areva MOU, adequately covered the debt service cost. Is that accurate?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: And that remains your opinion?

WITNESS JOHNSON: That remains our opinion, especially the point where there would be sufficient funds for NRC, if it needed to direct a standby trustee to fund dispositioning that it could go to DOE.

JUDGE ABRAMSON: State that last part again, please, Mr. Johnson?

WITNESS JOHNSON: All right. The objective of this paragraph was to indicate that the amount of money that would be in the dispositioning funding plan would be sufficient to utilize the DOE dispositioning paths if NRC was to need to do that.

For example, if LES was unable to complete decommissioning at any point during the lifetime of the operation, there would be sufficient funds for us to use a DOE disposition path.

JUDGE ABRAMSON: But not sufficient funds to enable construction of a new facility to --

WITNESS JOHNSON: Well, under the scenario that we evaluated there would be insufficient funds to do the deconversion.

JUDGE ABRAMSON: To build the deconversion facility, yes, okay. And that is simply because the size of the fund grows over time, as the number of tons of DU accumulated increases, and at some point there is a crossover between having enough to build a deconversion facility, and not having enough, is that the bottom line here?

WITNESS JOHNSON: Well, I think the bottom line is that in the cash flow analysis that John Collier prepared there would be insufficient revenues taken in by the deconversion facility to cover the debt service, at least

over the initial period of operation.

JUDGE ABRAMSON: Let me ask Mr. Collier, how many scenarios did you look at? Obviously at year 30, where there is enough cash available from the fund, if you need to draw on it, then you don't need to borrow at all.

So as time goes on the amount of cash built up in the fund increases, therefore the amount of debt and equity needed to build the plant decreases. So there must be some crossover point.

Is it at year 30, is it at year 10, where is the crossover point?

WITNESS COLLIER: If you look at the derivation of these factors, such as the 276, the way they calculate it on a per KGU basis, they take a -- LES, I believe, took the total cost and divided it by the total KGU processed.

Therefore you don't recover the cost until the last KGU is processed. So it is essentially the end of life.

JUDGE ABRAMSON: At which point there is enough to recover the entire cost of construction, operation, etcetera. So you are telling me that, or you are telling the Board that at no point prior to that would revenues earned after construction be sufficient to cover the gap?

WITNESS COLLIER: That is what was covered in my spreadsheet. But this was a simple analysis that only used a number of assumptions that I got from the Staff, and from LES.

JUDGE ABRAMSON: Carry on, Mr. Lovejoy.

MR. LOVEJOY: Thank you. Have you calculated the size of the deficit under the assumptions that you have been using?

WITNESS COLLIER: My spreadsheet does show deficits from a cash flow perspective. And while they total up to over 50 million dollars, assuming the plan is financed through debt, fully financed through debt, at ten percent, the main purpose of my analysis was to show, in each individual year, whether there was a surplus or deficit.

And there was, nearly always, a deficit.

MR. LOVEJOY: And the total, is the total shown on your spreadsheet, which I take it is exhibit 48? Is the total shown on your spreadsheet?

WITNESS COLLIER: Yes, the very bottom right cell.

MR. LOVEJOY: That is 51,915,069 dollars?

WITNESS COLLIER: Is the total, right.

MR. LOVEJOY: And did you calculate what amount that would be per KGU?

WITNESS COLLIER: No, I did not.

MR. LOVEJOY: In assessing the DOE option did anyone for Commission Staff do a cash flow analysis?

WITNESS JOHNSON: No, we did not.

MR. LOVEJOY: So there is no spreadsheet like this showing that DOE could be used as a deconversion facility?

WITNESS JOHNSON: There is no spreadsheet for the DOE's operation, that is correct.

MR. LOVEJOY: So how did you reach the conclusion that DOE would be a valid option?

MR. CURTISS: Well, I will object to the line of questioning

because the law of this case, from the Commission's ruling, and from this Board's ruling, is that the DOE option is a plausible strategy, and that the cost estimate is not reviewable.

So if the question of this panel is how did they determine that, the answer I think is the Commission has so ruled on the plausibility, and this Board has ruled that the cost estimate is not reviewable.

MR. LOVEJOY: Well, they have to have the money to pay DOE, even if we are not allowed to question what lies behind the dollars that have been estimated for DOE, they need to have the money to pay them.

JUDGE ABRAMSON: So let me ask the question another way, then.

CHAIR BOLLWERK: Does the Staff want to say anything about this before we --

MS. CLARK: Well, I just wanted to clarify. I mean, this cash flow analysis that was done was done for the proposed deconversion facility. And now are you asking for a cash flow of the NEF, to see if the NEF has enough money to pay DOE?

Because we have done no cash flow analysis for the NEF.

MR. LOVEJOY: I'm not talking about -- may I respond?

JUDGE ABRAMSON: Yes.

MR. LOVEJOY: I'm not talking about a cash flow analysis of the NEF. I'm talking about an analysis analogous to the one show in NRC Staff exhibit 48, supporting the judgement that the DOE option will be financially available during all interim periods, as Mr. Johnson has said.

WITNESS JOHNSON: We have not seen such a cash flow

analysis for the DOE facility.

MR. LOVEJOY: May I explain?

JUDGE ABRAMSON: Yes.

MR. LOVEJOY: I'm not talking about a cash flow analysis for the DOE facility. I'm talking about a cash flow analysis comparing the financial assurance provided by LES with the cost of using the DOE option.

WITNESS JOHNSON: No, we have not done a cash flow analysis related to the DOE option.

JUDGE ABRAMSON: I'm sorry, let me ask this question in another way, because I think it is a fairly straightforward question.

The Staff has looked at the sizing of the financial assurances instrument. And that sizing includes a piece for dealing with the depleted uranium, the DUF-6?

MR. CURTISS: Yes.

JUDGE ABRAMSON: And the question that I would like to have answered, which I think would address Mr. Lovejoy's question is, in that sizing is there an amount adequate to cover the DOE costs, as you know the number to be at present?

If you had to dispose of the DU by sending it to DOE, is there enough in the fund to cover that, or why not?j

WITNESS JOHNSON: We are in the process of doing, completing our review of the DOE cost estimate. So --

JUDGE ABRAMSON: But assuming that the cost estimate is as it is now ---

WITNESS JOHNSON: And we get our questions resolved,

and those questions, you know, show that the DOE estimate is reasonable, then the answer to your question is, yes, we would judge the DOE estimate to be reasonable.

JUDGE ABRAMSON: No, that is not my question, that is not my question.

WITNESS MAYER: If I could just perhaps take a shot at this? The difference between the DOE and the LES is there is not debt service involved. DOE would be charging LES a service.

JUDGE ABRAMSON: We understand that.

WITNESS MAYER: A charge for that.

JUDGE ABRAMSON: We understand that. Let me restate my question. What I want to know is quite simple. There is a fund available for decommissioning, and the fund is calculated on the basis of a number, of a series of numbers, one of which is to cover the cost of disposition of the DU.

That amount that is in the fund, is that amount sufficient to cover disposition if the mechanism is to give it to DOE, and if the DOE number as we have seen it to date, is a valid number?

WITNESS JOHNSON: Yes, it would be sufficient money in the fund to cover --

JUDGE ABRAMSON: At any time?

WITNESS JOHNSON: -- the current values that we have for the DOE cost estimate.

JUDGE ABRAMSON: That is, and there is no cash flow, or anything involved in that, you've got a contractor, your assumption is you've got a contract to dispose of it?

WITNESS JOHNSON: Yes, that is correct.

JUDGE ABRAMSON: Thank you.

MR. LOVEJOY: Well, in saying that the financial assurance will be sufficient to pay DOE, you are comparing 2004 dollars with 2004 dollars, correct? WITNESS JOHNSON: Correct. The numbers we have from DOE are based on 2004 dollars.

MR. LOVEJOY: And you have not made any projection applying any escalation either, well, to DOE's cost, is that correct?

WITNESS JOHNSON: We have decided to base our initial review on 2004 dollars, and that is what our review is. We haven't tried to escalate those numbers into the future because we have agreed to evaluate it based on 2004 dollars.

MR. LOVEJOY: But this option needs to be available from 2006 to 2036, doesn't it?

WITNESS JOHNSON: And future escalation would be covered in the updates to the decommissioning funding plan. So it would continue to be covered in the future.

JUDGE ABRAMSON: And escalation, in your mind, covers any change in that cost, from today forward?

WITNESS JOHNSON: Right, the update, as was stated previously this morning, includes things like inflation, as well as any other change to the assumptions that were made in the cost estimate.

MR. LOVEJOY: Nevertheless you have made cash flow studies over the entire period to 2036, with respect to the private option, correct?

WITNESS JOHNSON: For the scenario that we evaluated we did a cash flow analysis, that is correct.

MR. LOVEJOY: And you don't currently plan to do such an analysis with respect to the DOE option?

WITNESS JOHNSON: No, we do not.

MR. LOVEJOY: Now, looking at exhibit 48 I think you referred to this in your testimony, and you said you used a ten percent interest rate, because it had been used by LES, is that right?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: Would your view on the appropriateness of a ten percent cost of capital be supported if there were analysis of the cost of capital in the nuclear utility industry?

WITNESS COLLIER: I'm sorry, I don't understand what you are asking.

MR. LOVEJOY: Okay. Let me show you one item here. This would be 288. I requested an extract from an interdisciplinary MIT study called the Future of Nuclear Power, be marked as exhibit 288 for NIRS/PC.

CHAIR BOLLWERK: Let the record reflect that NIRS/PC exhibit 288, which is an extract from the Future of Nuclear Power, an interdisciplinary MIT study, has been marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 288 for identification.)

MR. LOVEJOY: And I request that the Panel look at it, and I ask that this be introduced in evidence.

WITNESS JOHNSON: Is there a specific page, or part of this you would like us to look at?

MR. LOVEJOY: Yes, I suppose we need to deal with introduction of the exhibit.

CHAIR BOLLWERK: Any objections?

MR. SMITH: No.

CHAIR BOLLWERK: None from the --

MS. CLARK: Could I ask what the purpose of this exhibit is? I don't see --

MR. LOVEJOY: This is to address cost of capital, as you will see.

MS. CLARK: All right. I would like to say that our experts have not done any evaluation, as they have stated, of the interest rate used by LES, and that was used in the spreadsheet.

So if the questioning is going to go into what the appropriate interest rate is, that is beyond the scope of what my experts are prepared to testify to.

MR. LOVEJOY: Well, I suppose if they don't know the answer, they don't know the answer.

CHAIR BOLLWERK: Let's go back to the original question which is, is there any objection to the introduction of this exhibit?

MS. CLARK: No objection at this point.

CHAIR BOLLWERK: All right, then NIRS/PC exhibit 288 is admitted into evidence.

(The document referred to, having been

previously marked for identification as NIRS/PC Exhibit No. 288 was admitted in evidence.)

MR. LOVEJOY: Now, there is a table, 5.3, on page 43 and --

JUDGE ABRAMSON: This is selected pages, or this is the whole report?

MR. LOVEJOY: This is chapter 5, the financial chapter of this report. You will see, in table 5.3, I suppose Mr. Collier, you are the one to pay particular attention to this.

For nuclear power financing costs are shown as equity 15 percent, nominal, net of income taxes, and debt 8 percent. Do you see those entries?

WITNESS COLLIER: Yes, I do.

MR. LOVEJOY: And the weighted average for those, if you have a 50/50 capital structure, as the table also assumes, would be what, 11 and a half percent?

WITNESS COLLIER: That sounds right.

MR. LOVEJOY: And, in the same table, for gas and coal plants, I think the figures are the same. There is an assumption of an equity rate of 12 percent, and 8 percent for debt. Do you see those entries?

WITNESS COLLIER: I'm sorry, can you repeat that?

MR. LOVEJOY: Under the coal --

WITNESS COLLIER: Okay, yes, 12 percent and 8 percent.

MR. LOVEJOY: Do you see the entry is 15 percent and 8 percent? And I notice that they --

WITNESS COLLIER: Twelve percent and 8 percent.

MR. LOVEJOY: Excuse me, 12 percent and 8 percent. And they assume a 40 percent equity and 60 percent debt for those fossil plants. Do you see that?

WITNESS COLLIER: Yes, I do.

MR. LOVEJOY: And do you know what the weighted average would be with those capital ratios?

WITNESS COLLIER: I don't, I would have to calculate it, but I'm prepared to believe what you say.

MR. LOVEJOY: I found 9.6 percent, and I'm sure anybody can correct me if I'm wrong. Does that sound about right for you?

WITNESS COLLIER: Approximately.

MR. LOVEJOY: Would the combination of these figures support using an estimate, in this case, of at least an overall capital cost of ten percent, for uranium enrichment plant?

WITNESS COLLIER: I don't think I could agree or disagree to that statement without reading more of the study to learn about the kinds of facilities.

And I might add, also, to learn more about the deconversion plant than I already know.

JUDGE ABRAMSON: Let me ask a question of the panel. Do any of you know anything about the actual financing in the power industry, have any of you ever been involved in financing a power plant?

WITNESS COLLIER: I have been involved in some decommissioning aspects, but not --

JUDGE ABRAMSON: Have you ever been involved in the actual financing of a facility?

WITNESS COLLIER: No, sir.

WITNESS JOHNSON: No.

WITNESS MAYER: No, sir.

WITNESS DEAN: No.

JUDGE ABRAMSON: Do any of you have any experience in investigating, well, in working with, or investigating among debt and equity participants what the ratio of debt to equity would be?

Have you ever been involved in negotiating a transaction, or examining a transaction, where somebody determined how much debt they were going to put in, and what they were going to charge, or how much equity they put in and what they were going to charge?

WITNESS JOHNSON: No, sir.

WITNESS MAYER: No.

WITNESS DEAN: No.

WITNESS COLLIER: No.

JUDGE ABRAMSON: So you assumed, you simply used the ten percent that the Staff, that the Applicant had been using, is that right?

(No verbal response.)

JUDGE ABRAMSON: Thank you.

MR. LOVEJOY: Let me try one more, here. I'm going to mark as NIRS/PC exhibit 289 an extract from a study by the University of Chicago, August 2004, called the Economic Future of Nuclear Power.

CHAIR BOLLWERK: Let the record reflect that NIRS/PC

exhibit 289, a Study of the Economic Future of Nuclear Power, excerpts from that, what part specifically is it?

MR. LOVEJOY: This is the chapter on financial aspects of nuclear power.

CHAIR BOLLWERK: A University of Chicago study dated August 2004, is marked for identification.

(Whereupon, the above-referenced to document was marked as NIRS/PC Exhibit No. 289 for identification.)

MR. LOVEJOY: And I offer this in evidence.

JUDGE ABRAMSON: And for what purpose?

MR. LOVEJOY: To pursue the question of cost of capital with these witnesses, who are offered as expert witnesses on cost of capital.

CHAIR BOLLWERK: Any objection?

MS. CLARK: Well, once again, my witnesses are not proffered to discuss the appropriate interest rate to be charged for cost of capital. I think that we have established that all they did was to take the assumptions that were provided by LES and project income and revenues based on those assumptions.

MR. LOVEJOY: Well, this is a hearing on cost of capital, and this is the Staff's panel of experts.

JUDGE ABRAMSON: You didn't introduce these, or did you attempt to introduce these exhibits with your own witness?

MR. LOVEJOY: No, I have not.

MS. CLARK: Well, and I have to say that these assumptions

were -- cost of capital is a matter to be provided by LES. It seems to me that these questions would be appropriately directed to LES' experts, not the Staff's.

JUDGE ABRAMSON: Mr. Lovejoy, I think we have heard this panel tell us, in no uncertain terms, that they don't really know much about the cost of capital, debt or equity, in the power industry, in the nuclear industry.

And that this was an exercise performed by them using a ten percent number they got from LES. So I'm a little bit at a loss as to what the purpose of these exhibits is.

CHAIR BOLLWERK: Well, there is a cross examination exhibit that has been proffered, 289. Any objections from LES?

MR. CURTISS: No objection.

CHAIR BOLLWERK: Any objection from the Staff?

MS. CLARK: No objection.

CHAIR BOLLWERK: All right, there are no objections. Having said that, the exhibit is admitted.

(The document referred to, having been previously marked for identification as NIRS/PC Exhibit No. 289 was admitted in evidence.)

CHAIR BOLLWERK: Now the question will be, what do they know about it.

MR. LOVEJOY: Okay. I'm looking now, first, at page 5-18. There is a discussion of base cost of capital. And at the end of the first paragraph it reports the effect, the average weighted average cost of debt for these utilities, based on Bloomberg reports, adjusted to pre-tax basis, is 5.34

percent and for equity it is 8.63 percent.

Do you see that entry?

WITNESS COLLIER: Yes.

MR. LOVEJOY: And the study notes that Bloomberg was using a ten year Treasury bond as the guideline for a risk free rate, and it states, on page 5.18, which we are looking at, that one half to one percent should be added to adjust for a more appropriate long-term maturity.

Do you see that? That is at the bottom of the second paragraph, under base cost of capital.

WITNESS COLLIER: Yes.

MR. LOVEJOY: And does that make sense to you, do you understand that process?

WITNESS COLLIER: I understand the increase in risk, yes. I have no opinion as to whether the percent increase is adequate to cover that risk.

MR. LOVEJOY: Then on this page, and the following page, in the carryover, the study states that another adjustment would be made to correct for historically low current rates.

And it refers to using a moving average of the yield on a generic U.S. Treasury security, which suggests adding another 50 basis points, giving us, on page 5-19, a cost of equity of 9.64 to 10.13 percent, and a cost of debt of 6.35 to 6.84 percent. Do you see that passage?

WITNESS COLLIER: Yes, I do.

MR. LOVEJOY: And continue, and they round those figures to ten percent for equity and seven percent for debt. And continuing on to page

5-21, the study calculates a risk premium of three percent, which I see in the first sentence, on the first full paragraph on 5-21.

Do you see that?

WITNESS COLLIER: I see the figure three percent.

MR. LOVEJOY: Yes. And adding the three percent risk premium to the cost of equity would give a cost of equity of 13 percent, correct?

WITNESS COLLIER: I'm taking your word for this. This is a complicated subject and I would really need to read all of this report to really agree to what it is saying.

MR. LOVEJOY: Do you need to read some of it right now? I don't want to set aside too much time for this, but --

MS. CLARK: Well, if you are asking for agreement from our Staff witnesses, I think that is clearly an objectionable question. It is clear that is outside the scope of what they are proffered here for.

If your intention is to simply read them the passages, and ask them if that is what it says, that is what the Staff has been doing on their cross examination, and that can continue.

MR. LOVEJOY: Well, my question ultimately is going to be quite simple. And that is, would the combination of figures reported here support using an estimate in this case of at least an overall cost of money, cost of capital, of ten percent?

WITNESS COLLIER: I'm not prepared to address that question today.

MR. LOVEJOY: So you don't know?

WITNESS COLLIER: I would need to read this report, at a

minimum, and also find out some additional information besides.

MR. LOVEJOY: What else could you need to know?

WITNESS COLLIER: I would need to learn a variety of things, including about the types of facilities that are covered in this report, the types of owners, the types of financial institutions.

I would need to learn more about the deconversion facility, and various aspects of its operations, and how risky it is. I would need to look up these historically low risk premiums that you mentioned.

There are probably a host of other things that are mentioned in here, that I haven't had a chance to even read once, much less consider.

MR. LOVEJOY: All right, let me move back to something we were talking about a minute ago, which is the spreadsheet, exhibit 48. Do you have that?

WITNESS COLLIER: Yes, I do.

MR. LOVEJOY: And looking at the entries under 20.12, in identifying the baseline cost of construction, is that what it appears, under the year 2012, the entry for 88 million, is that what that figure represents?

WITNESS COLLIER: That is the sum in 2004 dollars of the cost, the assumed cost of construction, and licensing, and engineering.

MR. LOVEJOY: And the figure 88 million came from LES' estimate, correct?

WITNESS COLLIER: That is correct.

MR. LOVEJOY: And, as you say, it is in 2004 dollars?

WITNESS COLLIER: That is correct.

MR. LOVEJOY: And are you showing it on this spreadsheet

as, are you showing on this spreadsheet that construction commences in 2012?

WITNESS COLLIER: Yes, I am.

MR. LOVEJOY: Would it be correct, then, to have escalated the construction cost from the 2004 dollars, to a 2012 value?

WITNESS COLLIER: That would have been correct. However, I would add that the way I did it was perfectly valid for my purposes.

MR. LOVEJOY: What do you mean?

WITNESS COLLIER: The costs of -- prior to 2012 the only thing that is happening is that costs are escalating due to inflation. It is true that the cost of construction would be escalating during that time.

However, it is also true that the assumed price that, and the components of price that LES has posited, would also be inflating at the same rate. These figures cancel out, and the net result is there is no effect.

So I just, as an analytic simplification, I just started at 80 million dollars.

MR. LOVEJOY: But, in fact, the construction costs would be significantly greater than 88 million, if it were initiated in 2012, correct?

WITNESS COLLIER: Sure. It wouldn't change any of the conclusions on my spreadsheet, though.

MR. LOVEJOY: It would change some of the numbers, wouldn't it?

WITNESS COLLIER: It would certainly change some of the numbers. And that is probably true for, you know, many of the figures that have been thrown out today.

JUDGE ABRAMSON: But the numbers wouldn't change in relation to each other, right? Everything would be escalated pari passu?

WITNESS COLLIER: That is correct.

JUDGE ABRAMSON: You did only this one scenario, is that right, Mr. Collier, this one parametric, where you assume construction would start in 2012?

Did you do one, for example, where construction would start in 2018, or any others?

WITNESS COLLIER: No, I didn't.

JUDGE ABRAMSON: Just this one?

WITNESS COLLIER: It is possible to draw some conclusions on the end of life scenario, from this spreadsheet, though.

MR. LOVEJOY: Let me ask you, in particular, about the figure of 40 cents, which is in the black box, for interest. Do you see that?

WITNESS COLLIER: Yes, sir.

MR. LOVEJOY: Is that a figure that you took from LES?

WITNESS COLLIER: I got that figure from the Staff. It is my understanding that they got that from LES.

MR. LOVEJOY: And did you understand that LES was proposing to add that, in some sense, to their financial assurance? Tell me what your understanding was.

WITNESS JOHNSON: Yes, we did get that from their submittals.

MR. LOVEJOY: Was that actually proposed to be a figure paid in current dollars throughout the life of the facility, rather than a figure

stated in 2004 dollars, as you dealt with, do you know?

WITNESS COLLIER: As I understand it that was a component of the price, the price would escalate with inflation, so that figure, as far as the recovery of costs, or revenues associated with it, would escalate over time.

MR. LOVEJOY: And that would tend to make the revenues greater than if you had used the 40 cents as a figure that applied each year in current dollars? WITNESS COLLIER: Certainly.

MR. LOVEJOY: Have you looked at the LES calculations, the spreadsheet that was produced by them, although not part of their testimony?

WITNESS COLLIER: I'm sorry, I don't know which spreadsheet you are referring to.

MR. LOVEJOY: It has been marked as NIRS/PC exhibit 281. Yes, I believe this has been introduced?

CHAIR BOLLWERK: It has.

WITNESS COLLIER: I believe I have seen this before, and I might have looked at it a little bit. But, to be honest, I don't really remember too much about it.

MR. LOVEJOY: Do you know how they developed the figure 40 cents?

WITNESS COLLIER: I understand it somewhat, yes.

MR. LOVEJOY: Can you explain what you know?

WITNESS COLLIER: I'm not sure I'm going to get it entirely correctly, but they -- it is stated in our testimony, if I can just refer back to that?

MR. LOVEJOY: Please.

WITNESS COLLIER: Yes, they calculated an annual debt service payment of approximately 8.399 million dollars, and divided this by the maximum annual thru-put of 7 million KGU of the hypothetical deconversion facility, to yield a debt service cost of 120 per KGU.

And then they subtracted, from this, 1 dollar and 20 cent cost, the amount of 80 cents per KGU, which corresponds to the per KGU cost of construction, plus licensing and engineering.

CHAIR BOLLWERK: And what were you reading from, I'm sorry?

WITNESS COLLIER: I'm sorry, I was reading from page 7 of our direct testimony.

CHAIR BOLLWERK: All right.

MR. LOVEJOY: What was the 8.399 million figure basically a mortgage payment done in current dollars, in your opinion?

WITNESS COLLIER: It was a calculation that was based on a mortgage payment type financing scheme.

MR. LOVEJOY: So it was in 2004 dollars?

WITNESS COLLIER: I'm sorry, why are you saying that?

MR. LOVEJOY: For the information. This was a calculation of a constant debt service payment, in current dollars, during the life of the facility, correct?

WITNESS COLLIER: It was a fixed payment. If the mortgage payment is fixed at the time the mortgage is taken out. So it wouldn't escalate.

MR. LOVEJOY: It was in current dollars, it would not

escalate?

WITNESS COLLIER: It would not escalate.

MR. LOVEJOY: Okay.

WITNESS COLLIER: And that is similar to how I modeled it, too.

MR. LOVEJOY: So if you are, in effect, taking this piece apart, on a per KGU basis, you are still dealing with payments in current dollars in your payment, aren't you?

WITNESS COLLIER: I don't understand what you are saying.

JUDGE ABRAMSON: Let me see if I can get this right. I think I understand where Mr. Lovejoy is going.

He is saying that in your direct testimony you said there is an annual payment of 8 point something million dollars, and that translates to 40 cents a KGU.

WITNESS COLLIER: That wasn't my testimony, that was saying what LES did.

JUDGE ABRAMSON: But that was, from your direct, you said that is what they did?

WITNESS COLLIER: That is what they did.

JUDGE ABRAMSON: And that is a constant annual payment?

WITNESS COLLIER: Yes. My calculation of that figure is 14 million dollars.

JUDGE ABRAMSON: But whatever, the number was -- and

that boiled down to 40 cents a KGU, which was left for -- which you attributed, then, to a debt service, or an interest payment, is that right?

WITNESS COLLIER: LES did that.

JUDGE ABRAMSON: LES did, okay. Now, what I think I hear Mr. Lovejoy saying is, that is a constant annual payment, 40 cents a KGU. So 40 times 7 million, whatever that is, so many million dollars a year, and if I look at your spreadsheet I see the 40 cents into 2012, and 41 cents in 2013, and 42 cents in 2014.

WITNESS COLLIER: Yes, I can explain that.

JUDGE ABRAMSON: So tell me what that is, please.

WITNESS COLLIER: Sure. First let me direct your --

JUDGE ABRAMSON: Is that right, Mr. Lovejoy?

MR. LOVEJOY: That is what I was curious about.

WITNESS COLLIER: If you look at the second to last line on this spreadsheet there is a row, the first says B payments, and then in bold it says debt service payments.

And if you read, over in that row, you will see a series of 17 years worth of figures, each one says 14,017,797 dollars. That is the fixed mortgage payment.

In my analysis that was calculated at a 10 percent rate, over 17 years, for that 88 million dollars, okay? So that figure is fixed, okay? That is the cost side of the equation.

The figures you are referring to, that grow from 40 to 41, up top, that is on the revenue side. Those are the components of price. And price will escalate with inflation, at least that is the theory.

JUDGE ABRAMSON: That is what they were charging their customer?

WITNESS COLLIER: What they are charging their customers.

JUDGE ABRAMSON: All right.

WITNESS COLLIER: So that figure would increase. Therefore the amount of this deficit, which is the various components of price that would be used to cover debt service, subtract off the debt service, it is a deficit, but it is a declining deficit, because of that increase in inflation.

Just like anybody's house would become more affordable, even if their salary only grows in nominal dollars.

MR. LOVEJOY: Excuse me just a moment.

CHAIR BOLLWERK: Fine.

(Pause.)

MR. LOVEJOY: We will move on to cylinders at this point. Let me just ask the panel, generally, do you agree, first, that if the enrichment plant shuts down, at any time, and there is an inventory of cylinders containing DUF-6, that the cost of cleaning, if necessary, the remaining cylinders, and disposing, if necessary, of any cylinders that must be disposed of, would be decommissioning costs that LES should fund with financial assurance?

WITNESS JOHNSON: Well, if LES is unable to complete decommissioning, the remaining cylinders containing depleted uranium would have to be processed, deconverted, as well as the cylinders either cleaned out for recertification, and reused, or potentially cleaned to free release.

MR. LOVEJOY: And there are different kinds of washing

processes applied to cylinders, correct?

WITNESS JOHNSON: As I understand it, there are several different methods of cleaning out cylinders. There is one that is specified in ANSI 14.1. The U.S. Enrichment Corporation uses a different procedure, but they end up cleaning it sufficiently for them to do their inspection and recertification process.

But, yes, there may be more than one way of cleaning out the cylinder.

MR. LOVEJOY: The process called for by ANSI N14.1, addresses cleaning of cylinders for reuse within the nuclear industry, doesn't it?

WITNESS JOHNSON: Yes, that is the subject of it.

MR. LOVEJOY: The Cameco letter, which is 123, LES exhibit 123, addresses -- do you have that?

WITNESS JOHNSON: Yes, I do.

MR. LOVEJOY: That addresses, where it says that Cameco can wash cylinders to meet the standards of ANSI N14.1, correct?

WITNESS JOHNSON: Yes, that is correct.

MR. LOVEJOY: In the second paragraph?

WITNESS JOHNSON: Yes.

MR. LOVEJOY: And LES has also stated, in its rebuttal testimony here, that Urenco, in the UK, washes cylinders to the ANSI N14.1 standard, correct? Are you aware of that?

WITNESS JOHNSON: I would have to go back -- I believe that is discussed in the business study. Is that where you are referring to?

MR. LOVEJOY: I'm referring to the rebuttal testimony by LES.

WITNESS JOHNSON: Where is that?

MR. LOVEJOY: Page 3. They refer to the Urenco process, the Urenco operations. And they say, Urenco washes --

WITNESS JOHNSON: Is this in answer A-5?

MR. LOVEJOY: A-5, yes.

WITNESS JOHNSON: All right.

MR. LOVEJOY: Washes and recertifies cylinders to meet the American National Standards Institute N14.1 standard. And that is, also, a process of washing and recertification for reuse, correct?

WITNESS JOHNSON: Yes, that is what it says, that is for recertification.

MR. LOVEJOY: Now, in order to -- for the Staff to agree that a financial assurance allowance for compliance with ANSI N14.1, is sufficient to deal with the question of cylinder management, would you not need to know that there is available a market for reuse of cylinders at the appropriate time?

WITNESS JOHNSON: Well, we accept that there is a market for reuse of these cylinders, because they are being reused now.

MR. LOVEJOY: But LES has said that it might not begin deconversion until after the end of the operating life of the NEF, in about 2036. And they would have about, you've heard the testimony, about 13,000 cylinders by that time?

WITNESS JOHNSON: That is approximately the number, if they wait for 30 years before they begin deconversion.

MR. LOVEJOY: And it would take them another, say, 20 years roughly to carry out deconversion, correct?

WITNESS JOHNSON: Well, it would probably be 16 to 17 years if you have a plant that processes 7,000 metric tons per year.

MR. LOVEJOY: Can you project, or do you have any basis to project, that in 2036 through 2050, LES or, indeed, a third party managing the deconversion process, could put 13,000 used cylinders into the market, and sell them promptly to users?

WITNESS JOHNSON: Well, as I testified, in October, I felt that there would be a market to return for reuse a quantity of those cylinders. But at that point I was not able to say exactly what the market would be, and whether or not there would be cylinders for which there would be no market for reuse.

If 13,000 cylinders were dumped on the market, in a short period of time, I don't know what the market would be for all of them. I feel certain that there would be a market for a large number of them. Whether it would be for all of them, I don't know.

JUDGE ABRAMSON: Mr. Johnson, between now and the end of the license life, there are going to be ten mandatory, or 30 agreed annual adjustments to the decommissioning funding.

Do you envision that your, that the Staff's, because I assume neither I or you will be around for that whole 30 year period, that the Staff's view of the market for these cylinders will evolve over that period?

WITNESS JOHNSON: I'm sure that would happen, as well as, you know, if the cost basis changed, that would be factored into the update

as well.

So right now LES is proposing 60 cents per kilogram. If it changes in the future the cost basis, and the decommissioning funding plan update would provide the new basis.

JUDGE ABRAMSON: So there is not -- there is never -- do our regulations provide any mechanism for imposing a requirement of how these -- how the annual adjustments are to be done in the future, or strictly speaking --

WITNESS JOHNSON: Not to the detail that it requires market analysis. What we are looking for is a reasonable cost basis on which to issue the license.

And, for example, with deconversion, for example, if a plant comes available in 2016, then the cost basis would change, probably, to what the contract -- actual contracted value is.

And that value would include cost of recertification, if the deconversion facility was to do that.

JUDGE ABRAMSON: And in the meantime, between now and 2016, every year there is a reevaluation of this cost, and does the Staff factor in its view, and the Applicant's view of the market for cleaned up cylinders?

WITNESS JOHNSON: Well, I think the way around it is that from the testimony that was provided earlier, and the Cameco letter, it talks about, in the opinion of Cameco, the 60 cents would also cover free release to a Canadian standard, which is more rigorous than the U.S. release standard.

So I think in either case whether or not there are cylinders

that can't be marketed, that would have to be cleaned up to free release, it is included in that same cost.

JUDGE ABRAMSON: So that is the Staff's current view. Is that when establishing the amount of the decommissioning funding obligation, initial decommissioning funding obligation, the 60 cents would accommodate either cleanup, and recirculation, or cleanup and free release?

WITNESS JOHNSON: Well, in the updates, if there were changes in those costs, I would expect that those would be part of the updates.

MR. LOVEJOY: Well, as of now, do you know how many -- well, how many reactors do you expect to be operating in 2036?

WITNESS JOHNSON: I don't know what the current projections are, but reading in the trade press, it seems the total number of nuclear power plants, over the world, is going to increase.

You know, I have seen as many as 40 to 50 nuclear power plants worldwide that are going to come into existence over the next 15 to 20 years. So I expect that, you know, if you believe what is in the trade press, that nuclear power will be expanding, not decreasing.

MR. LOVEJOY: Well, there have been projections like that in the past, haven't there, about --

WITNESS JOHNSON: Well, I mean, that is why I'm not putting a value judgement. I'm just saying that is what I read in the trade press. And, as I understand it, there are a number of countries, like in India and China, that are seriously pursuing purchasing new plants.

MR. LOVEJOY: But you are not in a position to project how many of the currently licensed reactors --

WITNESS JOHNSON: I'm not an expert in energy projections. But it is just what I have read in the trade press. I haven't gone back and analyzed those articles in detail.

MR. LOVEJOY: Are you going to take into account projections of the nuclear industry, generation capacity, number of reactors in operation, are you going to take those into account in the updates that you have been talking about?

WITNESS JOHNSON: Probably not in the way that you are suggesting. I mean, we are looking for a reasonable cost basis for the decommissioning funding.

Normally we can do this through information provided by third parties. And we don't have to do projections of the sort that you are discussing.

MR. LOVEJOY: Now, you said that the Cameco letter refers to a process of cleaning to free release standards. Do you know how many times Cameco has done that?

WITNESS JOHNSON: I'm sorry?

MR. LOVEJOY: Do you know how many times Cameco has done that?

WITNESS JOHNSON: They have indicated that it is rare that they've had to do that.

MR. LOVEJOY: So you can't say that there is an established process that has been tested and proved to clean thousands of DUF-6 cylinders to free release standard, can you?

WITNESS JOHNSON: Well, I mean, if I read the Cameco letter they would apply the same process that they do in the rare cases where

they have to do this.

And in the next to the last paragraph in the letter Mr. Oliver indicates that he is confident that the 60 cents would be sufficient to cover the cost of cleaning a cylinder to meet free release standards.

MR. LOVEJOY: Actually Mr. Oliver doesn't say that it has ever been done, does he?

WITNESS JOHNSON: I'm sorry?

MR. LOVEJOY: He says, he doesn't say that Cameco has done this, he says that Cameco is familiar with the steps involved, correct?

WITNESS JOHNSON: Well, he says that they do it on rare occasion. And in the third paragraph of the letter it says, throughout our operations history Cameco has only disposed of a few damaged cylinders.

So you can see the need to scrap cylinders is rare.

MR. LOVEJOY: And he concludes, in that paragraph, for these reasons I cannot quote you a going rate for cylinder decommissioning by Cameco, correct?

WITNESS JOHNSON: Right. I read that as, you know, Cameco doesn't have a published rate for cylinder decommissioning because they don't do it very often.

But that doesn't mean they haven't done it in the past, or they don't know how to do it, and don't know how to provide a cost estimate for it.

MR. LOVEJOY: Do you have a figure for disposal of cylinders, if that is necessary?

WITNESS JOHNSON: No, I don't.

MR. LOVEJOY: The Urenco business study makes

reference to what may be understood as disposing of cylinders, but do you recall referring to that, have you made any --

WITNESS JOHNSON: I recall a discussion in the Urenco business study.

MR. LOVEJOY: That would not qualify as a third party source of data, would it?

WITNESS JOHNSON: Well, I think it would. But that is not the only third party data here that we could use in the review.

MR. LOVEJOY: Well, doesn't the requirement of third party data, wouldn't that eliminate a company which controlled the Applicant? You would consider Urenco a third party?

WITNESS JOHNSON: Well, I'm basing my discussion, here, on the Cameco letter. Carneco doesn't have any relationship, at all, with Urenco or with LES contractually, or a part of their organization.

MR. LOVEJOY: So you wouldn't be using the Urenco data?

WITNESS JOHNSON: I'm sorry?

MR. LOVEJOY: You would not be using Urenco's information --

WITNESS JOHNSON: Well, it depends on what the information is that Urenco is providing. But for the purposes of my review of cylinder washing, I accept what is in the Cameco letter as reasonable, and as a reliable piece of information from a corporate entity who does cleaning, and recertification on a regular basis, and has done cylinder decommissioning on occasion, as well.

MR. LOVEJOY: Now, you remember in the October hearings

we looked at how DOE, and its programmatic EIS had calculated the number of material involved in disposing of cylinders, and figured a cost. Do you remember that discussion?

WITNESS JOHNSON: Well, I guess you are going to have to be more specific as to what your question is.

MR. LOVEJOY: Well, let me ask you, have you seen an analysis of the cost of disposal of depleted uranium cylinders calculating the costs of preparation, crushing the cubic volume generated in that process, and the disposal methods, and the disposal costs of --

WITNESS JOHNSON: Not as low level waste. I have not seen one as low level waste in this country, no.

MR. LOVEJOY: Okay. May I confer for just a moment?

(Pause.)

MR. LOVEJOY: That is all I have. Thank you.

CHAIR BOLLWERK: Is there any redirect from the Staff?

MS. CLARK: Just a couple of questions.

EXAMINATION BY MS. CLARK OF

TIMOTHY JOHNSON

JENNIFER MAYER

JOHN COLLIER

CRAIG DEAN

MS. CLARK: Mr. Johnson I would like to, once again, go back to the Cameco letter. Are you familiar with the manner in which these cylinders are washed?

WITNESS JOHNSON: I'm sorry, I just did not hear.

MS. CLARK: Are you familiar with the methods used for washing cylinders?

WITNESS JOHNSON: On a superficial basis. I have read the recommended technique in ANSI 14.1, and I have gone back and looked at one of the submittals from U.S. Enrichment Corporation on how they recertify cylinders.

MS. CLARK: Could you give us, just tell us, do you consider this a very complicated, or complex technique, to wash these cylinders?

WITNESS JOHNSON: No.

MS. CLARK: In fact, is it --

WITNESS JOHNSON: It is pretty routine.

MS. CLARK: Could you explain that a little bit, is it a pretty straightforward matter?

MR. LOVEJOY: Excuse me, are you talking about ANSI --

MS. CLARK: I'm talking about the method used to wash the cylinders. I'm wondering if that is a highly technical or complex process?

WITNESS JOHNSON: I would characterize it as not a highly technical process. It basically is adding water, or an aqueous solution, in a small quantity, into the cylinder, so that the remaining UF6 heels can react out.

And then it is vented and cleaned out. The washing is done several times before it is inspected, before the internals are inspected.

MS. CLARK: Would you expect the washing to be technically very different, if you are washing it to free release standards, as opposed to washing it for reuse, and recertification?

WITNESS JOHNSON: Well, for free release standards there

would be some differences, in that the cylinder would probably have to be cut and sandblasted, which is not a part of the recertification process.

MS. CLARK: So given the difficulty that we are talking about, would you expect someone like Mr. Oliver, who has a PhD, and is a director of special projects for Cameco, to have a good understanding of what the costs would be?

WITNESS JOHNSON: Yes, I do.

MS. CLARK: Can you tell us what DOE is planning to do with the cylinders that they will be receiving, DUF-6?

WITNESS JOHNSON: My understanding is that they would be cleaning the cylinders and reusing them, basically, to become a waste container for the U308 product that is generated in the deconversion operation.

MS. CLARK: And for that purpose would they have to clean them to free release standards, or would it be sufficient to clean them for recertification purposes?

WITNESS JOHNSON: At this point I believe it would only require cleaning up to a recertification level. They would have to clean it up enough to reduce any hazard from any remaining UF6.

MS. CLARK: So in the event that there is not a market for reuse of the cylinders, wouldn't it be possible for whoever is responsible for them, to clean them up to recertification standards, and then use them as disposal containers?

WITNESS JOHNSON: Yes, and that is what DOE is planning on doing with theirs.

MS. CLARK: Thank you, that is all I have.

CHAIR BOLLWERK: Any other -- do you have a question?

EXAMINATION BY MR. LOVEJOY OF

TIMOTHY JOHNSON

JENNIFER MAYER

JOHN COLLIER

CRAIG DEAN

MR. LOVEJOY: Do you know what the cost of disposal of the cleaning and disposal of cylinders, when used as disposal containers would be?

WITNESS JOHNSON: I believe it would be the same as the costs for, on the order of the same costs as recertification, although you wouldn't necessarily have to go in and do all of the other tests associated with recert fication.

It may be sufficient just to clean them out.

MR. LOVEJOY: But there would be the cost associated with disposal too, would there not?

WITNESS JOHNSON: If you were going to dispose of them as low level waste, you would be disposing of a whole package, with the UF3 in it. And as I understand the DOE cost estimate, that is considered in their estimate.

So I believe that that would be a reasonable option to consider for these cylinders.

MR. LOVEJOY: And how would you -- excuse me.

(Pause.)

WITNESS JOHNSON: If I said UF3, I meant U308 as the

waste material.

MR. LOVEJOY: Well, do you have any data that assigns a cost to the disposal of the cylinder component of that disposal package?

WITNESS JOHNSON: I don't have any data on disposal of the low level waste cylinders, as low level waste, by themselves.

MR. LOVEJOY: When you say by themselves that includes --

WITNESS JOHNSON: Empty cylinders, or cut-up cylinders, I don't have costs on that.

MR. LOVEJOY: Well, do you have any data, you talked about the DOE process where depleted uranium cylinders were cleaned to some level, and used as disposal containers.

Has anyone, in planning for the DOE, assigned, figured out how much the disposal of the cylinders, other than the depleted U308 would cost?

WITNESS JOHNSON: You mean without the U308 in it?

MR. LOVEJOY: Calculated it, as an analytical exercise, not assuming that you dispose of them separately, but calculated the cost of disposing of the cylinders that way. Do you understand me?

WITNESS JOHNSON: I'm not -- I don't have any information on the cost of disposal of a cleaned up cylinder as is. I do have information that was provided in the DOE cost estimate for disposal of the U308 waste in, packaged in an empty cylinder that has been cleaned up to where it is suitable for disposal.

MR. LOVEJOY: What are you referring to, with that

information? What are you referring to?

WITNESS JOHNSON: I'm referring to the DOE cost estimate of, I would have to go back and look at the number for the disposal of the U308 and that includes packaging, transportation, and disposal at the Envirocare facility.

And the package presented for disposal would be a cylinder, an empty cylinder that had been cleaned up, and had been filled with U308.

MR. LOVEJOY: You are talking about the LMI study, is that right?

WITNESS JOHNSON: Yes.

MR. LOVEJOY: When that method of disposal is used, do you know what percent of the total disposal cost is assignable to disposing of the cylinders?

WITNESS JOHNSON: No, I don't.

MR. LOVEJOY: And what percent is assignable to the U308?

WITNESS JOHNSON: No, I don't know how that was broken down.

MR. LOVEJOY: That is all I have.

CHAIR BOLLWERK: Mr. Curtiss?

MR. CURTISS: Could we take a five minute break? We may not have any questions, but I would like to consult, if this is a good time to do this?

CHAIR BOLLWERK: Yes, this is a good time to take a break. It is approximately 25 after 3 at this point. Let's go ahead and take a ten minute break, so we will be back at 25 to 4.

(Whereupon, the above-entitled matter went off the record at 3:25 p.m., and went back on the record at 3:35 p.m.)

CHAIR BOLLWERK: Let's go back on the record, please.

Does LES have any questions?

MR. CURTISS: We have no further questions for this panel.

CHAIR BOLLWERK: All right. Anything further from either of the other parties, then?

(No response.)

CHAIR BOLLWERK: I just have one question. I heard a reference to the Canadian standard versus what I took to be the U.S. standard. You said the Canadian standard was stricter.

On what basis can you make that statement?

WITNESS JOHNSON: The U.S. standard is based on a regulatory guide 1.86 that has been in use since the '70s. And I think the values for fixed contamination on equipment, and release of those, have probably been in effect since the '60s, although it wasn't documented on a reg guide.

For materials licensees, those numbers for release of equipment are embodied in a document called Guidelines for Release of Equipment. And I will read the whole thing if you --

The current document is called Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproducts, Source, and Special Nuclear Material.

And this is a document that was specifically adapted for materials licensees and modified as of April 1993. The same numbers were

also used prior to that in another document prior to that.

And, again, these standards have been in place, formally, since the 1970s, and back into the '60s, less formally.

JUDGE ABRAMSON: So your point is that the Canadian standards are more modern and are, therefore, stricter?

WITNESS JOHNSON: As I understand the Canadian standards use the IAEA release standards as their justification.

JUDGE ABRAMSON: And those are more strict than the standards in this document?

WITNESS JOHNSON: The current standards are more strict than what is in the guidelines, yes.

CHAIR BOLLWERK: And the ANSI standard relate to the IAEA standards if I --

WITNESS JOHNSON: Well, the ANSI standards aren't really related to free release.

CHAIR BOLLWERK: Right.

WITNESS JOHNSON: Because you are not free releasing the cylinder, you are just recertifying it, doing a hydro test on it, and so on.

CHAIR BOLLWERK: So those are apples and oranges, then?

WITNESS JOHNSON: Right, you don't have to clean it up to free release standards to do the inspection.

CHAIR BOLLWERK: All right. Any other parties have any questions?

MR. LOVEJOY: Mr. Johnson, could you -- I'm sorry, did it get

to me?

CHAIR BOLLWERK: Sure.

MR. LOVEJOY: Would you state, into the record, the code designation for the guidelines that you were quoting from?

WITNESS JOHNSON: I'm sorry?

MR. LOVEJOY: Is there a -- it is not a NUREG document, is it, what you were reading from?

JUDGE ABRAMSON: The paper whose title you just read us, does it have any designation?

WITNESS JOHNSON: It is just titled Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use of Termination of Licenses for Byproduct Source and Special Nuclear Material.

And I believe it was attached to a branch technical position. I don't have the title of that.

JUDGE ABRAMSON: Do you have a date?

WITNESS JOHNSON: But the same numbers are also in reg guide 1.86 for release of equipment.

CHAIR BOLLWERK: All right. Anything further?

(No response.)

CHAIR BOLLWERK: Then we thank you very much for your testimony to the Board. Mr. Krich, I forgot to thank you as well. Sir, we appreciate your efforts, your testimony.

Dr. Makhijani if you would, please, sir?

Whereupon,

ARJUN MAKHIJANI

was called as a witness by Counsel for NIRS/PC and, having been duly sworn, assumed the witness stand, was examined and testified as follows:

MR. LOVEJOY: Dr. Makhijani, do you have in front of you two copies of a document dated January 13th, 2006, captioned Revised Prefiled Direct Testimony of Dr. Arjun Makhijani in Support of NIRS/PC Contentions EC-3/TC-1, EC-5/TC-2, and EC-6/TC-3 Concerning LES' Deconversion Strategy and Cost Estimate (Costs of Capital and Cylinder Management). Do you have two copies of that?

WITNESS MAKHIJANI: Yes.

MR. LOVEJOY: Is this direct testimony that you have prepared, or was prepared under your direction or admission in this hearing?

WITNESS MAKHIJANI: I did.

MR. LOVEJOY: And are you prepared to submit this to the record as your own testimony?

WITNESS MAKHIJANI: Yes. There is one correction in this that I would like to offer, on page 10.

MR. LOVEJOY: All right.

WITNESS MAKHIJANI: In the first answer there, in the third last line of A-5, what the capital costs, it should say cost of capital. There are three places that I made -- know what the cost of capital, it should read.

MR. LOVEJOY: Capital cost heading, we all agreed.

CHAIR BOLLWERK: All right.

MR. LOVEJOY: Page 10 of the direct.

WITNESS MAKHIJANI: In that one there is only that one

correction.

MR. LOVEJOY: And do you have, before you, the February 1, 2006, revised prefiled rebuttal testimony?

WITNESS MAKHIJANI: I do.

MR. LOVEJOY: And was this prepared by you, or under your direction?

WITNESS MAKHIJANI: Yes.

MR. LOVEJOY: Do you have some corrections to this?

WITNESS MAKHIJANI: Yes, there are two same corrections. Let me see, I have them marked up in my copy. On page 6, answer A-4, on line 4, there is the same change that should be made.

It says corresponding to capital costs, it should read corresponding to costs of capital. And then on page 11, sorry for this oversight, I apologize. The second last line, on page 11, it should say costs of capital.

I think I must have written that phrase so many times my brain must have wanted a variation. I'm sorry about that.

CHAIR BOLLWERK: No problem.

MR. LOVEJOY: Have you made those changes on the copies there?

WITNESS MAKHIJANI: No, I have not.

CHAIR BOLLWERK: We need to do that. Why don't you let us take a second and do that right now, so that we make sure that the ones that you pass over to Ms. Engle, our law clerk, have the right changes.

Let me also mention, while Dr. Makhijani is doing that, from the Staff panel we need to get back our stamped copy of exhibit 37, which was

in the little binder, I think it was, that we had allowed you all to use, if you still have it.

WITNESS MAKHIJANI: Your Honor, do I need to sign where I --

CHAIR BOLLWERK: No. If you want to go ahead and initial it, that will work, actually. It is probably a good idea.

(Pause.)

CHAIR BOLLWERK: And I believe in terms of exhibits, what we are looking at, so we are all on the same page, is 280, 282, and 283, at this point, that have not already been --

MR. LOVEJOY: Have we admitted the testimony for the record?

CHAIR BOLLWERK: Not yet. I just want to make sure we are all -- we are going to go to that as soon as we --

JUDGE ABRAMSON: He is initialing.

CHAIR BOLLWERK: The three copies.

WITNESS MAKHIJANI: I'm done, Your Honor.

CHAIR BOLLWERK: All right. He has finished then. If you have --

MR. LOVEJOY: Thank you. We offer the direct and the rebuttal testimony for admission into the record.

CHAIR BOLLWERK: Any objections from either of the parties?

(No response.)

CHAIR BOLLWERK: Hearing none, then the revised prefiled

direct testimony of Dr. Arjun Makhijani and the revised prefiled rebuttal testimony of Dr. Makhijani relating to Contentions EC-3/TC1, EC-5/TC-2, and EC-6/TC-3, concerning LES' Deconversion Strategy and Cost Estimate, both of those documents are adopted into the record as if read.

(Whereupon, the revised prefiled direct and rebuttal testimony of Dr. Arjun Makhijani were bound into the record as if having been read.)

~~Protected Material~~

January 13, 2006

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 70-3103
Louisiana Energy Services, L.P.	ASLBP No. 04-826-01-ML
National Enrichment Facility	

REVISED PREFILED DIRECT TESTIMONY OF DR. ARJUN MAKHIJANI IN SUPPORT OF NIRS/PC CONTENTIONS EC-3/TC-1, EC-5/TC-2, AND EC-6/TC-3 CONCERNING LES'S DECONVERSION STRATEGY AND COST ESTIMATE (COSTS OF CAPITAL AND CYLINDER MANAGEMENT)

Q1. Please state you name and what testimony you will be discussing today.

A1. My name is Dr. Arjun Makhijani and I have previously submitted direct testimony in this proceeding.

Q2. What is your opinion concerning the way in which LES has dealt with the cost of capital (i.e., return on investment) with regard to the proposed deconversion plant during the October 2005 hearing?

A2. It should be noted that in its application LES did not deal with the issue of the cost of capital at all. LES presented Staff with a table that reads as follows (LES Ex. 92; NIRS/PC Ex. 188). As will be seen from the table, LES had no entry for cost of capital:

Activity	Cost	kg U	Cost/kg U
Facility construction	$70,000,000	110,027,923	$0.64
Licensing and Engineering	$18,000,000	110,027,923	$0.16
Annual Operations and Maintenance	$12,500,000	7,000,000	$1.79
Decontamination and Decommissioning	$ 8,800,000	110,027,923	$0.08
Total Cost per kg U			$2.67

LES's expert witness, Leslie Compton, was not prepared to say whether a third party would ask $2.67 per kgU for the service of deconversion. (Compton, Tr. 1996-2001) Thus, LES's cost estimate for construction and operation (LES Ex. 92 at 2) shows $88 million up-front costs to build and license a deconversion plant. It shows no allowance for the cost of the money invested in the plant. (Compton, Tr. 2043).

At the same time, LES asserts that the cost of capital to construct and operate the deconversion plant is embedded in the line item for operating and maintenance (O&M) costs, although it is not so designated. (Compton, Tr. 2005). Such a presentation of a provision for return on invested capital is highly irregular as a matter of financial reporting, to say the least. In fact, this testimony is at

variance with the LES submission, which states that operating and maintenance costs are principally related to employee wages and include replacement parts, regulatory fees, and utility costs. Return on investment is not even mentioned. (LES Ex. 92, at 2).

LES has also asserted that, in doubling the size of the plant from the 3500 MTU per year plant discussed in the Urenco business study, LES understood that it would be necessary only to increase operating costs by about one-third. (Krich, Tr. 2278). Thus, LES claimed that operating and maintenance costs, upon doubling the size of the plant, would go from $6,250,000 per year to only $8,333,333. Therefore, LES contends, the plant owner could set aside $4 million per year out of operating and maintenance costs. (Tr. 2020).

LES's assertion that maintenance and operating costs would only increase by one-third, on doubling the plant size, is weakly supported and did not even appear in the prefiled direct testimony by LES or Commission Staff.

The statement that some surplus in O&M costs would materialize to pay for capital costs is without significant economic or technical analysis. In fact, no specific analysis at all has been provided to support it. The assertion that the costs of capital can be embedded in O&M costs is also without reference to any documentation or financial literature. No citations from Wall Street or academia have been provided. LES should at least cite some examples of an industry – any industry – where it is the practice to locate provisions for cost of capital under the O&M cost heading. The statements made during testimony about maintenance costs containing allowances for cost of capital are highly unusual and irregular in relation to how the cost of capital is generally reported. (Tr. 2005, 2018-19). It appears to me that they were an attempt at providing an improvised explanation

for a highly embarrassing omission in the cost estimate prepared by LES. The idea that capital costs can simply materialize out of an operations and maintenance cost item, without so much as an analysis of those costs, should be rejected out of hand as it lacks factual or analytical foundation or even any basis in the LES submission. In light of the above, the full amount stated by LES—$12,500,000— should be attributed to O&M costs. I note in passing that the $4 million per year that is claimed as the O&M surplus for funding capital costs has a present value of $64 million over 16 years. (NIRS/PC Ex. 280). This is about $80 million short of the present value of the cost of capital at 10 percent, even if the $4 million were to be accepted (which it should not be). Escalation at any assumed inflation rate cancels out when present value is estimated from the same rate, of course. For the effective rate for estimating the cost of capital see below.

LES had another theory under which cost of capital would be covered by its current cost estimate. LES's theory is entirely specious. Specifically, LES's witness Compton testified that, in projecting future revenues and costs, she would escalate the price paid for deconversion ($2.67) by three percent every year to reflect inflation. She stated that the three percent escalation would cover the necessary return on investment. (Compton, Tr. 2046, 2050; 2284). The Board pointed out that the operating and maintenance costs would escalate as well (Tr. 2041-42), as could be said also of decommissioning costs. Further, capital costs would also escalate until the deconversion plant is built. Hence, if construction starts 10 years from now, the capital cost will have increased, since the cost of labor and materials would be expected to increase with inflation. The cost of capital is then to be computed to a higher, escalated cost of the plant. No suggestion has been put forward that the capital cost of the deconversion plant would be immune to the effects of inflation; nor would such a suggestion have any merit were it to be made.

Thus, an initial estimate made for the purpose of developing a baseline estimate of the cost of capital cannot fail to escalate the capital cost of the plant at the rate of inflation. In other words, the total amount of capital to be raised in some mix of equity and debt will be higher. Therefore the annual payments to debt and equity holders will be correspondingly higher. When one discounts these payments to the present at the rate of inflation to compute their real constant value in present value dollars, the effect of inflation is cancelled out. The assessment of the cost of DU disposal is therefore independent of inflation provided that (i) O&M costs are escalated at the rate of inflation and (ii) the capital cost of the plant takes into account the anticipated rate of inflation. Therefore, escalating the $2.67 by the rate of inflation does nothing to provide for payment of the real cost of capital.

It has been astonishing to have to go over these elementary matters to counter incorrect assertions that ignore all financial and accounting methods, made without any reference to standard practice. They are not even contained in LES's own submission. A corporation that proposes to undertake a vast enterprise dealing in radioactive materials should have a grasp of how capital costs are to be budgeted and how they are to be folded into costs per unit of production. It does not engender confidence in the financial promises of LES when elementary norms of costing are being egregiously flouted using apparently extemporaneous statements in regard to amounts running into hundreds of millions of dollars. This failure to adhere to minimal norms of estimating the cost of capital raises a question whether financial guarantees that LES may currently provide can be trusted to conform to accepted practices in the future. In my opinion LES's October 2005 testimony regarding the cost of capital make its financial guarantees unreliable as the basis for DU deconversion. The inability to understand and properly budget for cost of capital clearly evident in LES testimony should lead to a rejection of the LES deconversion cost estimate as being of

unacceptable quality and content that is at variance with financial norms. LES should be required to provide new estimates that are well documented and based on a sound approach to estimating the cost of capital.

Q3. What are your observations and opinions regarding the spreadsheet submitted by LES regarding cost of capital subsequent to the hearing?

A3. The first and most notable thing about the LES spreadsheet (NIRS/PC Ex. 281) is that it contains no analysis of how supposed extra O&M costs would be used to fund the cost of capital. Hence, the spreadsheet does not appear to be the one that Mr. Krich and Ms. Compton testified about during the October 2005 hearings (Tr. 2305-08), which they said was prepared in the early part of 2005. That spreadsheet was said to show how the extra O&M costs and escalation of the $2.67 per kg allowance at 3% per year would cover the costs of capital:

> MR. LOVEJOY: And did you in those exercises account for some portion of the O&M costs as actually available to pay debt service?
>
> WITNESS KRICH: I think that we testified just a little while ago that we didn't identify this as a specific line item. We just added enough margin that it would cover those types of costs. But we, neither Ms. Compton nor I, identified that as a specific line item.
>
> ...
>
> WITNESS COMPTON: As we just talked about today, just looking over time, if you assume, we just spoke about with Dr. Abramson, if you look over time at the escalation of the 2.67, or actually just the construction piece, there is a, you know, that continues to escalate after you've paid for it, and that would cover your cost of capital, conceivably.
>
> MR. LOVEJOY: Did you just do that in your head, did you do that in your computer, how did you calculate that?
>
> WITNESS COMPTON: I just plugged it into a spreadsheet very quickly.
> ...

MR. LOVEJOY: When did this take place?

WITNESS KRICH: Mr. Lovejoy, I can't tell you exactly. When we did these calculations we did this analysis back in the early part of the year.

The LES submission does nothing to support this and other similar testimony along these lines at the October hearings. I have yet to see the spreadsheet described in the testimony.

The LES spreadsheet that was submitted in December 2005 actually makes an explicit provision for cost of debt of 6% by assuming an "interest rate" of 10 percent and then discounting that by 40% since debt is a cost that would be deducted from revenues prior to taxation. LES assumes a 40% tax rate.

This calculation is an improvement over the prior one in that it actually shows an explicit interest cost. According to this latest LES calculation, the cost of capital per kilogram of U amounts to $0.40. On a present value basis, this amounts to about 30 cents per kilogram (assuming an inflation rate of 3%). Hence, even according to LES's own calculations, the $2.67 per kg cost should be increased by about 30 cents.

However, the LES submission still does not reflect a proper accounting of cost of capital. It assumes that the entire capital will be raised as debt. This is a dubious assumption, at best. A large private enterprise would normally be funded by some mixture of equity and debt. Equity can be as common stock or preferred shares. Typical funding would be a mix of debt and these two types of equity. Equity holders demand a considerably higher rate of return than a typical bank interest rate. A corporation should count on a rate of 12 to 14 percent for equity. Risky ventures would require an even higher rate of return. In view of this, an assumption of funding entirely by debt at a net cost

of 6% is quite irregular. Financial guarantees of deconversion based on this figure would very likely significantly underestimate the cost of capital. As I have already testified, and as is clear from my October 26, 2005, worksheet (NIRS/PC Ex. 280), a ten percent cost of capital is a reasonable baseline number for a relatively non-risky investment that is funded by a mixture of debt and equity.

Further, a corporation that was unable or unwilling to seek private equity funding would likely be seen as a risky enterprise. Such a venture would be unlikely to get favorable treatment in terms of interest rate of debt funding. Hence, a net rate of 6 percent for an assumption of zero equity funding, which is implicit in the LES calculation, likely underestimates the cost of capital significantly. If debt only financing is assumed, the net cost of capital might arguably be greater than if a mixture of debt and equity is assumed.

There is another risk of assuming a no-equity deconversion plant. There would be no stockholders for the plant to restrain a premature bankruptcy declaration. The risk of a plant funded only with debt for non-performance of deconversion should be explicitly taken into account.

Finally, as noted above, the escalation of annual costs at the rate of inflation does not contribute to provisions for cost of capital.

In sum, the new LES capital cost estimate is an improvement over the assertions made by LES during the October 2005 hearing. Taking this estimate at face value, about 30 cents per kilogram should be added to the $2.67 cost per kg U of deconversion. Second, the cost of capital assumed is far too low. A net rate of at least 10 percent should be used to compute cost of capital.

Q4. How, in your opinion, should costs of capital be calculated here?

A4. I have looked at the plant with a 16 year operating life and applied a net 10% cost of money—a mixture debt and equity—which is a conservative figure. The expected throughput is about 7,000,000 kg U per year for 16 years. I also assumed a 3 percent inflation rate. The O&M, capital, and decommissioning costs were assumed as per the LES submission, cited above. (NIRS/PC Ex. 280).

On this basis, the annual payment corresponding to the cost of capital, estimated like a mortgage payment in equal amounts for 16 years, is about $11 million. This is in current dollars in the year of payment. When O&M costs and other costs are escalated at 3%, an annual cost estimate is obtained in current dollars (that is in the year of payment). These annual costs are then discounted back to the present to account for 3% inflation. On this basis, the present value of the deconversion of 112 million kilograms (7 million times 16) is about $390 million. This amounts to just under $3.50 per kg U for deconversion. A 2 cents per kg DU disposal charge for CaF2 is assumed here to provide a basis for comparison with the LES estimates.

On this basis, a $2.67 per kg provision for deconversion would fall short of the financial requirements by about $90 million (present value). The year in which the project starts is not material to this calculation, since all costs, including the capital cost of the plant, would escalate at 3% and the effect of the escalation cancels out when a present value cost estimate is done.

Q5. What is your view of how Commission Staff have analyzed the cost of capital?

A5. I disagree with the way Staff have addressed cost of capital. Mr. Dean of the Commission Staff had assumed that the cost of capital and return on investment were included in LES's $2.67 estimate. (Dean, Tr. 2124). Thus, Staff made no calculations of the cost of capital and presumed that the cost of capital was included in the Urenco business study. (Dean, Tr. 2206-07). However, Staff saw only selected pages from the business study and never saw the cost of capital. (Dean; Tr. 2206-07). In his testimony, Mr. Dean looked at the LES table and noted that the cost of capital is not broken out, and "We have no idea if it's included based on the near two word descriptions that are in the left-hand column." (Tr. 2208). Staff do not know what the ~~capital~~ of capital cost to build the plant would be. (Dean, Tr. 2208-09). Commission Staff received no explanation from LES of the financing of the deconversion plant. (Dean, Tr. 2133).

LES had explained to the Staff that the approach of doubling the operation and maintenance costs of a 3500 ton plant was conservative, but did not state what the actual operation and maintenance cost would be. (Mayer, Tr. 2193; Dean, Tr. 2194; Johnson, Tr. 2194). LES witnesses conceded that they had not explained to Staff what amounts of operations and maintenance costs would be available to go toward debt service. (Tr. 2293-94).

Q6. Please explain your calculations.

A6. In the attached tables (NIRS/PC Ex. 280), I show the cost of operation of the deconversion process, with a 10% cost of capital and 3% escalation of costs (excluding cost of capital). The cost of deconversion alone is $3.49 per kgU, not including costs of CaF2 disposal. These values are on a present value basis. Note that for simplicity and consistency, I have used a figure of 7 million kilograms per year for sixteen years, for a total deconversion of 112 million kilograms. Using 110 million kilograms over 16 years will not make a material difference to my estimates.

Q7. What provision has LES made for the cost of management of emptied depleted uranium cylinders?

A7. Briefly, the testimony of LES and Commission Staff witnesses does not address the cost associated with the management of the emptied DUF6 cylinders. The need to consider the management of the emptied DUF6 cylinders was noted explicitly by the DOE in its Programmatic Environmental Impact Statement:

> All of the conversion options would require the removal of depleted UF6 from the storage cylinders, resulting in a large number of empty cylinders. These empty UF6 cylinders from the conversion facility would be decontaminated at the cylinder treatment facility and then prepared for disposal as scrap metal.[1]

The DOE PEIS went on to state that:

> It was assumed that the treated cylinders with a very low residual radiation level would become part of the DOE scrap metal inventory. If a disposal decision were made, the treated cylinders would be disposed of as LLW, representing a 3% addition to the projected DOE complexwide LLW disposal volume.[2]

In the deposition of Paul Harding of Urenco the need to consider the management of the DUF6 cylinders after deconversion was also made quite clear:

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[1] DOE PEIS 1999, at F-66 to F-67 (NIRS/PC Ex. 282).
[2] DOE PEIS 1999 at F-67 to F-68 (NIRS/PC Ex. 282).

MR. LOVEJOY: Do your discussions with Cogema involve construction of the cylinder washing facility?
WITNESS HARDING: No.
MR. LOVEJOY: You're not planning to build that?
WITNESS HARDING: We're looking at options. There are other plants available.
MR. LOVEJOY: You're looking at other ways to supply that requirement?
WITNESS HARDING: Yes.
MR. LOVEJOY: I see. Do you plan to construct a cylinder washing facility of some sort?
WITNESS HARDING: That's one option that we're evaluating, but it isn't the only option.
MR. LOVEJOY: What are the others?
WITNESS HARDING: To place a commercial contract with another service provider.
MR. LOVEJOY: To provide what service?
WITNESS HARDING: Washing cylinders where that's needed.[3]

In fact, the Urenco business study relied upon by LES for its cost estimate includes an entire section on "Cylinder Washing and Liquid Residue Recovery Facility." (LES Ex. 91 at 11/15).

At the hearing LES acknowledged that during operations DUF6 cylinders would need to be cleaned to be recertified every five years. (Krich, Tr. 1966). Further, it is recognized that, if the NEF were shut down and a third party took over decommissioning, the third party would have responsibility for management of the cylinders containing DUF6. (Tr. 1972-73).

Staff testified that LES should fund washing of those cylinders that will not be recycled to the NEF. (Mayer, Tr. 2140-41, 2141, 2144). Mr. Johnson concurred that Staff would need to look again at the cylinder washing costs. (Tr. 2154). Staff have not determined what further work is to be done on the question of cylinder washing, but they take the position that cylinder washing is a legitimate cost to add to decommissioning funding. (Johnson, Tr. 2222).

Staff have determined that standard cylinder washing techniques do not always attain free release contamination levels. (Tr. 2234, 2246-48). Staff agreed that, if it were necessary to dispose of

[3] Deposition Compton et al. 2005/09/02 (NIRS/PC Ex. 229) p. 47-48.

cylinders, that cost would need to be added to decommissioning costs. (Johnson, Tr. 2224-25). Cylinders with heels would not be acceptable for disposal and would need to be cleaned first. (Johnson, Tr. 2225).

Q8. What cost data exist as to cylinder disposition?

A8. The process of dealing with the depleted uranium cylinders has several stages. And the same questions come up at each stage: Can the process be carried out consistently with Commission safety requirements and, if so, how much does it cost?

We must start with the assumption that at some point the enrichment plant may shut down, and there will then be some inventory of depleted uranium stored on site, essentially all of it contained in cylinders. These are the 48Y type and they each contain 8.5 MT of uranium in UF6. (NIRS/PC Ex. 133 at 4.13-16). Presumably, on decommissioning the NEF, these cylinders will all be transported to the deconversion plant. There they will be emptied so far as possible and placed in storage. But, with the NEF shut down, it can no longer be assumed that they will be turned around and sent back to the NEF to be filled again. I think that we must assume two things:

a. First, that with the NEF shut down, the deconversion plant will also shut down when the pending DUF6 stock is deconverted. Then the deconversion facility must itself be decommissioned. It is not realistic to assume that a deconversion plant in far west Texas or at a site not now determined or specified will continue to function if NEF closes based on getting business from a third party.

~~Protected Material~~

CERTIFICATE OF SERVICE

Pursuant to 10 CFR § 2.305 the undersigned attorney of record certifies that on January 13, 2006, the foregoing Revised Prefiled Direct Testimony of Dr. Arjun Makhijani in Support of NIRS/PC Contentions EC-3/TC-1, EC-5/TC-2, and EC-6/TC-3 concerning LES's Deconversion Strategy and Cost Estimate (Costs of Capital and Cylinder Management) was served by expedited delivery upon the following:

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February 1, 2006

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of | Docket No. 70-3103

Louisiana Energy Services, L.P. | ASLBP No. 04-826-01-ML

National Enrichment Facility

REVISED PREFILED REBUTTAL TESTIMONY OF DR. ARJUN MAKHIJANI IN SUPPORT OF NIRS/PC CONTENTIONS EC-3/TC-1, EC-5/TC-2, AND EC-6/TC-3 CONCERNING LES'S DECONVERSION STRATEGY AND COST ESTIMATE (COSTS OF CAPITAL AND CYLINDER MANAGEMENT)

Q1. Please state you name and what testimony you will be discussing today?

A1. My name is Dr. Arjun Makhijani and I have previously submitted direct testimony in this proceeding. I will be offering rebuttal to the pre-filed direct testimony of Rod M. Krich presented on behalf of Louisiana Energy Services, L.P dated December 29, 2005 and the pre-filed direct testimony of Timothy C. Johnson, Jennifer Mayer, Craig Dean, and John Collier

presented on behalf of the NRC Staff dated December 29, 2005. The testimony of Rod Krich, Timothy Johnson, Jennifer Mayer, Craig Dean, and John Collier was offered with respect to issues of cost of capital and cost of cylinder washing and management as they relate to Nuclear Information and Research Service and Public Citizen Contentions EC-3/TC-1, EC-5/TC-2, AND EC-6/TC-3.

Q2. What are the main points that LES and the NRC staff have made about cylinder washing in their testimony.

A2. LES's position is that cylinder washing is not a decommissioning cost, but it has nonetheless offered to include a provision of $0.60 per kg U as a "worst case" scenario (LES Testimony p. 9). LES does not consider disposal of the cylinders even as a contingency, stating that "[i]t certainly is not reasonable to assume that the cylinders would invariably require disposal as low-level radioactive waste, as NIRS/PC suggest. This is directly contrary to real world experience." (LES Testimony p. 7) LES also claimed that cleaning cylinders to free release standards "is actually a little less expensive than cylinder washing and recertification." (LES Testimony p. 10).

The NRC staff considers that the end-of-life cylinders that will not be re-used must be washed, cleaned and recertified, and that the associated cost "would appropriately be considered a decommissioning cost subject to financial assurance, in order for them to be released." (NRC Staff Testimony pp. 3-4). NRC Staff have stated that "once these cylinders are washed and/or recertified, they could be re-used by another party or recycled, and disposal costs will not need to

be reconsidered." (NRC Staff Testimony p. 4). Finally, as regards the LES offer of a decommissioning provision for the DU cylinders, the NRC Staff "would consider $0.60 reasonable, if confirmed and documented by Cameco, which has extensive experience with such activities in the United States." (NRC Staff Testimony p. 6). The NRC staff considers this estimate reasonable either for washing and recertification or disposal.

Q3. What is your position regarding the LES and NRC Staff testimony on cylinder washing?

A3. The LES position that cylinder washing is not a legitimate decommissioning cost is unreasonable. End-of-life provision for washing and recertification needs to be made. These costs are discussed in the Urenco study, which supposedly provides the basis for LES's deconversion cost estimates. The LES offer to include a financial provision $0.60 cents per kg U is not a worst case estimate. Cylinder washing and recertification is a necessary element of decommissioning of the deconversion plant. On this point, I am in agreement with the testimony of the NRC staff.

Further, the specific provision of $0.60 needs to be certified in a U.S. context. LES has not offered to do this, but as the NRC Staff has noted, it needs to be done. A well-documented analysis from Cameco as to how the $0.60 per kg U Urenco estimate would translate into U.S. conditions is a minimal requirement. Again I am in agreement with the NRC staff testimony on this point. In this context, I note that, in preparing their overall deconversion cost estimate, LES

has itself included an explicit cost provision for the "Americanization" of the deconversion plant's design and licensing. (NIRS/PC Ex. 221 at 22)

As regards the possibility that the cylinders would have to be disposed of as low-level waste, the LES statement does not appropriately characterize my view. I have not concluded that the cylinders would "invariably" have to be disposed of as LLW, as claimed by LES. Rather, in my direct testimony, I stated:

> It should be noted that in planning for the DOE inventory of depleted uranium, DOE has assumed that the DUF6 cylinders would be disposed of. (See DOE, Final Plan for the Conversion of Depleted Uranium Hexafluoride, July 1999, at 2)(NIRS/PC Ex. 283). Recent plans include their use as DU3O8 disposal containers (LES Ex. 17 at 2-14), but separate disposal as low level waste has also been analyzed. If a market can be shown for re-use, this demonstration must be explicit and supported with adequate documentation. LES has not made this demonstration or taken into account the costs for cleaning and marketing and delivering the cleaned cylinders for reuse. In the absence of such a demonstration LES should be required to make an appropriate provision for the disposal of empty cylinders as low level waste.

Hence, my statement regarding a provision for cylinder disposal as LLW was conditional. If LES can show that it is reasonable to assume that there will be a market for the cylinders in the context of projected conditions (including the possibility that other deconversion plant operators may have recertified cylinders to offer for reuse), then a washing, recertification, and marketing provision would be sufficient. At the present time, LES has not offered an analysis of projected conditions. Indeed, LES has been shifting the dates at which the deconversion plant might operate, which complicates any analysis. The farther out the cessation of deconversion operations, the more speculative the assumption that they can be successfully marketed. Absent

an analysis of the plausibility of reuse under projected conditions, a provision for disposal, such as has been proposed by the DOE for its own inventory of DU cylinders, would be prudent.

Hence, I do not agree with the NRC Staff that re-use can be assumed and that a provision of $0.60 per kg U would be sufficient at the present time, if certified by Cameco, as appropriate. A U.S.-based washing and recertification cost without a provision for disposal as LLW is only appropriate if an additional analysis of marketability of the cylinders at the projected time of decommissioning has been done.

As regards disposal, the Urenco study provides a cost estimate that is slightly lower than the washing and recertification estimate. However, that study provides no detail as to the basis of the cost. Specifically, it does not state whether the cost of prior washing to some extent is included and it does not explicitly state that the disposal is as LLW. An analysis of U.S. disposal costs is still lacking.

Finally, the LES assertion that free release costs would be slightly less than washing and recertification is without analysis or adequate documentation. Simple reference to "experience" (LES Testimony p. 10) and conversations are not a sound basis for estimating decommissioning financial provisions. Moreover, an analysis that specifically takes into account residual radioactivity in light of the fact that there is no "Below Regulatory Concern" rule in place in the United States is needed before such an assertion about free release can be regarded as reliable. At present the LES claim regarding free release costs is not well founded enough to be used as a basis for determining cylinder decommissioning costs.

Q4. What is the current position of LES and the NRC staff as regards the cost of capital of the deconversion plant and what provision should be made for it?

A4. LES asserts that $2.67 per kg U "escalated in accordance with the required periodic adjustment" will provide for "sufficient financial assurance ...at the end of the facility's operating life to construct and operate a deconversion facility." (LES Testimony p. 18). Since the funds corresponding to ~~capital~~ of capital cost would be there at the end of the enrichment plant's operations, a third party could build a deconversion plant using those funds and therefore, according to LES, "[t]here would be no need to borrow funds for that purpose, and hence there would be no debt to service (*i.e.*, cost of capital)." (LES Testimony p. 18).

LES also claims that:

- If deconversion begins before the end of enrichment activities, the deconversion expense would be operating expenses and "not funds withdrawn from LES's financial assurance instrument. (*i.e.*, surety bond)." (LES Testimony p. 18)
- "[T]here is no NRC requirement that LES commence DU dispositioning activities before the end of the NEF's operating period." (LES Testimony p. 19)

LES has made no mention of the calculation in its submission of December 22, 2005 where it estimated the cost of capital as 0.40 cents per kg U. (NIRS/PC Ex. 281). Nor has it made any

reference to a capital cost provision that would derive from excess of O&M costs, as per the LES testimony in October 2005, which is discussed in my direct testimony.

The NRC testimony covers the calculation submitted by LES in which LES agreed to put up 0.40 cents per kg U for the cost of capital calculated at a 6 percent net interest rate. That net rate was based on a 10 percent gross rate reduced by a 40 percent tax rate. The NRC Staff did not agree that the 10 percent gross rate should be so reduced and used the full 10 percent in its cost of capital calculations. The NRC assumed that construction of the deconversion plant would begin in 2012 and that operation would begin in 2016. It took into account interest during construction. The NRC staff prepared a spreadsheet as part of its testimony. The NRC staff estimated that if the LES provisions for deconversion cost are taken at face value, including the $0.40 per kg U cost of capital and escalated at 3 percent per year, there would be a resultant cumulative deficit of $51.9 million. The NRC staff cumulative deficit figure is the sum of annual current dollar deficits.

The NRC staff testimony agrees with the LES testimony on how capital costs would be allocated were deconversion to occur at the end of the enrichment period. The NRC Staff states that in that case "we believe that there would be no need to include the $0.40 figure [for cost of capital] at all." (NRC Staff Testimony p. 8). However, during the teleconference call between the NRC Staff and the LES Staff of December 19, 2005, the former did point out that "this assumption appeared to be a new approach that differed from that set out in the Areva MOU where deconversion operations would begin in year 2016, not at the end of LES operation." (NIRS/PC Ex. 284 p. 3).

Q5. What is your evaluation of the LES and NRC Staff testimony on provision for cost of capital for deconversion?

A5. The LES position is entirely new and, as the NRC Staff notes, not in accord with the schedule on which LES cost estimates have been based. I do not agree with either LES or the NRC Staff that if deconversion were to begin at the end of enrichment activities that a third party could use the accumulated provision for deconversion, escalated triennially, and carry out the deconversion.

First of all, the overall cost of deconversion would be greater if the deconversion were carried out at the end of the enrichment period. LES's agreement with the State of New Mexico requires it to limit the length of time that any particular cylinder can be stored in New Mexico to 15 years. It also limits the maximum number of cylinders that can be stored in New Mexico to 5,016 Type 48Y cylinders. (ASLB *Memorandum and Order* dated August 12, 2005) Since the NEF will operate for about a decade longer than the above time limit, LES will have to transport a considerable number of cylinders for offsite storage. Since no site for deconversion has been decided and would be unlikely to be decided over a decade ahead of the actual construction of the deconversion plant, it would be reasonable and prudent to assume a storage site outside New Mexico. This would add two transportation legs to the cost of deconversion, with each costing about $0.85 per kg U, for a total of $1.70 per kg U (2004 dollars), for the cylinders so stored. Not all the cylinders would have to be transported offsite, since the last 5,016 cylinders could be

stored in New Mexico at the NEF site. Since there would no deconversion facility in operation, the total number of cylinders would have to be sufficiently high to store all of the DU generated by NEF. At 8.5 metric tons per cylinder, this would amount to about 13,000 cylinders. Of these about 8,000 would have to be stored offsite. The overall net cost for this per kg U total (rather than just the DU transported offsite) would be about $1 per kg U, in 2004 dollars. In addition, provision must be made for payments to a third party for storing the DU. No such provision has been made by LES; nor has the NRC Staff asked for it to be made. This is in error, since the cost will be incurred in order for LES to comply with its agreement with the State of New Mexico.

Second, if a third party were to do the deconversion at the end of the operating life of NEF, LES would be handing over more than $500 million in then current dollars to some third party to cover the cost of building the plant and of actually deconverting it. This includes a $0.60 per kg U provision for cylinder washing and deconversion and cost escalation at 3% per year. Why would a profit making company simply hand over such a huge sum of money to a third party without any consideration to the opportunity costs to the parent company? To conclude that a provision for cost of capital does not have to be taken into account simply because a company has cash in the bank violates the idea set forth by the Board in the CEC case that, in that case, "the record provides no corroborating support for the proposition that a future domestic conversion facility is to be built and operated without a healthy regard for profits." (NIRS/PC Ex. 205).

Third, there is a significant risk that a end-of-life deconversion strategy would be regarded as being in violation of the spirit, if not the letter of LES's agreement with New Mexico, since there

is currently no designated interim storage site, no provision for the cost of transportation to and storage of about 8,000 cylinders at that site, wherever it may be. If a site is not obtained in a timely manner, LES could be required to cease operation for exceeding the limit allowed for storage of DU cylinders within the state. This would increase costs and the risk of a premature shut down. A third party would then not be able to construct or operate a plant to deconvert the DU, since the funding would be inadequate to do so.

Regarding deconversion according to the Areva MOU schedule, LES has stated that deconversion would be part of operating costs of the enrichment plant. This does not comply with the requirement of a financial guarantee for deconversion, which is required whenever that deconversion may occur. Further this LES position is at variance with the Areva MOU, since in that case the deconversion is to begin in 2016, and an explicit provision has been made for providing a financial guarantee for deconversion. The present LES position shifts the ground from how much that provision should be to a position that no provision whatsoever is required. This is contrary to the requirement that DU be treated as a waste and that provision for its deconversion and disposal be made as part of NEF decommissioning costs.

As noted above, LES has made no mention of the method it proposed during the October 2005 hearing that the cost of capital would be covered from an excess provision in its $1.79 per kg U O&M cost estimate and a 3% escalation of the $2.67 per kg U deconversion cost. LES has also not produced the spreadsheet referenced by LES in the October 2005 hearings in which calculations were stated to have been performed showing how the cost of capital was thus provided for. At the same time, LES has not explicitly renounced this approach, which, as I have

testified, is improper and incorrect. LES needs to produce the spreadsheet that its experts testified about, state the basis of its prior oral testimony, and explicitly state what its current position is in regard to that approach.

The LES direct testimony also does not discuss the approach described in its December 22, 2005 submission in which it estimated a $0.40 per kg U as the cost of capital. (NIRS/PC Ex. 281) I have discussed this in my direct testimony and reiterate here that a 6% interest rate implying funding entirely by debt is incorrect and far too low, even without taking into account the objections that the NRC Staff has raised in regard to reducing a gross rate of 10% by an assumed 40% tax rate.

I am in qualitative agreement with the NRC Staff that the commencement of deconversion prior to the cessation of NEF operations would require an explicit provision for the cost of capital. I also concur with the NRC staff's use of a 10 percent rate for the cost of capital. Further, the NRC Staff has properly included a provision of interest during construction, which was not included in my testimony or my calculations.

However, the NRC Staff calculations are incorrect in other respects. Most importantly, the NRC Staff calculations do not take into account that the $88 million dollar estimated capital cost figure for the plant is based on converting Urenco cost estimates that were provided in 2004 prices. Therefore, if construction starts in 2012, the ~~capital~~ of capital cost then would be about $111 million, assuming a 3% annual inflation rate for eight years. The borrowing and interest during

construction must be based on this amount. The NRC staff has based it on $88 million, thereby considerably underestimating the cost of capital.

Second, the NRC Staff has incorrectly escalated the LES $0.40 provision for cost of capital at the rate of inflation. The LES calculation was in the nature of a mortgage payment – that is a constant payment over the term of the loan, in which the early payments consist mainly of interest and later payments have a larger repayment of the principal. The $0.40 per kg U is an average current dollar amount based on this calculation done at a 6 percent interest rate. Similarly, the NRC Staff has assumed that the $0.80 cost would be escalated at 3% even in the context of a mortgage payment calculation. This is also in error. Mortgage payments at a fixed rate of interest are constant over the term of the loan. LES's calculation at an interest rate of 6% (net) results in an average, current dollar cost of $1.20, which it divided into two parts, $0.80 for the principal and $0.40 for the interest. These are already *current* dollar amounts and *not* present values. Hence, by assuming an escalation at 3%, the NRC Staff has effectively escalated the interest rate that LES would be paying over what LES has assumed. As a result the NRC Staff estimate of the deficit is too low.

Q6. Does that conclude your rebuttal testimony?

A6. Yes.

CERTIFICATE OF SERVICE

Pursuant to 10 CFR §2.305 the undersigned attorney of record certifies that on February 1, 2006, the foregoing Revised Prefiled Rebuttal Testimony of Dr. Arjun Makhijani in Support of NIRS/PC Contentions EC-3/TC-1, EC-5/TC-2, and EC-6/TC-3 concerning LES's Deconversion Strategy and Cost Estimate (Costs of Capital and Cylinder Management) was served by expedited delivery upon the following:

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MR. LOVEJOY: Now I would like to offer the associated exhibits which, I believe, are exhibit 280, a spreadsheet prepared by Dr. Makhijani, October 26th, 2005, revised December 2005.

Number 282, which is the DOE Programmatic EIS Appendix F, and exhibit 283, which is the DOE Final Plan for the Conversion of Depleted UF6. We identify those exhibits and offer them for admission.

CHAIR BOLLWERK: Let the record reflect that exhibits 280, 282, and 283, as identified by counsel, are marked for identification.

(Whereupon, the above-referenced to documents were marked as NIRS/PC Exhibit Nos. 280, 282, 283 for identification.)

CHAIR BOLLWERK: Any objections to the admission of any of these exhibits?

(No response.)

CHAIR BOLLWERK: Hearing no objection from the Staff, or LES, then NIRS/PC exhibits 280, 282, and 283 are admitted into evidence.

(The documents referred to, having been previously marked for identification as NIRS/PC Exhibit Nos. 280, 282, and 283 were admitted in evidence.)

CHAIR BOLLWERK: Anything further, then?

MR. LOVEJOY: At this point we tender the witness for cross examination.

CHAIR BOLLWERK: All right. Mr. Curtiss?

MR. CURTISS: We have no questions of this witness.

CHAIR BOLLWERK: Then I will turn to the Staff.

MS. CLARK: We have no cross examination.

JUDGE ABRAMSON: Boy, I bet you didn't think you could get off that easy, Dr. Makhijani.

WITNESS MAKHIJANI: I guessed that this would happen, actually.

JUDGE ABRAMSON: Thank you for coming.

WITNESS MAKHIJANI: And my colleague will affirm that.

CHAIR BOLLWERK: Then thank you, sir, we appreciate --

WITNESS MAKHIJANI: I had the experience the last time.

CHAIR BOLLWERK: Thank you sir, for your service to the Board.

At this point do we have any additional testimony, any surrebuttal I guess would be the nature, that anyone wants to put in, on anything?

(No response.)

CHAIR BOLLWERK: All right. Then I guess at this point, then, unless there are any questions from Judge Abramson, this --

JUDGE ABRAMSON: I am remarkably quiet.

CHAIR BOLLWERK: -- portion of the evidentiary hearing is concluded. Yes, the Motion -- I think I mentioned earlier, and Judge Abramson just reminded me that, again, the response to the Motion dealing, the NIRS/PC Motion dealing with the Mandatory Hearing will be due, the response, on the 21st of February, which is a Tuesday, after President's day holiday.

I believe that the -- we have already set the dates for -- one

second here, let me pull out my calendar. The proposed findings for the supplemental issues, I have them as, and correct me if I'm wrong, March 1st and March 17th, those are the correct dates?

MR. CURTISS: That is our understanding.

CHAIR BOLLWERK: All right. Again, I think it would be useful, as we mentioned in one of the orders that we issued last week, I believe it was, that to the degree it is possible that the parties confer about the transcript, once they receive it, as well as the exhibits.

And if we can make some kind of arrangement, among you all, on whatever disputes there might be, bring those to the Board and we would try to get those out so that we can release the transcripts, as well as the exhibits, if that is possible.

I don't know how much proprietary information there will actually be. And I think, I believe LES sort of took the lead on that process the last time.

MR. CURTISS: Yes, and we will do the same this time, Your Honor.

CHAIR BOLLWERK: Again, we were able to process those fairly rapidly the last time, and I think it is useful to get them out on the record, so that anyone that wants to see them has that opportunity, the redacted versions.

Judge Abramson, anything else?

(No response.)

CHAIR BOLLWERK: All right, we appreciate -- yes, a matter?

MR. CURTISS: Could I ask what the Board's intent is with respect to closing the record?

CHAIR BOLLWERK: At this point, certainly once we have those corrections we can close the record. Yes?

MS. CLARK: Well, I just wanted to point out that there is still an outstanding Motion for Summary Disposition.

CHAIR BOLLWERK: That is correct.

MS. CLARK: In the event that that is denied it may be necessary for the Staff to submit additional evidence.

CHAIR BOLLWERK: Well, if we close the record we can close it as to the portions that, you know, don't deal with that. We can be specific about it.

MS. CLARK: Okay.

CHAIR BOLLWERK: But I guess in terms of closing it, at a minimum we would like to see the portions of it that do not deal with EC-4, finalized. And we would need to get this information that we have just received settled, so that we can close the record to all other portions other than EC-4, which I guess that relates to.

Any other administrative matters?

(No response.)

CHAIR BOLLWERK: We very much appreciate everyone coming. I hope the snow storm that we had was not an inconvenience to anyone. Judge Abramson had about a 12 hour trip yesterday, back from where he was, up in New York.

But I hope everyone else was able to not have a problem in

terms of the snow storm. We very much appreciate the presentations made by the witnesses, and by counsel.

Once again you have done an excellent job of bringing your positions to the Board's attention, and presenting us with the issues as you see them.

This is a closed session, I recognize. But, again, I would mention that the mandatory hearing is set for the 6th of March, and there are limited appearance sessions for the 5th and the 6th as well.

And we have, actually, put out a press release, as well as a Federal Register notice on those. So if you know anyone that is interested in addressing the Board on the 5th or the 6th, we will be there to take limited appearance statements from them.

At this point, if the parties have nothing else, and Judge Abramson has nothing else, again I think you all for appearing before us today, and we stand adjourned. Thank you.

(Whereupon, at 5:50 p.m., the above-entitled matter was adjourned.)