HARMON, CURRAN, GALLAGHER & SPIELBERG
2001 S STREET, N.W.
SUITE 430
WASHINGTON, D.C. 20009-1125

GAIL McGREEVY HARMON
DIANE CURRAN
ANNE SPIELBERG
JANNE G. GALLAGHER
ERIC R. GLITZENSTEIN
KATHERINE A. MEYER
JESSICA A. LADD

TELEPHONE
(202) 328-3500
FAX
(202) 328-6918

February 26, 1992

FREEDOM OF INFORMATION ACT REQUEST
FOIA-92-103
Rec'd 2-28-92

BY HAND

Raymond J. Brady, Director
NRC Division of Security
Office of Administration
Washington, D.C. 20555

SUBJECT: Freedom of Information Act and Declassification Request re: Claiborne Enrichment Center, Docket No. 70-3070-ML

Dear Mr. Brady:

On behalf of Citizens Against Nuclear Trash ("CANT"), and pursuant to the Freedom of Information Act ("FOIA"), 5 U.S.C. § 552(a) et seq., 10 C.F.R. § 95.45, and Executive Order 12356 (April 2, 1982), I am writing to request that the Nuclear Regulatory Commission ("NRC" or "Commission") declassify and release certain information pertaining to the proposed design of the Claiborne Enrichment Center ("CEC"). This request for declassification is supported by the attached affidavit of nuclear safeguards consultant Helen M. Hunt.

In particular, CANT requests declassification of the diameters of CEC's process piping at potential online enrichment measurement points.[1] CANT also seeks declassification of information pertaining to whether or not the proposed design of the CEC includes reliable tamper-proof monitoring devices for sampling ports, process valves, and flanges. CANT needs this information in order to meaningfully challenge the adequacy of nuclear safeguards used to ensure that the CEC's centrifuge equipment is not unlawfully diverted to the surreptitious production of bomb

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1 While CANT would prefer to obtain the exact diameters of CEC process pipes at potential online enrichment monitoring points, it would be sufficient for purposes of evaluating the adequacy of the plant's safeguards to know the approximate pipe diameters at these points, i.e., whether they are greater than 110 mm (inner diameter).

grade uranium. As discussed below, classification of this information serves no legitimate security purpose, and even defeats the goal of maintaining security at the plant.

Background

Louisiana Energy Services ("LES") has applied to the NRC for a combined license to build and operate the CEC, a uranium enrichment center, in Homer, Louisiana. LES is a partnership of five companies which includes Urenco, U.S.A., a subsidiary of a European consortium known as Urenco, Ltd. ("Urenco"). Urenco is owned by the British and Dutch governments and by NUKEM, a group of German companies.

CANT is a citizens' environmental organization, based in Homer, Louisiana, which has intervened in the licensing proceeding for the CEC. On December 19, 1991, the Atomic Safety and Licensing Board ("ASLB") admitted, inter alia, CANT's contentions L and M, which challenge the effectiveness of the CEC design to provide reasonable assurance that the CEC is not unlawfully diverted to the surreptitious production of highly enriched (i.e. bomb grade) uranium.[2] Contention L charges that in order to provide reasonable assurance that gas centrifuge equipment at the CEC is not unlawfully diverted to the production of highly enriched uranium (HEU), LES should require continuous or frequent online enrichment monitoring for all cascades. To ensure the effectiveness of such monitoring, the plan should stipulate minimum process pipe inner diameters of 110 millimeters or greater at all potential measurement points. CANT has been informed by a representative of the license applicant, Louisiana Energy Services ("LES"), that the planned pipe inner diameter for the CEC is 3.07 inches, which is about 78 mm.[3]

CANT's Contention M asserts that in order to preclude or detect production of HEU by a batch recycling scheme involving misuse of sampling ports, process valves, and/or flanges, LES' Fundamental Materials Control ("FNMC") plan should require effective monitoring by reliable technical means which accurately keep track of employee access to these process connection locations. It is CANT's position that LES should be required to install reliable tamper-proof monitoring devices for sampling ports, process

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2 The full text of these contentions is attached.

3 Telephone communication: Peter LeRoy, LES, to Helen M. Hunt, June 11, 1991.

valves, and flanges. With a complete set of tamperproof monitors for process connection locations, utilized with authenticated transmission of data to a central computer, it would be a simple matter to reliably keep track of times for employee access to process connection locations, and to compare cumulative access times with data in the applicant's FNMC plan.

It is our understanding, based on statements made by NRC counsel at a January 21, 1992, prehearing conference on the admissibility of CANT's contentions, that information regarding product pipe diameters and the existence of tamperproof monitoring devices for process connection locations is classified. According to Lois Telford of your office, the pipe diameters were classified at the request of the British, French and Dutch governments. We do not know the basis for classifying the information regarding process connection monitors.

Standard for Classification of Information

The Freedom of Information Act requires the NRC to make available, upon public request, any agency documents that are not specifically exempted from disclosure under the Act. 5 U.S.C. § 552(a),(b). Exemption 1 of the FOIA permits the NRC to withhold documents that are

> (A) specifically authorized under criteria established by an Executive order to be kept secret in the interest of national defense or foreign policy and (B) are in fact properly classified pursuant to such Executive Order.

5 U.S.C. § 552(b)(1)(A) (emphasis added). Executive Order 12356, which sets forth substantive and procedural criteria for withholding national security information under Exemption 1, permits, inter alia, classification of "foreign government information." § 1.3(a)(3) However, § 1.6 of the Executive Order also requires that the foreign classification request must be for a legitimate security purpose:

> In no case shall information be classified in order to conceal violations of law, inefficiency, or administrative error; to prevent embarrassment to a person, organization, or agency; to restrain competition; or to prevent or delay the release of information that does not require protection in the interest of national security.

See also Carlisle Tire & Rubber Co. v. U.S. Customs Service, 663 F.2d 210, 217 (D.C. Cir. 1980) (affirming requirement for independent determination of whether national security requires classification requested by a foreign government); Lamont v. Department of Justice, 475 F. Supp. 761, 772 note 42 (S.D.N.Y. 1979)(Courts "have a duty to look behind any claim of exemption, which all too often in the past has been used to cover up inefficency or embarrassment even in foreign policy matters which, many times, are fully known by other countries but not printable in our own . . ..", quoting 120 Cong.Rec. 36626 (Nov. 20, 1974)(Rep. Reid, R-NY).

Information Should be Declassified

CANT requests that the NRC reconsider its agreement to provide classification for the requested safeguards information, because such classification fails to satisfy the criteria for withholding under the FOIA and Executive Order 12356. Classification of approximate process pipe diameters and information regarding the existence of tamperproof monitoring devices is not only unnecessary to protect national security, but it thwarts any public debate that might result in the strengthening of safeguards for the CEC. Would-be misusers of the CEC already have much of the general information to which CANT seeks access. The only purpose served by classifying it will be to protect Urenco from any public criticism that might lead to stronger safeguards at the CEC.

Process pipe diameters

To our knowledge, the CEC is the first plant for which any European government has completely classified process pipe diameters. The approximate, or in some cases, exact, diameters of the process pipes in Urenco's European facilities have never before been classified; in fact they have been presented freely in open safeguards literature. In the literature cited below, for example, exact pipe diameters for Urenco's Almelo and Capenhurst plants are cited freely. Approximate diameters are also given for Urenco's Gronau plant. It is also commonly understood that pipe diameters substantially less than 100 mm are "small," and greater than 100 mm are "large."

In addition, many unclassified papers have been published which discuss the relationship between pipe diameter and feasibility of online enrichment monitoring. For instance, a brief review of current safeguards literature yielded the following information:

1) Product pipes in some cascades at the Urenco facility in Almelo, Netherlands, have an outer diameter approximately 42 mm and an inner diameter approximately 36 mm. The literature on safeguards for gas centrifuge enrichment plants consistently describes those pipes as "small-diameter pipes." K. van der Meer, "Enrichment Verification on UF6 in Low Pressure Process Pipes: An Application of the Two-Geometry Method," Proc. 11th ESARDA Symposium, Luxembourg, 1989, ESARDA 22, p. 179.

2) Product, waste and dump pipes at the Urenco Capenhurst facility in the United Kingdom have inner diameters of 110 mm. The safeguards literature consistently describes gas centrifuge process pipes having an inner diameter greater than about 100 mm as "large-diameter pipes." T.W. Packer, "Continuous Monitoring of Variations in the U235 Enrichment of Uranium in the Header Pipework of a Centrifuge Enrichment Plant," Proc. 13th ESARDA Symposium, Avignon, France, 1991. ESARDA 24, p. 372.

3) Product pipes in some cascades at the Urenco facility in Gronau, Germany, are of small diameter. W.D. Lauppe, B. Richter, G. Stein, "Assessment of NDA Techniques for the Cascade Areas of Centrifuge Enrichment Plants," Proc. 11th ESARDA Symposium, Luxembourg, 1989 ESARDA 22, p. 483.

4) Product pipes in some cascades at the Ningyo Toge uranium enrichment pilot plant in Japan are of small to medium diameter (less than 80 mm outer diameter). M. Hori, T. Ishiga, M. Akiba, A. Tani and M. Omae, "NDA Measurement of the Enrichment of Uranium in the Pipe for a Gas Centrifuge Enrichment Plant," Proc. 27th Annual Meeting, Institute of Nuclear Materials Management, New Orleans, 1986, p. 649, diagram.

It is also publicly known that like some of Urenco's European plants, the CEC is being designed with small process pipe diameters that are not conducive to online enrichment monitoring. In fact, a LES representative provided process pipe dimensions to a member of the public over the telephone.[4] In addition, the NRC published them in a trip report that was circulated widely within the NRC and sent to various members of the public. Memorandum

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4 See note 3, supra.

from Raymond J. Brady, et al., to Robert M. Bernero, dated September 9, 1991, re: Foreign Trip Travel Report.[5]

Thus, general information about the dimensions of Urenco gas centrifuge enrichment facilities, and even specific information about the pipes at the CEC, is already available to the public through a variety of means. It is also well known that Urenco fiercely opposes any requirement to enlarge CEC pipe diameters at potential measurement points in order to utilize online enrichment monitoring. Yet, the inadequacy of CEC pipe diameters for safeguards purposes currently cannot be litigated in NRC licensing hearings for the CEC because the pipe diameters are classified. Classification of the information thereby improperly "thwart[s]" the "sunshine purposes" of the Freedom of Information Act and stifles important public debate about the adequacy of safeguards for the CEC, without serving any national or international safeguards interests in protecting truly secret information from disclosure. Lamont v. Department of Justice, 475 F. Supp. at 772.

In fact, it appears that Urenco's owners, the governments of Germany, Great Britain, and the Netherlands, have repeatedly sanctioned the release of information regarding process pipe diameters at other Urenco plants. Thus, release of this information for the CEC would not threaten these foreign governments' security interest in maintaining confidentiality. The only interest which appears to be served by classifying this information is Urenco's and LES' wish to avoid embarrassing litigation or public debate over the safety of the CEC, or the expense of upgrading the plant's safeguards design and equipment -- clearly an invalid rationale for classification under Executive Order 12356 and the FOIA.

Description of monitoring devices

For the same reasons, CANT also seeks declassification of information pertaining to whether or not the proposed design of the CEC includes reliable tamper-proof monitoring devices for

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5 Three days later, the NRC sent out a replacement page with the pipe diameters deleted. A cover memorandum requested that the corresponding original page be destroyed, but conveyed no sense of urgency and gave no explanation whatsoever for the substitution. Memorandum from Theodore S. Sherr to Those on attached list, dated September 12, 1991, re: Replacement Page.

sampling ports, process valves, and flanges. As discussed in CANT's contention M, it is already publicly known that the design for the CEC does not include such devices. Thus, maintaining official secrecy regarding the issue does nothing to protect the common defense and security. In fact, it has the opposite effect, by protecting LES and Urenco from criticism or challenge in the public hearings regarding their inadequate safeguards system.

Once again, there are no legitimate security bases under Executive Order 12356 and the FOIA for withholding this information from the public. Therefore, CANT requests that the NRC declassify information regarding the existence of reliable tamper-proof monitoring devices for sampling ports, process valves, and flanges in the applicant's FNMC.

If, for any reason, you deny this request, please provide a discussion of the reasons for your decision and the legal authority upon which you rely.

Request for expedited treatment

Litigation of CANT's contentions challenging the adequacy of LES' license application for the CEC is now underway. While no hearing date has been set, completion of the NRC Staff's Safety Evaluation Report, which would trigger the summary judgment and hearing processes, is expected to occur in early 1993. Thus, CANT respectfully requests that you give immediate attention to this matter, so that we may begin discovery as soon as possible.

Please do not hesitate to call me if you have any questions about this letter.

Sincerely,

Diane Curran

Attachments:

1 Affidavit of Helen M. Hunt
2 CANT's Contentions L and M

cc: ASLB Service list (w/o attachment 2)
NRC Commissioners
Donnie Grimsley, NRC FOIA Officer

Attachment 1

# AFFIDAVIT OF HELEN M. HUNT

Helen M. Hunt, being duly sworn, deposes and says:

1) I am an independent consultant on nuclear safeguards. A statement of my professional qualifications is attached.

2) I assisted in the preparation of Citizens Against Nuclear Trash's safeguards contentions L and M in the NRC licencing proceeding for the Claiborne Enrichment Center.

3) I have also reviewed the foregoing letter from Diane Curran to Raymond J. Brady, dated February 26, 1992, re: Claiborne Enrichment Center, Docket No. 70-3070-ML.

4) The information contained in CANT's contentions and in the letter from Ms. Curran to Mr. Brady is true and correct to the best of my knowledge.

Helen M Hunt

Helen M. Hunt

Signed and sworn to before me this 26 day of February, 1992.

Donna L Hopkins

Notary Public

My commission expires 10/31/94.

February 26, 1992

Statement of Professional Qualifications

HELEN M. HUNT

P.O. Box 530
Princeton, New Jersey 08542

Nuclear Safeguards Positions:

*Director, Nuclear Materials Safeguards Project, 1991*

Founder and director of organization dedicated to strengthening national and international safeguards for the purpose of reducing the likelihood of unauthorized acquisition of fissile materials for possible use in nuclear weapons.

*Independent Consultant on Nuclear Safeguards, 1990-91*

Testified before U.S. Department of Energy regarding safeguards issues in DOE nuclear weapons complex; prepared critique of plutonium health hazards study prepared by City of New York for proposed siting of nuclear warheads in New York Harbor; at the 1991 European Safeguards Research and Development Association symposium, proposed a solution to the uranium enrichment measurement problem for gas centrifuge plants.

*Consultant to the Nuclear Control Institute, Washington, D.C. 1988-90*

Investigated and reported on critical weaknesses in nuclear safeguards; demonstrated that nondestructive assay methods are not employed in a way that would allow detection of several kilograms of shielded plutonium or highly enriched uranium in a standard waste disposal container, and proposed a solution to the problem at the 1990 annual meeting of the Institute of Nuclear Materials Management; assessed and reported on weaknesses in Japan's nuclear safeguards program; discovered that current online uranium enrichment measurements are not working for many gas centrifuge enrichment plants.

Education:

B.A. in mathematics from Cornell University, 1965

M.A. in mathematics from Princeton University, 1971

Graduate courses at Princeton University on security and environmental issues, 1987-88

Principal Nuclear Safeguards Presentations and Publications:

"Detection of Attempted Diversion in Waste Containers," paper presented at the annual meeting of the Institute of Nuclear Materials Management, Los Angeles, California, July 15-18, 1990, and published in the conference Proceedings.

"Effective Go/No Go Enrichment Measurements," paper presented at the European Safeguards Research and Development Association Symposium on Safeguards and Nuclear Material Management, Avignon, France, May 14-16, 1991, and published in the conference Proceedings.

# CANT SAFEGUARDS CONTENTIONS L AND M

## L. Online Enrichment Monitoring

In order to provide reasonable assurance that gas centrifuge equipment at the CEC is not unlawfully diverted to the production of highly enriched uranium (HEU), the applicant's fundamental nuclear material control (FNMC) plan should require continuous or frequent online enrichment monitoring for all cascades. To ensure the effectiveness of such monitoring, the plan should stipulate minimum process pipe inner diameters of 110 millimeters or greater at all potential measurement points.[1] The current design of the CEC does not meet these specifications.[2]

BASIS: On December 17, 1990, the NRC published a proposed rule setting forth "new performance-based material control and accounting requirements" to be applied to enrichment facilities.[3]

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1 Minimum process pipe inner diameter should be 110 mm if uranium hexafluoride gas pressure in the pipe is relatively high, as at the Capenhurst plant in the United Kingdom. See T.W. Packer, "Continuous Monitoring of Variations in the $U_{235}$ Enrichment of Uranium in the Header Pipework of a Centrifuge Enrichment Plant," Proceedings of the 13th ESARDA Symposium on Safeguards and Nuclear Material Management, 14-16 May 1991. Attachment 15. (This article and all other articles referenced in the following four safeguards contentions are attached and incorporated by reference into this contention.) Minimum process pipe inner diameters must be larger than 110 mm for pipes in which the uranium hexafluoride gas pressure is moderate or low. For example, if the gas pressure were one-half that in a typical corresponding pipe at the Capenhurst plant, then the minimum process pipe inner diameter should be the square root of two times 110 mm, or 155 mm.

2 The safeguards issues addressed in the following four contentions will also be raised in CANT's comments to the Commission regarding the proposed standards for the CEC.

3 The Commission has directed that if this proposed rule is not final by the time of licensing of the CEC, the CEC license is to be amended, as necessary, to conform to the regulations. Notice of Receipt of Application for License, etc., 56 Fed. Reg. 23,310, 23,313 (May 21, 1990).

55 Fed. Reg. 51,726. Pursuant to proposed § 74.33(c)(5)(i), material control and accounting systems for uranium enrichment facilities must include a "detection program, independent of production", that provides "high assurance" of "detection of any production of uranium enriched to 10 percent or more in the $U_{235}$ isotope in any product stream." NRC Draft Regulatory Guide DG-5002, which describes methods acceptable to the NRC for achieving the performance objectives in 10 C.F.R. § 74.33, specifies that

> The licensee should have a program for monitoring the isotopic composition of product and tail streams, independent of operations, that provides high assurance of timely detection of any production of uranium enriched to 10 percent or more in the isotope U-235. .... [A]n extensive program for the centrifuge technology would be appropriate because of the ease of reconfiguring the machines to produce higher enrichments in a short period of time. The program can use nondestructive assay with fixed detectors, portable detectors, or $UF_6$ samples taken and analyzed for U-235 concentration.

Reg. Guide DG-5002, § 1.2.

For several reasons, the most practical and effective means of meeting this requirement is to employ frequent or continuous use of fixed detectors for monitoring gas enrichment in all product, waste, and dump pipes, rather than the more established practice of occasional intermittent use of portable detectors.[4] First, continuous or frequent enrichment monitoring allows more constant and comprehensive surveillance over the uranium enrichment process than does occasional intermittent enrichment monitoring. Second, detection of HEU production by portable

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4 See Packer, Attachment 15.

detectors can be evaded too easily. Because HEU gas could be removed from a centrifuge cascade in a very short time upon a decision to terminate use of the cascade (or a portion of the cascade) for HEU production, it would be possible for plant production personnel to take actions so that HEU production would not be detected by means of a portable detector technique; indeed, the high visibility of inspectors carrying detectors would serve as a signal to production personnel to promptly cease HEU production. Extensive sampling of process gas would not be a practical alternative to online enrichment monitoring, because it would involve excessive risk of leakage of air into the pipes.[5]

For all online enrichment monitoring techniques presently known, it is well established that effectiveness of monitoring requires that at measurement points there be at least a moderately high ratio (i.e., at least 1:1) of the amount of $U_{235}$ in the gas to the amount of $U_{235}$ in the pipe deposit.[6] The most practical means of assuring that this condition exists throughout the life of the enrichment equipment is to install process pipe sections at potential measurement points which are of a large

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5 Communications: Trevor Packer, Harwell Lab, United Kingdom and Ben Dekker, URENCO, Netherlands, to Helen M. Hunt at ESARDA meeting, May 16, 1991.

6 Helen M. Hunt, "Effective Go/No Go Enrichment Measures," 13th ESARDA Symposium on Safeguards and Nuclear Material Management (May 14-16, 1991) at 363-64. Attachment 16. See also Packer, Attachment 15.

diameter, i.e., greater than 110 mm inner diameter.[7] Actual recommended pipe diameter at a potential measurement point would depend on gas pressure in the pipe.[8] Proposed pipe diameters in the CEC design, however, are significantly smaller. According to URENCO representative Peter LeRoy, the planned pipe inner diameter for the CEC is 3.07 inches, which is about 78 mm.[9] At this pipe diameter, the uranium deposit that would build up on the pipe wall would, within months or a few years, dominate the online enrichment measurements. Because of associated large measurement uncertainties, online enrichment measurements would then not be capable of reliably determining whether low enriched or high enriched uranium hexafluoride gas is present in a pipe. The CEC design should therefore be modified to increase the pipe size at measurement points to a degree that will permit adequate enrichment monitoring.

M. Monitoring of Sampling Ports, Process Valves, and Flanges

In order to preclude or detect production of HEU by a batch recycling scheme involving misuse of sampling ports, process valves, and/or flanges, the applicant's FNMC plan should require effective monitoring by reliable technical means which accurately

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7 Communications: Trevor Packer, Harwell Lab, UK, and Ben Dekker, Urenco, Netherlands, to Helen M. Hunt at ESARDA meeting, May 16, 1991.

8 See note 41, supra.

9 Telephone communication: Peter LeRoy, LES, to Helen M. Hunt, June 11, 1991.

keep track of employee access to these process connection locations.

BASIS: Compliance with proposed 10 C.F.R. § 74.33(c)(5)(i) requires effective monitoring of all product streams. Production of HEU by a batch recycling scheme involving introduction of feed and withdrawal of product through sampling and process valve ports is a credible scenario in a gas centrifuge enrichment plant. Misuse of other process valves (not having ports) could be a component of such a scenario. Onsite production of HEU could be carried out discretely by as few as one or two production employees. For this reason, NRC Draft Regulatory Guide DG-5002, § 12.2, "Monitoring Program for Clandestine Enrichment Scenarios," requires the applicant's FNMC plan to address, inter alia, "Sampling ports and frequency of sampling to be used for monitoring of product streams," and "The use of tamper-indicating seals on process valves and flanges." Use of seals has been only partly reliable, however, because it has been possible for plant production personnel to remove seals from valve ports -- in order to perform process monitoring -- without promptly replacing seals in a verifiable manner.

Monitoring of such HEU production by human surveillance would not be reliable. It would be difficult to detect and assure the reporting of small feed and withdrawal containers that would serve as "possible indicators of unauthorized production." DG-5002, § 11.3. Hidden in the forest of tens of thousands of

centrifuges, they might not be seen by an individual who walks the halls. Moreover, individuals walking huge deserted cascade halls, listening and looking for signs of criminal production activity, could be in great personal danger if such activity were d'scovered. Fearing bodily harm to themselves or loved ones, cascade hall security guards would be strongly motivated not to report such anomalies. Online enrichment monitoring to defeat such a scenario would not be practical, because of the very great number of detectors that would have to be employed.

This scenario could be defeated, however, by the use of reliable tamper-proofed monitoring devices for sampling ports, process valves, and flanges. Reliable valve monitors, which could be used for these process connection locations, are under development at Sandia National Laboratories and should be available in 1992-93.[10] With a complete set of tamperproofed monitors for process connection locations, utilized with authenticated transmission of data to a central computer, it would be a simple matter to reliably keep track of times for employee access to process connection locations, and to compare cumulative access times with data in the applicant's FNMC plan.[11]

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10 Telephone communication: Cecil Sonnier, Sandia National Laboratories, to Helen M. Hunt, July, 1991.

11 Id.