

1 **Atomic Energy of Canada Limited:**

2 **Application for the renewal**

3 **of the operating licence for**

4 **the MAPLE reactors at the**

5 **Chalk River Laboratories**

6
7 **05-H20.1 / 05-H20.1A**

8 **Oral Presentation by**

9 **Atomic Energy of**

10 **Canada Limited**

11 **DR. TORGERSON:** Good morning, Madam Chair,
12 and Members of the Commission. Thank you for the
13 opportunity to make some introductory remarks associated
14 with our licence renewal application for the MAPLE
15 reactors.

16 For the record, I am Dave Torgerson, Senior
17 Vice-President and Chief Technology Officer for AECL.

18 I am accompanied here today by Dr. Ken
19 Hedges, Vice-President of the Dedicated Isotope Facilities
20 which will now be referred to as DIF; Mr. Paul Lafrenière,
21 the Chalk River site licence holder and General Manager of
22 DIF Operations, as well as key members of the AECL team
23 who have been working on this very important project.

24 The AECL Board of Directors, the Executive
25 and Senior Management Team are deeply committed to the

1 Dr. Hedges. Thank you.

2 **DR. HEDGES:** For the record, I am Ken
3 Hedges, Vice-President, Dedicated Isotope Facilities.

4 The Dedicated Isotope Facilities consist of
5 the MAPLE 1 reactor, the MAPLE 2 reactor and the New
6 Processing Facility.

7 The Iodine-125 Production Facility is
8 located within the MAPLE 1 reactor building.

9 Presentation outline. I am pleased to
10 update the Commission on the following topics: first, the
11 measures we have taken to strengthen our team and our
12 senior management oversight; the progress we have made on
13 the Performance Improvement Plan; performance of the MAPLE
14 reactors during the current licensing period; the plan for
15 commissioning an operation during the next two-year
16 licence period and, finally, to review the progress to
17 resolve the positive power co-efficient of reactivity.

18 Let me start with senior management
19 oversight. I am pleased to update you today on the new
20 DIF organization. This organization manages all aspects
21 of operations, design and commissioning work.

22 My role as Vice-President of DIF is to
23 ensure that the DIF organization receives the highest
24 commitment from senior management and that issues are
25 addressed in a timely and systematic way. I have received

1 regular updates from my team and I ensure that AECL's
2 Board of Directors and executives are kept up to date.
3 The Executive is updated weekly on the progress of DIF.
4 DIF is a standing item on all Board of Directors meetings.

5 The DIF General Manager, Paul Lafrenière,
6 reports directly to me and he is responsible for ensuring
7 that all activities related to operations are in full
8 compliance with AECL's nuclear operations and CNSC
9 requirements.

10 Reporting to Paul Lafrenière is the DIF
11 Production Manager who has the combined responsibility for
12 MAPLE reactors and the New Processing Facility. This
13 ensures a consistent approach for the safe operation and
14 maintenance in compliance with all applicable licences,
15 permits, laws, regulations, policies and procedures.

16 The new Project Engineering, Procurement
17 and Commissioning Team under Lawrence Lupton is
18 responsible for all project engineering, procurement,
19 construction and commissioning of the MAPLE reactors,
20 MAPLE Iodine Production Facility and a New Processing
21 Facility.

22 We have appointed a highly-experienced
23 director level, Kuldeep Singh, to lead QA and we have
24 strengthened and expanded the QA function in both
25 operations and the project to address concerns previously

1 identified.

2 We have put in place the facility oversight
3 process which ensures appropriate management and review of
4 all non-routine activities.

5 We have strengthened operations by adding a
6 licence and a safety function.

7 We have launched a human performance
8 program which emphasizes conservative decision making.

9 A dedicated team has been formed to oversee
10 the resolution of the positive power coefficient of
11 reactivity. This team includes experts in design, safety
12 analysis, commissioning, licensing operations and AECL's
13 own groups.

14 The DIF organization ensures management
15 oversight, an operational risk review in an integrated
16 manner. The integrated team ensures that safety and
17 quality practices are enforced.

18 Let me turn to safe and high quality
19 operation. We are committed to operating the MAPLE 1 and
20 2 reactors to ensure safe, reliable and environmentally-
21 sound performance. DIF Operations has adopted a five-
22 point strategy for upgrading the overall performance of
23 the plant.

24 People, procedures and processes. This
25 strategy includes frequent, intrusive independent audits

1 using industry peers. A facility-wide self-assessment
2 program will focus on conduct of operations.

3 DIF Operations Program Health Report; a
4 facility monthly performance reporting system
5 consolidating all efforts under the DIF Operations
6 Comprehensive Improvement Plan which I will describe
7 later.

8 We have responded to the lessons from the
9 unplanned events during the current licensing period.
10 Some of the steps we have taken to improve performance
11 are: strengthening facility management oversight; the
12 addition, as I mentioned earlier, of a Safety and
13 Licensing Group within DIF Operations; implementation of a
14 risk review process; engaging industrial peers and Root
15 Cause Analyses teams to improve the quality of events and
16 investigations and providing mentoring and strengthening
17 support for the operational decision making using industry
18 best practices.

19 We have issued a corporate disclosure
20 policy. Under this policy we have taken steps to enhance
21 public consultation activities. We have also improved
22 communications with CNSC staff with regard to DIF
23 Operations issues and progress.

24 We have regular communications with all
25 staff in the DIF organization. In these communications we

1 remind everyone of the importance of safe and reliable
2 operation of the Dedicated Isotope Facilities. We provide
3 regular updates on the objectives, the accomplishment and
4 the path forward and feedback from all levels of staff is
5 encouraged.

6 The DIF Operations Comprehensive
7 Improvement Plan focuses on clear understanding of roles
8 and responsibilities, improved human performance, improved
9 processes and continuous performance evaluation,
10 development of equipment performance programs.

11 Let me give some examples. Some of the
12 activities to enhance our employees' understanding of
13 their roles and responsibilities are: Conduct of
14 operations' expectations implemented with the assistance
15 of industry peers; a facility-wide program of self-
16 assessments.

17 Some of the activities to enhance human
18 performance are: Increased, dedicated resources in
19 accordance with the DIF Operations Staffing Plan; filling
20 all management positions; using industry peers to guide
21 and mentor staff during workshops and to provide
22 observation and coaching.

23 Some of the activities related to Equipment
24 Performance Program are: Conducting reliability testing
25 and surveillance of equipment and analyses of the data;

1 preparing our facility configuration baseline document;
2 developing an enhanced preventative maintenance program;
3 implementing a DIF safety-relief valve program;
4 implementing a system health monitoring and other
5 engineering programs under the guidance of industry peers.

6 The corrective actions from the departure
7 of Guaranteed Shutdown State were to place MAPLE 1 and 2
8 in GSS, to complete the root cause assessment, issue a
9 Revised Operating Limits and Conditions document.

10 The designated officer has approved
11 revision 9 of the OLCs; issue a MAPLE Reactor Shutdown
12 State's document; engage industry consultants to review
13 the site OPEX Program and work with AECL to make
14 improvements. All wire re-termination work required
15 before removal of MAPLE 1 from GSS has been completed.

16 The DIF managers meet regularly with the
17 NRU managers to share experiences and review lessons
18 learned. An event reporting system for MAPLE reactors
19 which is based on CNSC standard S-99 has been implemented.
20 The intent is to improve our performance and be consistent
21 with the utility practices.

22 We recognize that public accountability is
23 essential. As such, we are committed to sharing
24 information to foster openness and transparency. Some
25 examples of how AECL is engaging in the public are:

1 A toll-free number as well as contacts for
2 information are well advertised on the AECL website.

3 A meeting was held December 2003 with the
4 concerned citizens of Renfrew County, the Sierra Club, to
5 discuss ways to improve information transfers. Subsequent
6 offers have been made for further meetings.

7 Continued sharing of information with
8 elected officials: First Nations and interested members
9 of the public through scheduled meetings, community events
10 and special projects. We are also sharing all reportable
11 events classified as significant one and two with these
12 stakeholders.

13 Provide fully and specific briefings and
14 tools for all community stakeholders: Information on
15 medical isotopes and MAPLE is available both on the MDS
16 Nordion's and AECL's web pages.

17 Some examples of sharing information on our
18 environmental performance: The consultation meetings were
19 held January 2005 on the ecological effects review of the
20 Chalk River Laboratories. Properties of AECL's Annual
21 Environmental Monitoring Reports, Corporate Annual Reports
22 and project-specific materials are provided to all
23 community stakeholders.

24 As noted at previous Commission meetings,
25 AECL's Chief Regulatory Officer provides oversight of

1 AECL's licensing and compliance programs. AECL management
2 and executives meet regularly with the CNSC staff
3 counterparts to discuss the progress in resolving of
4 regulatory issues and provide updates on the status of the
5 MAPLE reactors.

6 All commitments to address regulatory
7 issues are tracked and monitored against project
8 milestones. We meet regularly to update CNSC staff on the
9 status of our commitments and to facilitate progress
10 towards achieving these milestones. We believe the
11 relationship between CNSC and AECL staff is professional
12 and effective.

13 Then we turn to MAPLE reactor performance.
14 As would be expected with the reactors in the shutdown
15 state, worker dose and radioactive releases are well below
16 regulatory limits. There were no fires in MAPLE 1 and 2
17 reactors during the current licensing period. There was
18 one lost time accident in MAPLE 2 reactor during the
19 licence period. There was no accidents in MAPLE 1 during
20 the licence period.

21 CNSC staff has rated AECL programs and
22 their implementation in seven key safety areas. We wish
23 to comment on the work to improve our performance in the
24 two "C" rated implementation areas.

25 With respect to operating performance, a

1 contributing factor to the departure of the GSS event was
2 the prerequisite documents for operation staff were not
3 available. Documentation summarizing the definitions and
4 requirement for each shutdown state and procedures are now
5 in place. Operators have been fully trained with this new
6 information.

7 In addition, operational risk review
8 management oversight and work practices have been
9 upgraded. As described earlier, we are improving our
10 performance with the implementation of an event reporting
11 procedure based on S-99.

12 With respect to performance assurance we
13 have updated the QA manuals for DIF Operations and the
14 project to address the findings from AECL's assessments
15 and various orders. The training program for managers of
16 operations and reactor operators has been updated. We
17 have successfully recertified six managers of operation
18 and 10 reactor operators. We currently have 11 reactor
19 operators certified. Seven new reactor operators and one
20 new manager of operations have taken the CNSC
21 certification exams.

22 In addition, we wish to highlight some of
23 the initiatives to improve our Environmental Protection
24 Program. In May 2004 AECL obtained isotope 14001, 1996
25 Environmental Management System certification for the

1 Chalk River labs. This standard calls for continuous
2 improvement in our environmental performance and we are
3 committed to this effort.

4 AECL has appointed a chief environmental
5 officer and formed a senior environmental committee to
6 oversee environmental activities. All employees have
7 received management training in AECL's environmental
8 policy and programs. AECL has completed an ecological
9 effects review for the Chalk River site in January 2005
10 which has been accepted by the CNSC staff.

11 Let me turn to the operating plan for the
12 next licence period. At this time DIF Operations has
13 completed all of the work AECL believes necessary to
14 obtain CNSC staff approval for the MAPLE 1 reactor to
15 leave the guaranteed shutdown state and enter operation at
16 2 kilowatts. We anticipate the CNSC staff review of our
17 documents will be completed very soon.

18 The operating plan for MAPLE 1 is operate
19 at 2 kilowatts to establish routine operations and
20 maintenance, operate at 5 megawatts to perform PCR-related
21 tests, operate at 8 megawatts to test the PCR mitigation
22 features, produce radiated isotope targets for MPF
23 commissioning, complete commissioning above 8 megawatts
24 progressed to in service.

25 At this time the project is completing all

1 of the work necessary to finish MAPLE 1 Iodine Production
2 Facility Phase A commissioning. The operating plan for
3 the Iodine Production Facility is to complete Phase A and
4 B commissioning and progress to in service.

5 At this time MAPLE 2 reactor is in a
6 referenced guarantee shutdown state. The operating plan
7 for MAPLE 2 is to complete Phase B commissioning up to 500
8 kilowatts.

9 Finally, let me turn to the Positive Power
10 Coefficient of Reactivity. To ensure all practical
11 options of designing and operation have been considered to
12 remedy the positive PCR, AECL has implemented the
13 following plan.

14 The first phase of the plan involve
15 assessing AECL's current understanding of the behaviour of
16 the MAPLE reactor and defining a set of options for
17 mitigating the positive PCR. The following steps were
18 taken: One, AECL performed a systematic formal review of
19 all phenomena that could cause a positive PCR and ranked
20 them in order of importance. This ranking is described in
21 a report submitted to the CNSC. AECL assessed the
22 feasible options for mitigating the positive PCR. These
23 design options were described in a report and submitted to
24 the CNSC. AECL has contracted the Idaho National Lab to
25 predict PCR using independent models and independent

1 codes. The results from the study are expected at the end
2 of September. AECL has contracted the Brookhaven National
3 Lab to perform an independent review of AECL's work on
4 PCR. The results are expected to be available at the end
5 of September.

6 The second phase of the plan will refine
7 the options based on the information gathered in the first
8 phase.

9 Additional information gathering from our
10 reactor tests: Plans have been developed to perform tests
11 in MAPLE 1 reactor with high power. All of this
12 information will be used to define and commit a mitigation
13 strategy. Results of all of these investigations will be
14 documented and submitted to the CNSC.

15 Finally to summarize, in summary, Madam
16 Chair, members of the Commission, I believe the issues
17 have been appropriately managed, have been resolved with
18 the highest priority on safety.

19 The completion of MAPLE 1 and 2 reactors is
20 vital to Canadians and thousands of people around the
21 world. To ensure success we have strengthened our team
22 and management oversight. We have established and are
23 committed to a comprehensive improvement program that
24 draws on the lessons learned from others in the industry.
25 We are focused on meeting all regulatory criteria. The

1 steps we have taken in strength and DIF Operations will
2 improve our safety performance. Our operating plan for
3 the next few years is to complete the commissioning of the
4 MAPLE 1 reactor and establish safe and reliable operation.
5 In addition, we plan to complete the commissioning of the
6 MAPLE Iodine Production Facility and perform nuclear
7 commissioning on the MAPLE 2 reactor.

8 This ends my presentation to support AECL's
9 application for a two-year licence for the MAPLE reactors.

10 **THE CHAIRPERSON:** Thank you very much, Dr.
11 Torgerson and Dr. Hedges. That concludes then AECL's
12 presentation? Thank you.

13 **05-H20**

14 **Oral presentation by**
15 **Atomic Energy of**
16 **Canada Limited**

17 **THE CHAIRPERSON:** We will now then move to
18 the presentation by the CNSC staff. This is outlined in
19 CMD document 05-H20 and I will turn over to Mr. Barclay
20 Howden who is the Director General responsible for this
21 area.

22 Mr. Howden, you have the floor.

23 **MR. HOWDEN:** Thank you. Good morning,
24 Madam Chair, members of the Commission. For the record,
25 my name is Barclay Howden.

1 With me today are Mr. Greg Lamarre,
2 Director of the Research Facilities Division, Mr. Bruce
3 Pearson, Project Officer for the MAPLE reactors, and the
4 rest of the CNSC licensing team for this facility.

5 CNSC staff has reviewed the application
6 from AECL to renew the operating licence of the MAPLE
7 reactors at Chalk River and has formed the position on the
8 application and put forward recommendations for your
9 consideration.

10 I will now turn the presentation over to
11 Mr. Pearson who will outline these for you.

12 **MR. PEARSON:** Good morning. My name is
13 Bruce Pearson.

14 Atomic Energy of Canada Limited has applied
15 for the renewal of a licence to operate the MAPLE reactors
16 at Chalk River Laboratories. CNSC staff prepared CMD 05-
17 H20 which contains recommendations for the Commission on
18 this application. This presentation provides a brief
19 overview of the key issues of this application and CNSC
20 staff's recommendations.

21 Our presentation has five sections: a
22 review of AECL's application to renew the operating
23 licence for the MAPLE reactors; a review of commissioning
24 during the current licence period; an overview of the
25 outstanding licensing issues; our overall conclusions; and

1 our recommendations to the Commission.

2 The operating licence for the MAPLE
3 reactors at Chalk River Laboratories expires November
4 30th, 2005 and AECL has applied for renewal of this
5 operating licence. The application cross-references the
6 operating licence for Chalk River Laboratories because the
7 MAPLE reactors use a number of common programs supplied by
8 the Chalk River site.

9 CNSC staff's review of the MAPLE reactors
10 application has incorporated the information presented in
11 CMD 05-M33 which is the mid-term report on AECL's nuclear
12 research and test establishment in Chalk River. The
13 submission of the MAPLE application was timely and the
14 information contained in the application meets the
15 relevant requirements. AECL has requested a licence term
16 of 24 months that would lead to an expiry date of November
17 30th, 2007.

18 Commissioning activities in the MAPLE 1
19 reactor have been suspended since June 2003. At that
20 time, it was discovered that a key safety behaviour of the
21 reactor, the Power Coefficient of Reactivity, was not
22 correctly predicted by safety analysis. Because of the
23 significance of this finding, the MAPLE 1 reactor has been
24 shut down since May 2003 and is currently in the approved
25 guaranteed shutdown stage. Recently, AECL has requested

1 approval to operate the MAPLE 1 reactor up to a nominal
2 power of two kilowatts. This application is currently
3 under review by CNSC staff.

4 During the current licence term, the MAPLE
5 2 reactor achieved First Criticality on October 9th, 2003.
6 However, in January 2004, AECL discovered a Stuck Moly
7 Target Cluster Holder. Because of this finding, combined
8 with the presence of a Positive Power Coefficient of
9 Reactivity, nuclear commissioning in MAPLE 2 was
10 suspended. The MAPLE 2 reactor has not operated since
11 January 2004 and is currently in the approved guaranteed
12 shutdown stage.

13 At the Commission meeting on March 24th,
14 2004, the Commission members requested staff to develop a
15 systematic and meaningful process of reporting to the
16 Commission on the MMIR Project. To meet this request,
17 CNSC staff presented CMD 04-M28 to the Commission at the
18 July 8th, 2004 Commission meeting. In that CMD, all
19 outstanding issues related to the MMIR Project were
20 identified and acceptance criteria for closure of each
21 issue were defined. The issues are grouped according to
22 key milestone dates and other regulatory activities.

23 The current focus of AECL and CNSC staff's
24 efforts is on the resolution of issues required to restart
25 the MAPLE 1 reactor for operation up to two kilowatts. In

1 addition, AECL has focused considerable effort on the
2 resolution of the Positive Power Coefficient of Reactivity
3 issue.

4 Resolution of the remaining issues are tied
5 to future milestones associated with MAPLE 1 commissioning
6 up to five, eight and 10 megawatts, active commissioning
7 of the MAPLE iodine production facility and the nuclear
8 commissioning of the MAPLE 2 reactor. Prerequisites for
9 these milestones are detailed in CMD 05-H20.

10 Other regulatory activities require AECL to
11 establish, document and implement a document baseline for
12 configuration management, to update the final safety
13 analysis report and operating limits and conditions
14 document to reflect experience gained during commissioning
15 and to make modifications to the periodic inspection
16 program for full acceptability.

17 We wish to note that CNSC staff has
18 recently approved revision nine of the operating limits
19 and conditions document and this document is referenced in
20 the proposed licence.

21 Pursuant to the Commission's record of
22 proceedings in the matter of financial guarantees for
23 decommissioning of the Chalk River site and dated July
24 12th, 2005, CNSC staff intends to add, prior to the Day
25 Two Hearing, the following licence condition to the

1 proposed licence attached to CMD 05-H20. The condition
2 requires that AECL submit a comprehensive preliminary
3 decommissioning plan for the Chalk River site prior to
4 July 1st, 2006.

5 This table summarizes CNSC staff's
6 assessments of the various safety areas that are relevant
7 to the MAPLE reactors. Note that many of these safety
8 areas are covered by the Chalk River Laboratories site-
9 wide programs for which the assessment is taken from the
10 CNSC mid-term report for Chalk River. At this point, we
11 wish to note that implementation of the performance
12 assurance safety area remains at a "C" level. We have
13 completed our DIF operations' QA audit report and the
14 audit report was submitted to AECL on August 12th.

15 As noted in the table, weaknesses exist in
16 the Chalk River site-wide environmental protection program
17 and implementation of the operating performance and
18 performance safety assurance areas. However, CNSC staff
19 has weighed these weaknesses against the evidence of good
20 performance in many key safety areas and the overall risk
21 profile of the MAPLE operations and concluded that the
22 risk which continued operation of the MAPLE reactors poses
23 should not be unreasonable for the proposed licence
24 period.

25 CNSC staff concludes that an environmental

1 assessment under the *Canadian Environmental Assessment Act*
2 is not required for the proposed licence renewal. AECL is
3 qualified to carry on the licensed activities that AECL
4 has made and in the opinion of CNSC staff will continue to
5 make adequate provisions for the protection of the
6 environment, the health and safety of persons and the
7 maintenance of national security and measures required to
8 implement international obligations to which Canada has
9 agreed.

10 CNSC staff recommends that the Commission
11 accept CNSC staff's assessment that the conduct of an
12 environmental assessment of this project under the
13 *Canadian Environmental Assessment Act* is not required,
14 renew the proposed operating licence to operate the MAPLE
15 reactors for a 24-month period to November 30th, 2007.

16 That concludes my presentation. I will now
17 turn the floor back to Mr. Howden.

18 **MR. HOWDEN:** Thank you. Barclay Howden for
19 the record.

20 Madam Chair, staff is ready to respond to
21 questions. Thank you.

22 **THE CHAIRPERSON:** Thank you, Mr. Howden.
23 The floor is now open for questions from Commission
24 members and I'd like to start with Mr. Taylor.

25 **MEMBER TAYLOR:** Thank you, Madam Chair.

1 We seem to have a slight divergence in that
2 AECL is making a statement that it's got competent and
3 excellent organization ready to go to operate this plant
4 safely and yet, staff finds that certain aspects of
5 operation get a category "C"; therefore, some weaknesses
6 in them. Clearly AECL has put forward an Improvement
7 Program in some detail.

8 Can the staff give any instances of where
9 the AECL Improvement Program has already produced concrete
10 evidence of improvement?

11 **MR. LAMARRE:** Greg Lamarre for the record.

12 As the Commission Member noted and as AECL
13 has discussed, there are a number of improvement
14 initiatives that have been ongoing.

15 In terms of specific examples, I think some
16 of the areas where we could indicate that we have
17 witnessed positive improvement in terms of management
18 oversight. Dedicated QA oversight for this project, as
19 Dr. Hedges has alluded to, has given some, I think, early,
20 positive returns.

21 Mr. Pearson discussed our audit finding
22 reports from the DIF Ops audit recently conducted, and
23 without getting into a lot of specifics, I think staff's
24 overall conclusion is that we're seeing improvement. So
25 certainly there are improvements in that area.

1 In terms of managed processes, perhaps it's
2 a little bit early to really make a very concrete link
3 between a managed process and a positive trend in terms of
4 operational performance, reduced events, reduced
5 significance of events, but the information that we have
6 been provided to date would also indicate improvements in
7 those managed process areas.

8 **MEMBER TAYLOR:** Thank you.

9 Could you clarify a point for me under
10 3.5.1 on page 11 of the CMD? It says:

11 “To date, AECL has completed MAPLE 1
12 commissioning activities up to those
13 specified for 8 megawatts operation.”

14 And yet you seem to have significant doubt
15 about commissioning assurances and, in fact, have put in
16 some requirements that AECL provides you with alternate
17 evidence that they have in fact completed the
18 commissioning.

19 So I'm not quite clear about the
20 consistency of these statements. On one hand, it's
21 completed; on another hand, you haven't got satisfactory
22 completion assurances.

23 Could you explain that, please?

24 **MR. LAMARRE:** Greg Lamarre for the record.

25 On page 11, section 3.5.1, that really

1 indicates the progress to date in terms of AECL's
2 activities in carrying out commissioning. Previously, we
3 had received commissioning completion assurance for 8
4 megawatts. Subsequently, as the CMD notes and as our
5 previous CMD in July of last year notes, there were
6 deficiencies noted, non-compliances in which the
7 performance of the system as built did not meet design
8 intent in the safety analysis.

9 So subsequently, we have had to go back and
10 AECL is going back and looking at some of those
11 deficiencies. So that statement there simply is a
12 statement of fact of progress previously made and doesn't
13 indicate that commissioning up to 8 megawatts has
14 necessarily been successfully completed in staff's
15 opinion.

16 **MEMBER TAYLOR:** Thank you.

17 And my third question relates to this
18 Target Cluster problem in MAPLE 2. It's not clear to me
19 how that feeds back into MAPLE 1.

20 Is it a prerequisite to get that resolved
21 also for MAPLE 1?

22 **MR. PEARSON:** For the record, my name is
23 Bruce Pearson, Project Officer to the MAPLE reactors.

24 The same issue exists in MAPLE 1. What
25 AECL has done is they have confirmed that the problem

1 isn't of imminent safety concerns at this point for MAPLE
2 1. What they have done is they have done visual
3 inspection and confirmed that all the targets are locked
4 in place in the MAPLE 1 reactor.

5 In MAPLE 2, the problem occurred when they
6 tried to remove the target holder and it got stuck. They
7 have agreed that they will not remove any of the Moly
8 Targets in the MAPLE 1 reactor prior to having a design
9 fix put in place to eliminate the problem.

10 So at present, the targets are in the
11 locked position, been confirmed to be locked in the locked
12 position in MAPLE 1 and there is the proviso that the
13 targets will not be removed from MAPLE 1 prior to a fix
14 being put in place.

15 **MEMBER TAYLOR:** Could I just follow up with
16 that then? It's acceptable for these things to be in the
17 core and presumably at some stage during commissioning,
18 getting eradiated before the fix is done. I mean, don't
19 they have to be taken out to be fixed?

20 **MR. PEARSON:** Yes. If a problem occurred,
21 they would go through the same process that they use to
22 remove the stuck target cluster holder from the MAPLE 2
23 reactor and that process was such that they didn't do any
24 subsequent damage to the stuck target.

25 **MEMBER TAYLOR:** Thank you.

1 **THE CHAIRPERSON:** Mr. Taylor, with your
2 concurrence, I would like to offer AECL an opportunity if
3 there is any comments you would like to make on any of
4 those three areas of questioning that Mr. Taylor had asked
5 to the staff?

6 **DR. HEDGES:** For the record, Ken Hedges.

7 I think the answers were fully in line with
8 our view. With regard to the target cluster holder, we
9 have a new design. As soon as we remove any targets from
10 any of the reactors, they will be replaced with the new
11 design of target cluster holder.

12 We believe that we are making progress and
13 some of the things that staff might not have seen, we are
14 beginning to see. For example, as a result of issuing a
15 procedure on code of operations, we are seeing much more
16 conservative decision making and a much more questioning
17 attitude from the reactor operators than was previously
18 seen, and I think if you wish more, we can talk about that
19 in more detail.

20 But we have clearly given the message to
21 the operators that they must follow procedures. They must
22 take conservative decisions and if there's anything
23 abnormal, it must go through a very rigorous management
24 review process to make sure that all safety considerations
25 have been taken into account.

1 about 45 people on that list. At White Shell there's
2 about 20 or so that continuously receive information from
3 us. So that's just sort of the paper documentation. A
4 lot of the other requests are handled through the website.

5 **MEMBER McDILL:** The reason I ask is there
6 has been an ongoing -- I guess comments by intervenors
7 that they have requested but have not received, and so I
8 was trying to get a sense of whether "managed" was a
9 meaningful word.

10 **MS. ROACHE:** Certainly it's a valid
11 question and it's one that I'm always interested in being
12 able to have the opportunity to respond to.

13 We have a number of intervenors' groups. I
14 can tell you exactly who they are. Most of them attend
15 the hearings. Concerned Citizens of Renfrew County
16 obviously are our closest group that's interested in
17 what's happening around the laboratory site. Sierra Club,
18 Greenpeace, Ottawa Riverkeeper, Concerned Citizens for
19 Renewable Energy, as well as others, the Ottawa Vanier
20 Greens, which were just recently introduced to us, and we
21 have maintained interactions with them as well.

22 We go out. We provide them with the
23 information as it becomes available. If there are
24 information sessions that are being held, they're invited
25 to participate. We offer to give briefings to their

1 organisations. They do not respond. We tried to keep
2 that information flow going. We give them lots of
3 opportunities. Certainly the Concerned Citizens of
4 Renfrew County will come to information sessions that are
5 held locally. Other organisations do not and we are
6 taking steps to address that further field.

7 We certainly took the comments that came
8 from previous meetings about how we can enhance our
9 communications programs and we are doing those things.
10 But we make the invitations available. We give them the
11 documentation. We have the documentation to show that.

12 **MEMBER McDILL:** Thank you.

13 Would staff care to add anything to that?

14 **MR. LAMARRE:** Greg Lamarre for the record.

15 I concur with Ms. Roache's statements,
16 specifically of a more recent nature. What Ms. Roache and
17 her group have started to do is to provide us with all the
18 correspondence that goes out, including a summary of
19 meetings that are held, the town hall meetings, the
20 meetings that are carried out in places like Chapeau and
21 the like. So we've been CCed on all that correspondence
22 and certainly we've seen an increased and renewed effort
23 to, not only communicate but a more active consultation
24 phase seems to be much improved as well.

25 Once again, this is a program not specific

1 to MAPLE but site-wide and our conclusions at the Chalk
2 River mid-term are still valid on the licensee's public
3 information program.

4 **MEMBER McDILL:** Thank you.

5 Staying with the presentation, you made the
6 statement "frequent intrusive independent audits using
7 industry peers". Does that mean that CNSC hasn't been
8 sufficiently intrusive over the last few years? I'm
9 wording that as carefully as I can.

10 **THE CHAIRPERSON:** What we could do is maybe
11 I should just reword it as could the licensees please
12 explain what they mean by that? That might be the way to
13 do it.

14 **MR. HEDGES:** Ken Hedges for the record.

15 Paul Lafrenière will respond to that
16 question. I think the answer to the way it was originally
17 phrased was that that is not what it was intended by my
18 remarks.

19 **MR. LAFRENIÈRE:** Paul Lafrenière for the
20 record.

21 I believe the wording would be "more
22 intrusive". Let me explain.

23 We have started since the third quarter of
24 2004 to bring in industry peers into DIF, dedicated
25 isotope facilities. We currently have under contract 14

1 recognized industry peers at DIF. We have decided that
2 the best way to achieve the improvements that we're
3 looking for in the timescale that we need is to bring in
4 industry peers who have done this at a number of
5 utilities, to ensure that not only do we get the feedback
6 that operators need and operating staff need, we have them
7 tracking individuals day by day.

8 So in other words, we've developed a very
9 good relationship between our industry peers and our staff
10 and it's a win/win relationship. So it's a very open
11 relationship and this is allowing us to ensure that the
12 employees are really part of the continuous improvement
13 program.

14 I can give six examples of what's happening
15 right now. Ken mentioned the fact that employee attitude
16 has changed. Well, in the past several weeks we've had
17 three instances where work has been stopped by the manager
18 of operations or by the operating crews because they felt
19 that the situation was not totally as per procedure. So
20 work was stopped right there. That is a real visible sign
21 of change in the facility.

22 Other examples are -- and this goes back to
23 the GSS event. We wanted to make sure we had the proper
24 work practices, management oversight in place as well as
25 the procedures. The procedures have been done and

1 reviewed by industry peers. In terms of the work
2 practices, they have been implemented and we need industry
3 peers in the facility all the time to ensure that we're
4 getting the right type of behaviour.

5 As an example of that we've done five
6 operational risk reviews in the past month or so for the
7 start-up that is imminent. These risk reviews document a
8 complete change over in our operating philosophy and it's
9 the presence of the industry peers on a day-to-day basis
10 that's allowing us to develop that methodology among our
11 operating staff and management.

12 **MEMBER McDILL:** I think I need to ask staff
13 the same question as stated by the Chair.

14 **MR. LAMARRE:** Greg Lamarre for the record.

15 In the past two to three years in
16 particular, we've got a listing of the number of times
17 here if you're interested of how often staff has been on
18 site for audits, for verification, inspections and the
19 like. Most of our activities, particularly in the last
20 couple of years, have concentrated on more desktop reviews
21 of their safety analysis given the fact that they have
22 effectively been shut down. So what we're looking at is
23 not so much a baseline regulatory program that should find
24 that at an operating facility whereby you do "x" number of
25 type twos a year and "x" number of type ones, what we're

1 doing here is looking at safe operation from a safety
2 analysis perspective into the future.

3 That being said, staff has clearly been on
4 site. In view of our Enhanced Regulatory Oversight
5 Program, when a key prerequisite needs to be achieved by
6 AECL to move forward, staff has not only been doing the
7 desktop reviews but they've been going to back it up on
8 site with dedicated site visits and inspections of key
9 components.

10 So to answer your question, I think we've
11 been very intrusive and I think AECL would probably agree
12 with that.

13 **MEMBER McDILL:** One more and then I'll
14 leave it for round two. So in view of these new
15 practices, will issues such as improper wire terminations,
16 will there be more crosschecking, are they less likely to
17 occur now than they have been in the past?

18 **MR. HEDGES:** For the record, Ken Hedges.

19 I'd like to just give a brief response but
20 then turn it over to Kuldip Singh who will talk about some
21 of the strengthening we've done on the quality assurance
22 area.

23 I think the chances of these things
24 happening are recused by a number of things. First is
25 that the training of -- the pre-job training and the

1 training of the workers, pre-job briefings have been
2 reinforced. Secondly, we have increased the number of
3 quality surveillance activities. Thirdly, we've put in
4 place a lot more checks and balances to make sure that
5 when work is done, work is left in a satisfactory
6 condition.

7 So I'll turn it over to Kuldip Singh who
8 can maybe talk about our Enhanced Quality Program.

9 **MR. SINGH:** As Ken mentioned, over the last
10 nine months, we have significantly strengthened the QA/QS
11 team on the project and operations. We've gone from three
12 people in October last year to nine at the current time.
13 We do recognize and they recognize that we need to be
14 better able to support and assist the line management in
15 complying to the various standards and the regulatory
16 departments as well, and we believe that the current
17 resource level is sufficient for that purpose.

18 So we will be emphasizing the verification
19 activities which are carried out by us, of course in an
20 oversight function, and we also would like to carry out
21 some effectiveness review of the various corrective
22 actions taken by the line management.

23 I'd just like to mention that the
24 compliance requirement has been and remains a line
25 management responsibility.

1 So in that sense, we are also -- we have a
2 good functional working relationship with the corporate QA
3 who provide our team, the QA/QS team, with senior level
4 advice on the various issues facing the DIF Operations.

5 We are putting greater emphasis on having
6 procedures and operating instructions in place for all the
7 activities which are carried out within DIF. We are also
8 making sure that the appropriate training is provided to
9 all staff who have to use those procedures.

10 There has been much greater emphasis to
11 staff, starting with the senior level management from Ken
12 Hedges downwards, that they need to be aware of what
13 procedures and processes are in place and they are
14 emphasized on an ongoing basis that they need to follow
15 those procedures.

16 **MEMBER McDILL:** And staff.

17 **MR. PEARSON:** For the record, my name is
18 Bruce Pearson, Project Officer for the MAPLE reactors.

19 I would just like to say that CNSC staff's
20 auditing practices were very intrusive and I think AECL
21 would agree to that.

22 For example, the last DIF Operations audit
23 that we conducted was a four-person audit that was carried
24 out over the course of a week, at site. Subsequent to the
25 audit we had requested thousands of pages of documentation

1 to continue our review in the office. That attributed to
2 a later submission of the audit report than we had
3 originally planned.

4 At the end of the day we found one
5 directive, nine action notices and three recommendations,
6 which you would not find such findings if you weren't
7 being intrusive.

8 CNSC staff believes that, although there is
9 a number of findings, it is an improvement over the
10 previous audits that we have carried out. In fact, many
11 of the action notices may have been directives, had AECL
12 not identified the problems themselves before we went and
13 did our audit and took actions to correct the findings.
14 And the corrective action, at the time of our audit, was
15 in the form of plans. So AECL had found many of the
16 deficiencies that we found but because they had plans in
17 place to address these we deemed them to be less serious
18 at the stage of our audit.

19 So, at the end of the day, I think CNSC
20 staff is extremely intrusive in its audits and
21 verifications of AECL's activities.

22 **MEMBER McDILL:** Thank you.

23 **THE CHAIRPERSON:** I think it might be
24 appropriate as the Chair just to clarify that I don't
25 think that we want to necessarily encourage intrusiveness

1 or whatever in any part. I think what we are looking for
2 is for the staff to take a risk-informed approach to any
3 facility and do what they deem necessary to get the
4 information necessary to assure themselves and, therefore
5 us, of the safety of the facility.

6 If in a process of self improvement the
7 facility -- the licensee uses peers, or however they deem
8 it to be within their responsibility area to do that
9 improvement that we think -- so it is probably just the
10 word "intrusive" sounds -- which means, if I am correct --
11 and I guess this is my question -- may be based on the
12 fact that you have them on the facility. You are not
13 doing peer audits in the sense of an OSA or something --
14 they come and go -- but you actually have them there all
15 the time. Perhaps that was the sense of the word; am I
16 correct?

17 **MR. HEDGES:** Yes, we intend -- we do have
18 them on site -- for the record, Ken Hedges.

19 We do have industry peers on site. We are
20 meeting on Monday with the utilities to get another formal
21 audit of DIF Operations along the same lines as the NRU
22 audit. We are hoping to have that actively in September.

23 CNSC staff are very detailed in their
24 questioning and I think I made in my talk a statement that
25 the relationship is professional and effective. I think

1 we are all taking a much closer look and raising the bar
2 and setting very high standards for this facility.

3 **THE CHAIRPERSON:** Thank you.

4 Doctor Barnes.

5 **MEMBER BARNES:** Thank you.

6 I appreciate the frankness in your last
7 comment and the ones you started with, Dr. Hedges.

8 You clearly have made some sort of
9 structural changes, organizational changes, in
10 establishing DIF as a sort of a new structure. But I was
11 surprised that, given that, that you wouldn't have
12 provided in the documentation a kind of organizational
13 chart to reflect how that is going to affect the kind of
14 decision making that you are taking.

15 If we accept that this is an oversight, do
16 you think we could ask for that in Day Two, perhaps with
17 some of the key player's named?

18 **MR. HEDGES:** Ken Hedges, for the record.

19 We would be happy to provide the
20 information. We have already provided it to the staff
21 when we made the structural changes. It was an oversight
22 it wasn't in the presentation.

23 **MEMBER BARNES:** You mentioned a Monsieur
24 Lafrenière -- particularly you mentioned the 16 peers that
25 you had on site -- I approve, obviously, that approach.

1 If peers are on site for long, sometimes they can be less
2 arms-length than the principle of involving peers. So I
3 wouldn't mind a little explanation now, or more in Day
4 Two, how that concept of using peers, how long that is
5 going to last, where they are being deployed and so on.
6 That is a useful aspect.

7 Second, as a follow-up to that -- because I
8 guess they are going to be involved in some of the U.S.
9 national lab evaluations that follow up in September --
10 since Day Two is on October the 18th, do you think we will
11 be able to get a fair amount of the information that might
12 come from that review in September, or do you think that
13 the reviews might take another month or two to provide you
14 with some written documentation and they would not be
15 available for Day Two?

16 **MR. HEDGES:** Ken Hedges, for the record.

17 I will answer the second part about the
18 national labs.

19 We anticipate having the information
20 available to present at the Day Two Hearing. That's
21 really what -- we pushed them to get the schedules as
22 early as possible.

23 With regards to the industry peers, I would
24 like Paul Lafrenière to answer that question.

25 **MR. LAFRENIÈRE:** Paul Lafrenière, for the

1 record.

2 The peers are not on a full-time basis, not
3 all of them. So there is a continuing flow of people.
4 The idea is, is there are roughly 50 programs in the
5 facility and they are auditing, reviewing, ultimately
6 working with employees in these different programs.

7 So it is a continuous shuffling so that we
8 do not have issues, as you mentioned, of overly
9 familiarity, I would say.

10 The issue of the reviews, we are currently
11 preparing to issue our improvement plan, as Dr. Hedges
12 alluded to earlier. That will provide, I think, a
13 confirmation that the CNSC audits were, for the most part,
14 on the mark and that is one part of it.

15 The second thing is that the reviews are
16 starting to be available now. We have already done two
17 independent peer reviews of the facility. So that
18 information could be made available.

19 **MEMBER BARNES:** You just returned to the
20 peers -- if I could just return to peers -- are these
21 individuals that are outside of AECL, or are they from
22 other parts of AECL that are brought in to sort of give a
23 somewhat dispassionate evaluation?

24 **MR. LAFRENIÉRE:** These are consultants --
25 essentially consultants -- from a number of utilities ---

1 **MEMBER BARNES:** Okay.

2 **MR. LAFRENIERE:** --- and even from U.S.
3 power plants. So this way we are ensuring that we have a
4 balanced view on nuclear power plant standards.

5 **MEMBER BARNES:** My main comment, I guess,
6 on the documents that we have before me was maybe touching
7 on Mr. Taylor's comment at the beginning. I thought he
8 was a little gentle in saying there seemed to be slight
9 mismatch.

10 I would say I was really quite struck by
11 the very different structured tone and detail in the
12 documents from AECL and from staff, because clearly I
13 think it is pretty obvious that AECL has had a number of
14 ongoing difficulties with the MAPLE reactors. And I was
15 greatly disappointed from the AECL documents from pages 39
16 until the end, 39 to 40, which really was just a set of
17 bullets, statements and bullets without very much
18 explanation of problems. You might say, "Well, some of
19 those were discussed in the first dozen pages or so."

20 Let me just try to illustrate what I mean
21 by referring to some of the issues in the staff document
22 under "Outstanding Licence Issues".

23 And Madam Chair, if you will excuse a
24 little bit of a monologue here?

25 It's not that each one needs an answer but

1 it's the sort of comments that I read into this, and will
2 read out parts of it in the staff document, which together
3 suggests that there is still some very serious licensing
4 issues, and the examples I will choose are a mix just to
5 give an indication of the diversity and clearly there is
6 some more serious than others as I read the document.

7 So reading from the staff documents on page
8 12, section 4, which is entitled "Outstanding Licensing
9 Issues", and so it goes on at some depth -- some length
10 rather, but under 4.1.1.1, the Positive Power Coefficient
11 of Reactivity, at the bottom of page 12 to read as quote:

12 "To date AECL has been unable to
13 determine why your design and safety
14 analysis computer codes and models do
15 not predict the measured reactivity
16 change with power without a complete
17 understanding of the measured response
18 to a change in power. AECL is unable
19 to identify and assess design and/or
20 operational changes that we restore
21 the reactor to conformance with its
22 design."

23 In addition, on page 13:

24 "AECL is unable to carryout reliable
25 simulations of the Power Coefficient

1 of Reactivity behaviour as the core
2 state evolves with time.

3 And then on the bottom of page 15, which is
4 also dealing with the Positive Power Coefficient of
5 Reactivity, right at the bottom:

6 “If AECL is unable to demonstrate
7 shutdown system effectiveness in
8 accordance with the actions as
9 credited in the FSAR, then AECL must
10 explore other options that meet the
11 original licensing basis or propose
12 changes to the licensing basis. In
13 the latter case the acceptability of
14 such changes would need to be
15 considered by the Commission.”

16 If we jump up in that page 15, this is
17 under the “Guaranteed Shutdown State (GSS) Compliance”,
18 just under the word “Status”:

19 “However, AECL still has to comply
20 with CNSC’s comments on AECL’s root
21 cause analysis for that event.”

22 Page 17, that deals with the commissioning
23 demonstration of design intent. In the box:

24 “AECL must demonstrate that systems
25 and equipment perform according to

1 engineering changes to the equipment,
2 maintenance of equipment and
3 operational use of equipment. The
4 document baseline should be structured
5 to clearly define the documents..."

6 And so on.

7 And if I just go back to page 19, which
8 deals with the really difficult issue of the Shut Off
9 Rods, the SOR, the second paragraph, which I will read in
10 it's entirety; a short one:

11 "As requested, AECL has carried out
12 the MCNP simulation-based estimations
13 of SOR's reactivity worth. CNSC
14 staff's recent reassessment of those
15 simulation results led to the
16 conclusion that there was no
17 measurement which could be used to
18 determine the SORs reactivity worth,
19 that there was no measurement which
20 could be used to confirm the normal
21 shutdown margin (deployment of all
22 three SORs) and that there was no
23 measurement which could be used to
24 confirm the stable sub-critical margin
25 (deployment of any two of the three

1 available SORs). These findings have
2 been passed to AECL."

3 So if I then went to see what AECL said
4 about the SORs, which is on their page 32, it's a set of
5 bullets that really don't address what they think have
6 been the serious issues.

7 So it seems to me as a member of the
8 Commission, we are being asked to renew the licence, and
9 in particular the outstanding licence issues should be
10 perhaps a particular focus for us.

11 As I read these documents staff are
12 bringing forward, what I read just -- and I've just quoted
13 some. I could keep going on but obviously we don't need
14 to. It seems in almost all the components listed here
15 there are many, many significant issues that AECL has to
16 address and is required to address through the licensing
17 process, but I am afraid I really don't see in the
18 document that AECL has produced that the words AECL is
19 providing are really addressing the key issues at hand.
20 It's almost -- well, I'll just leave it at that.

21 And I would hope that -- I could do one of
22 two things; I could ask for a response from AECL on each
23 of these, which I won't, but I would ask maybe for an
24 overall comment whether my impression is correct from
25 AECL, maybe even staff, and if my impression is correct I

1 think it would be implicit on AECL really to address these
2 in a more frank and open basis on Day Two how these
3 licensing issues are going to be addressed in a precise
4 and timely fashion, and particularly to indicate what
5 happens if they're not addressed within the two-year
6 licensing period.

7 **THE CHAIRPERSON:** Just before you start,
8 just so that we don't have a repetition later because I
9 don't think you really would want that either is, to me
10 this also hits to the core of a follow-up from CMD 04-M28,
11 which is an understanding which the Commission asked for
12 to make sure that we had an understanding between the
13 staff and AECL about what was required, and I really do
14 think that is a fundamental thing for us, is to feel that
15 there is that understanding.

16 One will recall that the issues around the
17 Positive Power Coefficient were really the areas where
18 there was not an agreement at that time and I think the
19 transcripts would show that. So there really is, I
20 believe, a sense by the Commission, if I understand Dr.
21 Barnes' comment and Mr. Taylor's, is that we want to, in
22 this licensing, feel that there is a real clear
23 understanding of what has to be done and a clear
24 understanding of moving forward, as well as in the more
25 macro systems that you put in place.

1 So just so that I don't repeat that later,
2 which would probably be unhelpful to you.

3 Dr. Hedges, would you like to comment and
4 then the staff on Dr. Barnes' question?

5 **MR. HEDGES:** For the record, Ken Hedges.

6 It is true there are a number of
7 significant open issues which have been dealt with by the
8 staff and AECL and you have touched on, I think, six of
9 them there and they are all open issues which need
10 resolution.

11 Without going into the details of each one
12 of them, in my view, my understanding of each one of those
13 issues, and the staff understanding of each one of those
14 issues, I think, is reasonably consistent. We have -- we
15 are in the process of resolving each of those issues.

16 The first one you mentioned, just as an
17 example, with the power coefficient, and in my
18 presentation I named a great long list of all of the
19 things that we are doing to resolve them. It is a complex
20 technical issue for which the ultimate solution is not yet
21 known. But I think staff would agree, and hopefully the
22 Commission will agree, that everything -- we are doing
23 everything that is practical to resolve it and we won't
24 operate the reactor and won't ask to operate the reactor
25 in any condition that makes the PCR -- make it unsafe.

1 These issues are being dealt with and maybe it would be
2 useful for us to provide a half page on each of these
3 items to explain how we are moving ahead.

4 We are moving ahead on all of those items
5 and we do have a path forward, I believe, with the staff.

6 **THE CHAIRPERSON:** Does the staff wish to
7 comment, please?

8 **MR. LAMARRE:** Greg Lamarre, for the record.

9 I would just like to emphasize that the CMD
10 we presented today as well as the one 04-M28 clearly lays
11 out our rigorous regulatory oversight program in place.
12 Operated under the guise of the licence, provided by the
13 Commission, are the prerequisites and the whole points for
14 going forward. It's our opinion that those are clearly
15 defined and understood by AECL, i.e. thou shalt not move
16 beyond this point until these issues are fully resolved to
17 our satisfaction.

18 So in our opinion, to answer Commission
19 Member Barnes' question, they are clearly defined and very
20 well understood and on public record. That's exactly how
21 we will be going forward on this issue. Perhaps we can
22 lay out a little bit more clearly at the time of the day
23 too further information on that, but in our opinion the
24 position that we have outlined at this CMD and the CMD
25 last summer is clear, concrete and very much in place at

1 this time.

2 **MEMBER BARNES:** On the basis of that and on
3 the basis of the comments that there is now a good
4 dialogue between AECL and CNSC staff, do you believe that
5 over the period of this next licence, just two years, that
6 AECL has a reasonable chance of achieving what they state
7 they hope to achieve within that period?

8 **MR. LAMARRE:** Greg Lamarre, for the record.

9 It's a very difficult question to answer
10 due to the uncertainties that lie before AECL, one of the
11 key issues being the Power Coefficient of Reactivity.
12 Staff is aware of the ongoing initiative being undertaken
13 by those two U.S. labs at this point but has only really
14 been provided with, for lack of a better word, some
15 superficial information as to some of the results that are
16 coming out of that. What we want to be in a position to
17 do is to at least have a preliminary assessment done of
18 the findings of the U.S. lab in time for the Day Two
19 Hearing.

20 But to answer your question categorically,
21 Dr. Barnes, would be near impossible. We know that AECL
22 is working towards a schedule that they have outlined in
23 their CMD on a best-effort basis. However, given the
24 numerous uncertainties that are still out there, it's
25 impossible for us to state categorically that the

1 likelihood of them achieving that is 100 per cent, for
2 instance.

3 **MEMBER BARNES:** I would never ask that sort
4 of question, but I think when, in this case, an applicant
5 provides a document requesting continuance of a licence
6 for the next period, it should contain some achievable
7 or deliverables in there which are reasonable based on
8 your best assessment of that.

9 It seems to me, which is what I was trying
10 to get at, is you are raising repeatedly either many
11 significant failures of AECL to respond to your insistence
12 of certain deliverables on your part or that there are
13 very serious and profound changes, the one you have just
14 referred to which the jury is still out whether it's
15 possible to do that.

16 But when you put all these together, it
17 seems to me that AECL has a very challenging task to
18 achieve anywhere near what they are proposing to achieve
19 within the two-year period. I think we do expect some, I
20 think, in the licensing process, some reality here and I
21 think from my viewpoint we should have these fairly and
22 openly stated and a good correlation between, in this
23 case, AECL and yourself with a schedule which then can be
24 translated in milestones. So through the two years we can
25 see whether that's correct and in two years' time they can

1 come back and so on. But because this has been sort of an
2 ongoing scenario with many repeated problems I think it's
3 sort of time that we really define the milestones as
4 precisely that we can, given engineering uncertainties of
5 the type that everyone understands in this situation.

6 Maybe I could just make a final question on
7 a different topic now, and that's the operational
8 readiness which is on page 14? Within the box there:

9 "AECL must demonstrate that an
10 adequate number of trained staff and
11 the systems and equipment are
12 available for the resumption of
13 commissioning..."

14 I think this is a slightly different issue
15 because the reactors have really not been reacting well,
16 that the issue is do you have enough staff, does AECL have
17 enough staff once these come on line if everything went
18 well? Would the staff be adequately available and those
19 that are available adequately trained?

20 Could AECL just comment on their ability to
21 bring sufficient well-trained staff on line if and when
22 the reactors come on line?

23 **DR. HEDGES:** Yes. For the record, Ken
24 Hedges.

25 Paul Lafrenière will respond to that, but

1 the simple answer is "yes".

2 **MR. LAFRENIERE:** Paul Lafrenière, for the
3 record.

4 Ken is correct. The staffing overall has
5 been increased by 50 per cent in the past four months.
6 The certified staff, in terms of operators, techs and
7 managers of operations, now meet our requirements for the
8 OLCs and we are still in a process of training and
9 staffing up. So our resources will be more than
10 sufficient and we are on track for our staffing plan.

11 **THE CHAIRPERSON:** Dr. Dosman.

12 **MEMBER DOSMAN:** Thank you, Madam Chair.

13 Well, a number of issues that I have noted
14 have been discussed and I don't wish to retread on those.
15 But I would just like to ask AECL, presumably the issue of
16 the Positive power coefficient of reactivity is
17 fundamentally your most serious issue in bringing the
18 reactor on stream. Am I right in that assumption?

19 **DR. HEDGES:** For the record, Ken Hedges.

20 Yes, the PCR is the most technically-
21 challenging issue for the facility.

22 **MEMBER DOSMAN:** Mr. Hedges, all things
23 being equal, when would you see a restart of MAPLE 1 to 2
24 kilowatts? I might just add to that, do you need to solve
25 the issue theoretically or would you restart to 2

1 kilowatts to assist in solving the issue?

2 **DR. HEDGES:** Ken Hedges, for the record.

3 I will ask Victor Snell to respond to this
4 question.

5 **MR. SNELL:** Thank you. Victor Snell, for
6 the record.

7 What we have done for the particular case
8 is to pair a safety case for it which reflects the
9 behaviour of the reactor as observed and takes very
10 conservative assumptions to make sure that we can operate
11 the reactor safely at 2 kilowatts with the positive power
12 coefficient; particular things like setting trip set
13 points way down and the initial power level itself, of
14 course, helps as well.

15 That case has been submitted to CNSC staff
16 and their approval of that case would be part of their
17 approval of restart.

18 That just gets us to 2 kilowatts. So we
19 intend to submit another safety case for 5 meg of
20 operation, around 5 megawatts. Again, the power level
21 that is chosen is significantly below the rated power of
22 the machine to gain the safety margin to offset the
23 effects of the positive power coefficient. The reason to
24 go to 5 megawatts is so that we can get up to a power
25 level where we can test -- first of all, re-observe the

1 PCR to re-measure it more accurately and, second, where we
2 have a number of potential mitigation measures in mind and
3 we would like to test those at 5 megawatts to see how
4 effective they are. As a scientist, I believe in
5 measurement more than theory and the measurement will tell
6 us whether these measures are effective. We have to be at
7 a substantial power level to see a difference.

8 The staff has not yet seen our case of 5
9 megawatts. We intend to submit it, again, as part of the
10 approval to go to 5 megawatts. It will have, again,
11 conservative assumptions which offset the effect of the
12 positive PCR.

13 **MEMBER DOSMAN:** May I pursue the -- so I
14 take it that obviously this issue is a difficult one for
15 AECL and I take it then, by mitigation, are you suggesting
16 that there may be one of two approaches to the solution?
17 One is to achieve a technicality that allows for a
18 negative coefficient. The other is to achieve a set of
19 measures which would allow eventual operation with a
20 positive coefficient?

21 **MR. SNELL:** Victor Snell for the record.

22 The current thrust of AECL is basically
23 threefold; to identify -- first of all, to -- well, sorry,
24 to re-measure the power coefficient accurately so we know
25 exactly what it is.

1 The second is we have a number of
2 activities aimed at finding out why it's positive, and Dr.
3 Hedges mentioned earlier on of the initiatives we have
4 with the U.S. Laboratories which are quite expensive and
5 very thorough. They are starting from scratch so that
6 they do not use our information to generate their models.
7 INEL started basically from drawings and they are creating
8 their own scientific models. They're using their own
9 codes. So it's as independent as we can make it, and they
10 will come up with what they come up with. We're hoping
11 that we will see something useful by the end of September,
12 and we have invited CNSC staff to the meeting at which
13 their preliminary results are presented.

14 It is our hope that the results will be
15 clean enough to tell us whether the issue is one of
16 computer codes or whether it's an unmodeled phenomena in
17 the reactor. That would be very, very useful information.
18 So whatever they come up with I believe will be useful to
19 us in narrowing down the cause of the PCR.

20 Having identified a cause, the main thrust
21 of AECL is to mitigate it by fixing it through design if
22 that is practical. It's a bit hard to speculate what
23 design fixes might be. We are looking at some in
24 parallel, but until you know exactly what the cause is,
25 it's hard to know what the fix will be, but the priority

1 will be given, as we have committed to CNSC staff, to
2 finding a design fix. I don't want to speculate beyond
3 that. That is our priority route right now.

4 **MEMBER DOSMAN:** Thank you. That is helpful
5 for me.

6 I just would like to turn briefly to the
7 question of performance assurance and operating
8 performance and, of course, I recognize that until the
9 facility is fully functional, it's hard to solve all the
10 performance and operating issues, but how is the
11 documentation coming and how is AECL doing on the
12 documentation end?

13 **THE CHAIRPERSON:** Is that a question for
14 staff then in an assessment?

15 **MEMBER DOSMAN:** It's a question for the
16 Applicant followed by comments by staff.

17 **DR. HEDGES:** For the record, Ken Hedges.
18 Paul Lafrenière will respond to that.

19 **MR. LAFRENIERE:** Paul Lafrenière for the
20 record.

21 The issue of the baseline that was raised
22 earlier, I am going to address that point. I believe it
23 will respond to the question.

24 First of all, a management oversight
25 process on the documentation has been established in the

1 past quarter. We have defined the baseline of documents.
2 It consists of roughly 13,000 documents. This list has
3 been reconstituted. The documents have been validated to
4 be up to date and In Track, and In Track is our
5 computerized system, and 80 per cent of the documents are
6 correct and in place. The other 20 per cent are
7 undergoing review or revision at this time.

8 As far as MAPLE 1 two-kilowatt restart is
9 concerned, we have identified a subset of necessary
10 drawings and documents, and they are all available and as
11 required in the main control room.

12 So at this point in time, there is a good
13 tracking mechanism. We have also introduced tracking of
14 changes to documents which are being implemented into the
15 computerized system so that we will be able to track
16 jumpers, for instance, or changes to documents.

17 So this process is ongoing and, again, the
18 management oversight is in place and the numbers can be
19 validated at any time.

20 **MEMBER DOSMAN:** Thank you.

21 And I wonder if I might have staff comment
22 on the issue?

23 **MR. PEARSON:** Bruce Pearson, Project
24 Officer for the MAPLE reactors.

25 My understanding of the question, I think

1 the response is that during the audit, we found that AECL
2 has many plans in place to address the deficiencies that
3 were noted. Some of these are the document baseline.
4 Others are the NCR process.

5 So what we found during the audit was AECL
6 has identified a lot of these problems themselves and is
7 addressing the problems that we have noted, and they do
8 have plans in place and this is the basis for why we
9 consider that there should be an improving trend, and we
10 expect them to achieve a mutual requirement level in the
11 not-too-distant future.

12 **MEMBER DOSMAN:** If I might perhaps clarify
13 my question? Thank you for that information. I was
14 inquiring not so much about plans but about the status of
15 the completion of the necessary documents to achieve full
16 documentation in these areas. I was inquiring how far
17 along are they, so to speak?

18 **MR. PEARSON:** Yes, I think what we found
19 during the audit is that if you're referring specifically
20 to the document baseline, AECL did present us with a draft
21 baseline for the documentation needed for operations.
22 They have split the document baseline requirements into
23 three areas. One are those documents needed by operations
24 staff to effectively operate the reactor, those needed by
25 maintenance staff to effectively maintain the reactor and

1 those needed by design type people or the technical
2 section to ensure changes are incorporated correctly.

3 The current status, I think, as was
4 mentioned is that they do have the documentation available
5 in the control room to operate the facility and they are
6 working on the other two areas. That information is as of
7 our audit, which was two months ago.

8 **MEMBER DOSMAN:** If I just might, so as the
9 reactor is restarted and ramps up from 2 kilowatts to 5
10 and so on, is there adequate documentation in place or
11 imminently in place to handle that restart?

12 **MR. PEARSON:** The answer to that is yes, we
13 believe so.

14 **MEMBER DOSMAN:** Thank you.

15 **THE CHAIRPERSON:** Yes, Mr. Graham.

16 **MEMBER GRAHAM:** Madam Chair, I had a series
17 of questions that were very adequately covered by Dr.
18 Barnes. And not to be repetitious, I think really there
19 is a tremendous amount of information that is going to be
20 required on Day Two that will probably warrant even longer
21 debate or longer question, and we have seen an evolution.
22 I believe that AECL has recognized that there is a lot of
23 information that must be supplied. So without being
24 repetitious, I'm going to leave my questions until Day
25 Two.

1 **THE CHAIRPERSON:** I'm going to do a little
2 check to see how close we are to the end of the
3 questioning. There is a second round. You have second
4 round. We are going to try to go through the second
5 round.

6 I think mine is more of a comment than a
7 question. I think, to me, I am -- it is very fascinating
8 because you're really in a research and development
9 process, and that's the way research and development goes.
10 So I appreciate that as an issue.

11 For me as a safety regulator, for me, what
12 I am looking for from the staff and from the licensee is
13 the assurances that there is safety in the process. I
14 think that it's not so much -- there is clearly a very
15 strong imperative here for AECL in terms of an economic
16 imperative, et cetera, but for me, I just -- I think what
17 I was hearing from the staff, which is what I needed to
18 hear, was that there was sufficient oversight of this,
19 including my understanding is that there will be more
20 presence at CRL on site by the staff to ensure that
21 Canadians are protected in terms of the safety of the
22 facility at any stage, whether it's now and where it goes,
23 you know, scientific curiosity aside on my side.

24 Just let's keep the real clear idea that we
25 need to have this safely operated at every stage.

1 And so what I was seeking which I just
2 wanted to say I read in the documents, at least at the
3 stage of the macro level where AECL is, is an
4 understanding of the importance of this oversight at
5 various stages to ensure that it is safely operated from
6 your responsibility for the safety. The staff's
7 responsibility of oversight is your responsibility to
8 operate this safely.

9 So I think the real issue for me will be --
10 at this stage I see in the documentation --I don't really
11 have any questions per se on the documentation -- that the
12 systems are in place which we know are essential to make
13 sure that that process goes on for the licence length,
14 that over the next two years, there's a process in place
15 and if this process is followed, if these improvements are
16 followed in terms of oversight, that AECL will provide
17 oversight as this process goes through.

18 I'm not being very clear, but that's what I
19 -- I'll be honest -- that's what my concern is; that that
20 has to be in place for us to feel comfortable about the
21 licensee and for the staff. So I'm just making that
22 comment.

23 We'll go now to round two and we'll start
24 with Mr. Taylor.

25 **MEMBER TAYLOR:** Thank you, Madam Chair.

1 I would like to follow up on your comment
2 really and just clarify with the staff that my
3 understanding of the sort of big picture of that CMD per
4 cent is correct.

5 My understanding is that, regardless of the
6 state of the units or the other facility your impression
7 that you're giving us is that you believe this facility
8 will be operated safely over the period for the reasons
9 that are basically summarized in Table 1 of your CMD;
10 these assessments B, C or whatever, of the various areas
11 that you've covered, regardless of whether the units were
12 operating or not.

13 The other issues, the various things which
14 are visibly problematic, which are things like the Power
15 Coefficient Reactivity, are dealt with in that operation
16 of the plant and can't proceed beyond the appropriate
17 level until they're resolved. So these other things are
18 dealt with by whole points and the overall safety of the
19 plant is dealt with by your consideration of the major
20 factors listed in Table 1.

21 Now, that's how I see it. First of all, is
22 that correct?

23 **MR. HOWDEN:** Barclay Howden speaking. That
24 is absolutely correct, yes.

25 **MEMBER TAYLOR:** Okay. And secondly, is

1 there anything seriously outstanding or problematic that
2 is not yet resolved that would affect the safety of the
3 plant regardless of whether the units start up or operate
4 beyond 2 megawatts or 2 kilowatts or whatever, or whether
5 they start up at all? Is there anything now that concerns
6 you that affects the safety of the plant over the next two
7 years?

8 **MR. LAMARRE:** Greg Lamarre, for the record.

9 No, there are no immediate risks to health
10 safety and the environment that we foresee in recommending
11 this to your licence condition.

12 However, I'll reiterate once again that the
13 prerequisites will give staff the confidence that all
14 safety areas are adequately addressed before AECL goes
15 forward and the enhanced regulatory oversight that we
16 apply to this project not only in the desktop reviews but
17 the onsite verifications will continue to give staff that
18 level of confidence that the health, safety and the
19 environment continue to be protected throughout the course
20 of the proposed licence period.

21 **MEMBER TAYLOR:** Thank you.

22 **THE CHAIRPERSON:** Dr. McDill.

23 **MEMBER McDILL:** You talk about the big
24 picture down to the tiny nitty-gritty. Maybe in the
25 interest of time this could be brought forward to Day Two.

1 I'm interested in the erosion ---

2 **THE CHAIRPERSON:** No, I would rather do it
3 today.

4 **MEMBER McDILL:** You would rather -- okay.
5 Well, we'll do it today.

6 With respect to the localized erosion in
7 the process water system I'd like to know why there was a
8 flooding alarm if there was no leakage, the material pipe
9 length, pipe diameter -- I think the cause may not be
10 known yet -- and the likelihood of implications being
11 broader in scope. Since it's in MAPLE 2 is there going to
12 be a similar problem in MAPLE 1?

13 Sorry, I'm on page 8 of AECL's document.

14 **MR. HEDGES:** For the record, Ken Hedges.
15 I'd like Lawrence Lupton to address the process water pipe
16 erosion problem.

17 **MR. LUPTON:** For the record, Lawrence
18 Lupton.

19 The problem occurred, the leak occurred on
20 MAPLE 2 and it was a pinhole leak. We have done a root
21 cause evaluation of it, a material analysis. It was
22 caused by cavitation erosion. A similar problem has not
23 occurred on MAPLE 1. Presently the PWS system is in
24 operation under a conditional release. We are doing
25 regular monitoring, both ultrasonic measurement and, as

1 required, shut the system down and open up and view the
2 pipe. We have put through, or we are in the process of
3 putting through a design solution for the cause to fix the
4 fault and we'll be implementing that early in 2006. We
5 have to do some ordering of equipment but the MAPLE 1
6 system is safe to operate at the present time under
7 conditional releases.

8 **MEMBER McDILL:** So the operational
9 conditions on 1 are different enough that this will not
10 occur on 1?

11 **MR. LUPTON:** That is correct. There's a
12 difference in the valve positions between unit 1 and unit
13 2, the way the system was operated, and the unit 1 valve
14 position is such that the problem is much less.

15 **MEMBER McDILL:** Thank you.

16 And the flooding alarm went because there
17 was some leakage. It says no leakage here but there was
18 enough presumably to trigger an alarm somewhere.

19 **MR. LUPTON:** MAPLE 2, there was leakage.

20 **MEMBER McDILL:** Does that mean the
21 paragraph is incorrect:

22 "The inspection found localized
23 erosion in the process water system
24 but no leakage".

25 It's the last paragraph on page 8.

1 **MR. LUPTON:** The paragraph is referring to
2 MAPLE unit 1.

3 **MEMBER McDILL:** Both MAPLE 2 and MAPLE 1
4 are referred to in the first two sentences in that
5 paragraph. So if the inspection found localized erosion
6 but no leakage that means there was also localized erosion
7 in MAPLE 1?

8 **MR. LUPTON:** We have found a small amount
9 of erosion but nothing of the same nature as MAPLE 2.

10 **MEMBER McDILL:** Thank you.

11 **THE CHAIRPERSON:** I think, Dr. McDill, it
12 might be helpful if AECL re-looked at that paragraph. If
13 nothing else, it's probably a little bit confusing. So it
14 may be worth just looking at that, because I think we're
15 going to have a supplementary CMD with at least the
16 organization chart for Day Two anyway. So if we could
17 have that reworded in a way that is appropriate in terms
18 of that, that would be helpful?

19 Any other questions at this time?

20 **MR. LEBLANC:** This hearing is to be
21 continued on October 18th, 2005 here in the CNSC offices.
22 The public is invited to participate either by oral
23 presentation or written submission on Hearing Day Two.
24 Persons who wish to intervene on that day must file
25 submissions by September 19th, 2005.

1 The hearing is now adjourned to October
2 18th, 2005.

3 **THE CHAIRPERSON:** We will recommence at
4 2:00 o'clock. Thank you.

5 --- Upon recessing at 1:07 p.m.

6 --- Upon resuming at 2:03 p.m.

7 **THE CHAIRPERSON:** Good afternoon, ladies
8 and gentlemen.

9 **THE CHAIRPERSON:** The next item on the
10 agenda today is Hearing Day One on the matter of the
11 Application by Atomic Energy of Canada Limited for the
12 renewal of the Nuclear Substance Processing Facility
13 Operating Licence for the New Processing Facility at the
14 Chalk River Laboratories.

15 **MR. LEBLANC:** The Notice of Public Hearing
16 2005 H12 was published on June 7th, 2005 and a revised
17 Notice of Public Hearing was published on August 5th,
18 2005 to announce a change of date for Hearing Day Two now
19 scheduled for October 18th, 2005.

20 July 18th, 2005 was the deadline set for
21 filing by the Applicant and by CNSC staff. August 10th
22 was the deadline for filing of supplementary information
23 by the Applicant and Commission staff. It is noted that
24 supplementary information has been filed by the Applicant.

25 As indicated earlier today, the Commission

1 has conducted two parallel hearings on the MAPLE reactors
2 and the new processing facility. The Commission notes
3 that the facilities are within the same general site and
4 share a number of common systems, facilities and programs.
5 Therefore, to reduce repetition and ensure there is a
6 complete record for both hearings, the Commission, in
7 making its decisions, will consider any relevant
8 information regarding those common elements that may be
9 presented during the course of these hearings.

10 **THE CHAIRPERSON:** With that preamble, I'd
11 like to then start the hearing today by calling upon
12 Atomic Energy of Canada Limited for its oral presentation
13 as outlined in CMD documents 05-H21.1, 05-H21.1A and I
14 will call upon Dr. Torgerson, Senior Vice-President and
15 Chief Technology Officer of AECL.

16 Dr. Torgerson, you have the floor, sir.
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