

Cline, Leonard

From: Cline, Leonard
Sent: Friday, March 03, 2017 8:54 AM
To: R1PilgrimCommTeam Resource
Subject: RE: RE: Increases in Decommissioning Costs

From: Cline, Leonard
Sent: Wednesday, June 01, 2016 11:56 AM
To: James Lampert <james.lampert@comcast.net>
Cc: Dusaniwskyj, Michael <Michael.Dusaniwskyj@nrc.gov>; Watson, Bruce <Bruce.Watson@nrc.gov>; Burritt, Arthur <Arthur.Burritt@nrc.gov>; Lombard, Mark <Mark.Lombard@nrc.gov>; Lew, David <David.Lew@nrc.gov>; Bowers, Anthony <Anthony.Bowers@nrc.gov>
Subject: RE: RE: Increases in Decommissioning Costs

Dear Mr. Lampert:

I am responding to the email you sent following the April 13, 2016, Pilgrim annual assessment meeting requesting additional information on decommissioning funding. I understand you talked with NRC economist Michael Dusaniwskyj about your concern that inflation will make the eventual cost of decommissioning prohibitively expensive.

First, it is important to recognize that the NRC does not regulate commerce; rather, we regulate the commercial industry to assure nuclear plants are operated and decommissioned safely. The regulations at 10 CFR 50.75, Reporting and Record Keeping for Decommissioning Planning, and 10 CFR 50.82, Termination of License, outline the financial funding expectations that enable licensees to provide reasonable assurance that decommissioning funding will be available for the safe and successful decommissioning of a nuclear facility.

Second, each licensee must provide regular funding forecasts in order to demonstrate that there will be sufficient decommissioning funding for NRC license termination. A principle consideration in these calculations relies on the "real rate of return," which, simply stated, is the rate of interest after allowing for inflation. NRC's regulations mandate that licensees may assume at least a 2 percent (%) real rate of return in its funding forecasts. Therefore, whatever the future inflation rate, decommissioning funds are assumed to grow in the future at a rate of 2%, or higher, than inflation. The idea that real rate of return is greater than inflation is an accepted economics principle, and is more commonly referred to as the Fisher principle, or Fisher equation. As noted above, decommissioning trust funds are frequently monitored (every two years while the facility is in operations and every year when the facility is in decommissioning) from license issuance through license termination.

Over the long term, the assumed 2% real rate of return is conservative for forecasting purposes, and that actual future real rates of return are expected to be greater than the assumed 2%. This methodology ensures that the purchasing power of the decommissioning funds is preserved. We note that since the time the minimum formula amount at 10 CFR 50.75(c) was established by regulation in 1986, through 2015, U.S. inflation has increased by over 118% on a cumulative basis, or by approximately 2.7% on an annual basis. In contrast, decommissioning cost adjustments have resulted in formula amount increases of approximately 400% on a cumulative basis, or 5.5% on an annual basis. As these statistics illustrate, the formula amount has increased beyond the rate of inflation due to continual adjustments in labor and energy costs, and in low-level waste burial charges. By regulation, licensees are required to fund their decommissioning trusts to meet or exceed the most recent, adjusted formula amount.

I trust this addresses your concerns. Should you have further questions, please contact Anthony Bowers at 301-415-1955.

From: Lew, David [<mailto:David.Lew@nrc.gov>]
Sent: Friday, April 15, 2016 9:00 AM
To: James Lampert <james.lampert@comcast.net>
Cc: Cline, Leonard <Leonard.Cline@nrc.gov>; Dusaniwskyj, Michael <Michael.Dusaniwskyj@nrc.gov>; Watson, Bruce <Bruce.Watson@nrc.gov>; Burritt, Arthur <Arthur.Burritt@nrc.gov>; Lombard, Mark <Mark.Lombard@nrc.gov>
Subject: RE: Increases in Decommissioning Costs

Jim, It was a pleasure meeting you on Wednesday. Len Cline, who is one of the Region I staff, will coordinate with Mike Dusaniwshyj and get back with you. Dave

From: James Lampert [<mailto:james.lampert@comcast.net>]
Sent: Thursday, April 14, 2016 3:52 PM
To: Dusaniwskyj, Michael <Michael.Dusaniwskyj@nrc.gov>; Arthur.burritt@nrc.gov; Watson, Bruce <Bruce.Watson@nrc.gov>; Lombard, Mark <Mark.Lombard@nrc.gov>; Lew, David <David.Lew@nrc.gov>; Dean, Bill <Bill.Dean@nrc.gov>; david.dorman@nrc.gov
Cc: michal_freedhoff@markey.senate.gov; michael.jackson@mail.house.gov; 'Hoffer, Melissa (AGO)' <melissa.hoffer@state.ma.us>; Daniel.Wolf@masenate.gov
Subject: [External_Sender] Increases in Decommissioning Costs

I am following up on yesterday's (Wednesday's) meetings in Plymouth in which I said that, based on the information that I have, decommissioning costs are growing far faster than inflation, and that by the time Entergy starts radiological decommissioning about 60 years from now, the actual costs will be somewhere between about \$5B and \$60B greater than what will then be the amount in the decommissioning trust fund. Pertinent extracts from the NRC statement about increases in decommissioning costs and the 2015 Callan study on actual recent cost increases that I mentioned are below. If you can't find the complete documents, please ask me and I will try to forward them to you. .

A. Extract from Q&A On Financial Assurance (ML1119/ML11195003; also Enclosure 5 to SECY 11-0133)

20. Do the cost formulas of 10 CFR 50.75(c) represent the future cost to decommission a nuclear reactor?

No. The NRC formulas represent the cost to decommission today, not in the future. Due to rising costs, the future value of decommissioning will be much larger than the NRC formula calculated today. For example, using the range of cost escalation rates based on NUREG-1307, the increase in cost over a 20-year license renewal period would range from 2.5 to 5.6 times today's estimated cost, not counting costs that are not included in the formula, such as soil contamination. The rates of increase in decommissioning cost are higher than general inflation.

B. Extract from Callan Associates – 2015 Nuclear Decommissioning Funding Study: NDT Fund Balances, Annual Contributions, and Decommissioning Cost Estimates as of December 31, 2014 (<https://www.callan.com/research/files/1137.pdf>)

Key Findings

Nuclear decommissioning trusts have faced pressure in recent years in multiple areas, including challenging capital markets and unresolved waste burial issues. Fund balances were unable to keep pace with rising costs in 2014 as the former rose 5% while the latter rose 11%. The result of the mismatch was a decline in the funding level from 73% in 2013 to 69% in 2014. Other key findings from this survey include:

Fund Balances – Fund balances have risen steadily since a sharp decline in the 2008 market crisis. As of December 31, 2014, NDT funds totaled approximately \$61 billion, a \$3 billion (5.2%) increase from a year earlier. The increase is somewhat less than 2014 capital market performance might suggest due to a greater percentage of investor-owned utilities reporting net-of-tax trust values.

Contributions – Contributions to NDT funds rose \$36 million (10.9%) in 2014 after three years of declines. Most of the increase stems from a \$74 million increase in PG&E's contribution from 2013 (\$27.7 million) to 2014 (\$96.3 million). Without the PG&E increase, contributions would have fallen more

Costs – Total decommissioning cost estimates have risen 60% since 2008. 2014 decommissioning cost estimates rose approximately 11% from the previous year and now total over \$88 billion. Part of the increase is the result of a greater use of site-specific estimates that include costs, such as spent fuel management and site restoration, which go beyond the NRC scope of decommissioning.

I particularly want thank Mr. Dusaniwskyj taking a few minutes to speak with me in the course of the Wednesday evening meeting and helping me understand how the NRC evaluates decommissioning costs and funds. My understanding of what he told me is that:

- a. 10 CFR 50.75 sets out the methodology that the NRC uses to determine both (i) whether there is currently enough money in a licensee's decommissioning trust fund and also (b) whether there will continue to be enough money in the future; and
- b. this methodology assumes that decommissioning costs will increase at the rate of inflation; and that the fund will grow at the prudently conservative rate of 2% over inflation.

I would greatly appreciate it if Mr. Dusaniwskyj could confirm (or correct) these understandings.

It would also be very helpful if he could tell me what assumptions the NRC makes about future rates of inflation.

Again, I thank you all for your time and attention on Wednesday, and look forward to continuing our conversations.

Jim Lampert