UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket # 50-293-LR
Entergy Corporation	
Pilgrim Nuclear Power Station	
License Renewal Application	May 12, 2011

PILGRIM WATCH REQUEST FOR HEARING ON POST FUKUSHIMA SAMA CONTENTION

In accordance with 10 C.F.R § 2.309 (c)(1), Pilgrim Watch files the following new contention:

> The Environmental Report is inadequate post Fukushima Daiichi because Entergy's SAMA analysis ignores new and significant lessons learned regarding the possible off-site radiological and economic consequences in a severe accident.

The Environmental Report is inadequate post Fukushima Daiichi because Entergy's SAMA analysis ignores new and significant lessons learned regarding the possible off-site radiological and economic consequences in a severe accident at a GE Mark 1 reactor very similar to Pilgrim. Data from TEPCO Unit 2 shows that its nuclear chain reaction continued to generate high levels of I-131 for over a month after scram despite the efforts of TEPCO to terminate chain reaction by injection of borated water. Pilgrim's SAMA source terms have durations of at most 24 hours duration, the maximum plume duration allowed by the MACCS2 code, which assumes that once

the accident begins with reactor scram, a reactor completely ceases production of "fresh" short-lived iodines, such as I-131, which pose great radiological hazard if inhaled or ingested. By design, MACCS2 is unable to model the consequences of an accident at a reactor where the fission chain reaction continues apace despite reactor scram. This phenomenon was also noted at the Chernobyl Unit 4 accident of April 26, 1986, where, after large amounts of materials were dropped on the uncovered core, the nuclear chain reaction was observed to greatly accelerate and reach a peak on May 1, 1986, which resulted in large unanticipated radiation exposures at the May Day parade in Kiev. It seems possible that the accident containment measures taken at both Chernobyl and Fukushima introduced neutron moderators which allowed the fission reaction that had probably been stopped to later begin anew. Because of the huge design differences between the two reactors, their ongoing chain reactions indicate a fundamental shortcoming in not just the MACCS2 code, but with all PRAs conducted using tools based on the NRC's PRA Procedures Guide. All known reactor accident analysis codes assume that I-131 available for release from a reactor core's inventory decreases according to its 8-day radiological half-life. No consequence code in the world allows the modeling of releases from reactor cores where the fission chain reaction continues many weeks after scram. While the resumption of fission at Chernobyl may have been ascribed to the graphite-moderated design, such is not the case at Fukushima and Pilgrim.

I. INTRODUCTION

In the license renewal process, the Applicant is required under 10 CFR §51(c)(ii)(L) to perform a severe mitigation analysis if they had not previously done so. The purpose of a SAMA review is to ensure that any plant changes that have a potential for significantly improving severe accident safety performance are identified and addressed.

In the SAMA analysis process, the applicant analyzes costs of damages and costs of clean-up. However, NRC policy permits the Applicant to use a SAMA analysis code (MACCS2) that underestimates consequences for a number of reasons, two brought forward here are based on lessons learned on new and significant information from Fukushima.

1. The code limits the total duration of a radioactive release to no more than four (4) days, if the Applicant chooses to use four plumes occurring sequentially over a four day period.[1] Entergy chose not to take that option and limited its analysis to a single plume having a total duration of the maximum-allowed 24 hours[2]. In any case either a 24-hour plume or a four-day plume is insufficient duration in light of lessons learned from Fukushima. The Fukushima crisis now stretches into its second month and shows that releases can extend into many days, weeks, and months; a longer release can cause offsite consequences that will affect cost-benefit analyses.
2. Computer codes in use are totally incapable of modeling an 8-week chain reaction that continues after a scram. MACCS2 is no exception. Like all the computer codes, it is incapable of modeling a "severe accident" release that lasts 8 weeks or longer. The MACCS2 code used by Entergy, and all other codes, assumes that the reactor is scrammed when the accident begins, the reactor is scrammed, and that the production of all fission products ceases at that time.

   We know that criticality was continuing at Fukushima Unit 2 through April 27, 2011, and to shorter duration at Unit 1, because of their continued post-scram high findings of I-131 reported by TEPCO. The reactors were shut down, scrammed, on March 11.th I-131 has

[1] NUREG/CR-6613 Code Manual for MACCS2: Volume 1, User's Guide, 2-2

2 The MACCS2 uses a Gaussian plume model with Pasquill-Gifford dispersion parameters (Users code 5-1). Its equation is limited to plumes of 10 hour duration.

an 8-day half-life. If criticality had stopped after the reactors scrammed, the I-131 would have largely decayed. It would not, be at the levels we have seen reported, that exceed the Cesium readings.

Conventional accident analysis of reactor accidents begin at reactor scram, t=0, and assume that the fission chain reaction ceases completely at that time, and that thereafter there is only "spontaneous" nuclear decay, with it being common practice to ignore the very tiny amount of "spontaneous fission" triggered by random neutrons from cosmic radiation hitting a fissile atom and creating infinitesimal amounts of I-131.

A large problem created by the ongoing chain reaction is the calculation of food doses. The code has no way of modeling the continual production of I-131 and I-134 which can get to people both by milk and from fresh leafy-vegetable consumption.

The Atomic Safety & Licensing Board has an obvious duty to re-evaluate the Applicant's SAMA analysis on the basis on this new and significant information and the public health and safety consequences.

II. THE CONTENTION IS WITHIN THE SCOPE OF THESE PROCEEDINGS

This contention addresses a defect or dispute regarding the Applicant's SAMA analysis, a Category 2 issue, and thus is within the scope of this proceeding. The fundamental purpose of the National Environmental Policy Act, NEPA, 42 USC § 4332, is to "help public officials make decisions that are based on understanding of environmental consequences, and take decisions that protect, restore and enhance the environment." 40 CFR § 1500.1(c). (Emphasis added).

In its application for license renewal of Pilgrim, Entergy was required under 10

CFR § 51 to provide an analysis of the impacts on the environment that could result if it is allowed to continue beyond the initial license. The environmental impacts that must be considered in an EIS include those which are "reasonably foreseeable" and have "catastrophic consequences, even if their probability of occurrence is low." 40 CFR §1502.22(b)(1). The fact that the likelihood of an impact may not be easily quantifiable is not an excuse for failing to address it in an EIS. NRC regulations require that "to the extent that there are important qualitative considerations or factors that cannot be quantified, these considerations or factors will be discussed in qualitative terms." 10 CFR§51.71.

This new contentions seeks compliance with NEPA and is based on the applicant's Environmental Report (ER). 10 CFR§2.309(f)(2).

III. THE ISSUE RAISED IN THE CONTENTION IS MATERIAL

The " issue raised in th[is new] contention is material to the findings the NRC must make to support the action that is involved in the proceeding." 10 CFR§2.309(f)(iv) In considering the license renewal for Millstone Nuclear Power Station, the ASLB stated that "[w]here a contention alleges a deficiency or error in the application, the deficiency or error must have some independent health and safety significance." *In the Matter of Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3) Docket Nos. 50-336-LR, 50-423-LR ASLBP No. 04-824-01-LR July 28, 2004, p. 7. See Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP- 98-7, 47 NRC 142, 179-80 (1998), aff'd in part, CLI-98-13, 48 NRC 26 (1998). The deficiency highlighted in this contention has enormous independent health and safety significance. Further analysis to evaluate how changes to assumptions discussed herein are likely to significantly increase offsite costs that

justifies requiring Entergy to add mitigation to reduce the risk of a severe accident such as adding plant modifications, operational changes and training to increace public safety during license renewal.

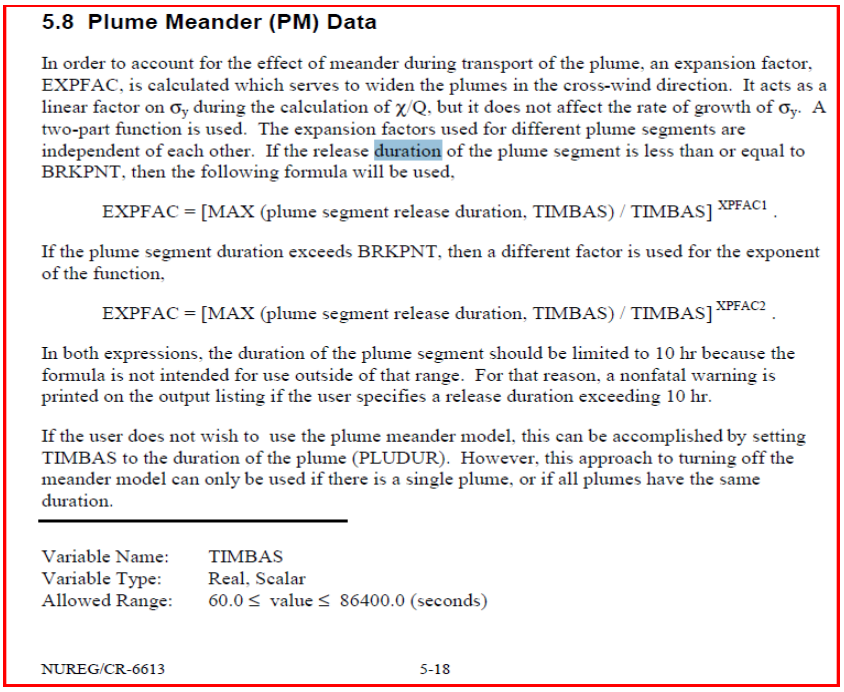
IV. THERE IS A SUBSTANTIAL BASIS FOR THE CONTENTION

Duration Radioactive Releases

The MACCS2 code used by Entergy limits the total duration of a radioactive release to no more than four (4) days, and then only if the Applicant chooses to use four plumes occurring sequentially over a four day period.[3] Entergy chose not to take that option. Entergy limited its analysis to a single plume having a total duration of maximum 24 hours[4]. MACCS2 is completely unable to model the impacts of an 8-week release, with the accident at Fukushima Daachi now entering its third month with no end to the release in sight. This is a generic shortcoming in what NRC considers to be the "state of art" computer model for which David Chanin (the expert Pilgrim Watch relies) was principal developer and architect, and therefore has greater knowledge of its internal workings than anyone because of his ability to "read the code," because no full Model Description for MACCS2 was ever written, much less published.

3 NUREG/CR-6613 Code Manual for MACCS2: Volume 1, User's Guide, 2-2

4 The MACCS2 uses a Gaussian plume model with Pasquill-Gifford dispersion parameters (Users code 5-1). Its equation is limited to plumes of 10 hour duration.



5.8 Plume Meander (PM) Data

In order to account for the effect of meander during transport of the plume, an expansion factor, EXPFAC, is calculated which serves to widen the plumes in the cross-wind direction. It acts as a linear factor on σ_y during the calculation of χ/Q, but it does not affect the rate of growth of σ_y. A two-part function is used. The expansion factors used for different plume segments are independent of each other. If the release duration of the plume segment is less than or equal to BRKPNT, then the following formula will be used,

$$EXPFAC = [MAX (\text{plume segment release duration}, TIMBAS) / TIMBAS]^{XPFAC1}.$$

If the plume segment duration exceeds BRKPNT, then a different factor is used for the exponent of the function,

$$EXPFAC = [MAX (\text{plume segment release duration}, TIMBAS) / TIMBAS]^{XPFAC2}.$$

In both expressions, the duration of the plume segment should be limited to 10 hr because the formula is not intended for use outside of that range. For that reason, a nonfatal warning is printed on the output listing if the user specifies a release duration exceeding 10 hr.

If the user does not wish to use the plume meander model, this can be accomplished by setting TIMBAS to the duration of the plume (PLUDUR). However, this approach to turning off the meander model can only be used if there is a single plume, or if all plumes have the same duration.

Variable Name: TIMBAS
Variable Type: Real, Scalar
Allowed Range: 60.0 ≤ value ≤ 86400.0 (seconds)

NUREG/CR-6613 5-18

In any case a 10-hour plume or even a four day plume is insufficient, as plainly shown by the fact that Fukushima crisis has stretched into its second month. As releases extend into days, weeks and even months, the offsite consequence will be larger, and this will affect the cost-benefit analysis. We also have seen that, at Fukushima which like Pilgrim is at the coast, the plume changed direction during the extended period while criticality continued.

Severe Accident Releases – Continued Criticality After Scram

Entergy used the MACCS2 code to perform its SAMA analysis. The MACCS2, is incapable of modeling a "severe accident" release that lasts 8 weeks or longer because it, and all other consequence codes, assume that when the accident begins, the reactor is scrammed[5], and that the production of all fission products ceases at that time. However we know that criticality is

5 NUREG/CR-6613, 5-26 explains that, "The start time of the plume segment is from the time of accident initiation e.g., reactor scram;" and, 5-26, "time of release …plume (seconds from scram)"

continuing at Fukushima Units 2 and Unit 1, to a lesser extent, because of the continued high findings of I-131 reported by TEPCO. This new and significant information requires a reanalysis of Pilgrim's SAMA, updating and correcting its assumption that there will be no continued criticality.

The following from the Gerson Lehrman Group (April 28, 2011) provides a succinct explanation.

> Data released on April 28, 2011 by TEPCO is now unequivocal in showing ongoing criticalities at Unit 2, with a peak on April 13. TEPCO graphs of radioactivity-versus-time in water under each of the six reactors show an ongoing nuclear chain reaction creating high levels of "fresh" I-131 in Unit 2, the same reactor pressure vessel (RPV) with a leak path to reactor floor, aux building, and outdoor trenches, that is uncontrollably leaking high levels of I-131, Cs-134, Cs-137 into the Pacific Ocean.
>
> **Analysis**
>
> When a nuclear reactor goes "critical" the fissioning of U-235 or Pu-239 becomes a self-sustaining process, called a chain reaction. Fissile material hit by a neutron splits (or fissions) into two atoms with atomic numbers between ~90 and ~140 while "throwing off" a few neutrons which then hit other fissile atoms, and the reaction then continues until it's stopped, usually by dropping the control rods, or reactor scram.
>
> During normal reactor operation, short-lived nuclides like I-131 (8 day) that pose high radiological hazard are created, but they decay quickly. The half-life of I-131 is much shorter than the refueling cycle, and I-131 reaches an equilibrium value quickly. In contrast, the cesium radionuclides that are created decay much more

slowly. Reactor inventories of Cs-134 (2 years) and Cs-137 (30 years) gradually rise during the cycle, reaching a maximum at end of cycle.

When Units 1-3 were all scrammed on March 11, 2011 because of the earthquake-caused station blackout, the chain reaction of splitting fissile U-235 and Pu-239 into numerous fission products came to an immediate stop. Reactor scram means that neutron-absorbing control rods are dropped into the reactor core to absorb enough neutrons that the chain reaction ceases. Because I-131 has no long-lived "parent" to "feed it" by parent decay, the levels of I-131 in scrammed reactors with intact geometry will decrease exponentially with an 8-day half-life; after 5 half-lives (40 days) the I-131 levels are only 3% of what they were at scram.

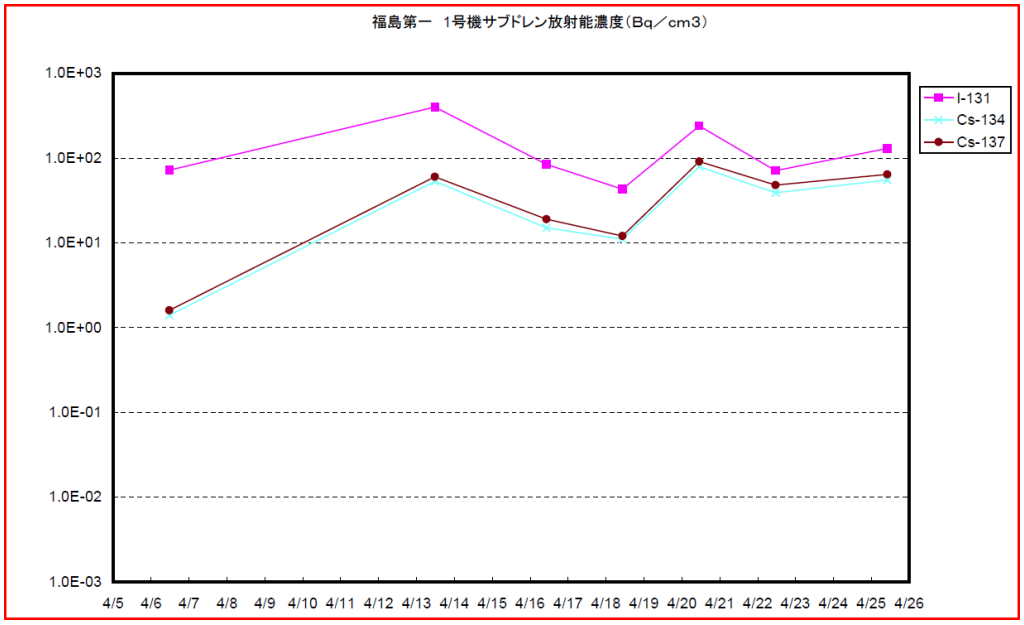
But instead of seeing that expected decrease in I-131 levels relative to Cs-134 and Cs-137 in the regular TEPCO press releases, I-131 was seen to be increasing, instead of decreasing as the physics said it should.

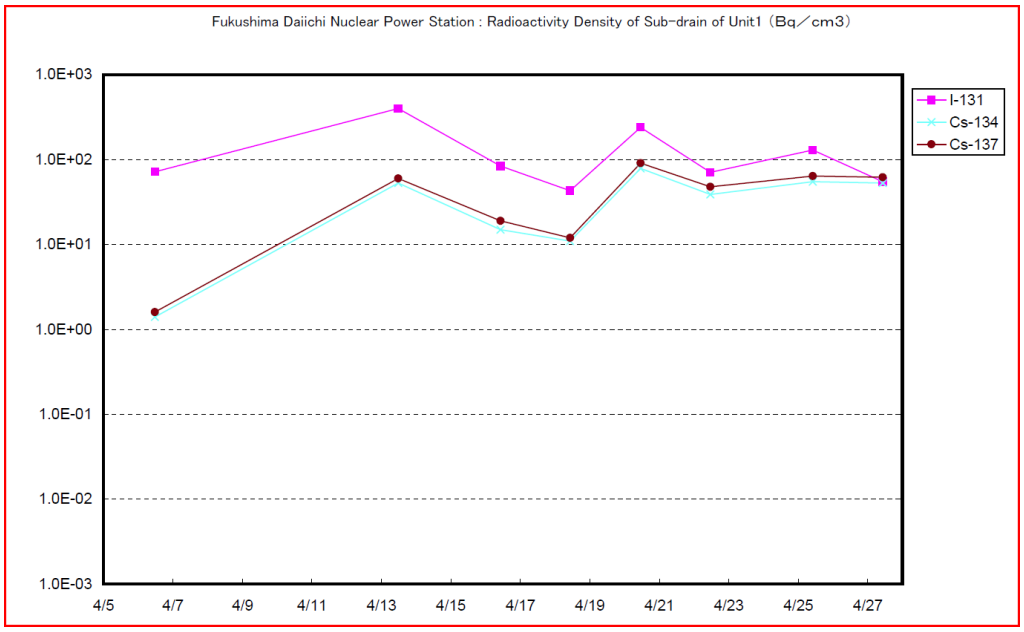
Before TEOCO's April 28 press release with accompanying graphs and table, it seemed that something strange was happening with the elevated I-131 levels, but until this latest news, it was impossible to know where, exactly, was the source of the high I-131 levels.

The answer is clear if you look at the graphs of groundwater radioactivity measurements from all six reactors. "Outlier" Unit 2 is very different; it has I-131 levels roughly 20 times its levels of Cs-134/137. The only possible source of I-131 would be "pockets" of molten core in the Unit 2 RPV settled in such a way that the boron in the injected water is insufficient to stop the localized criticalities.[6]

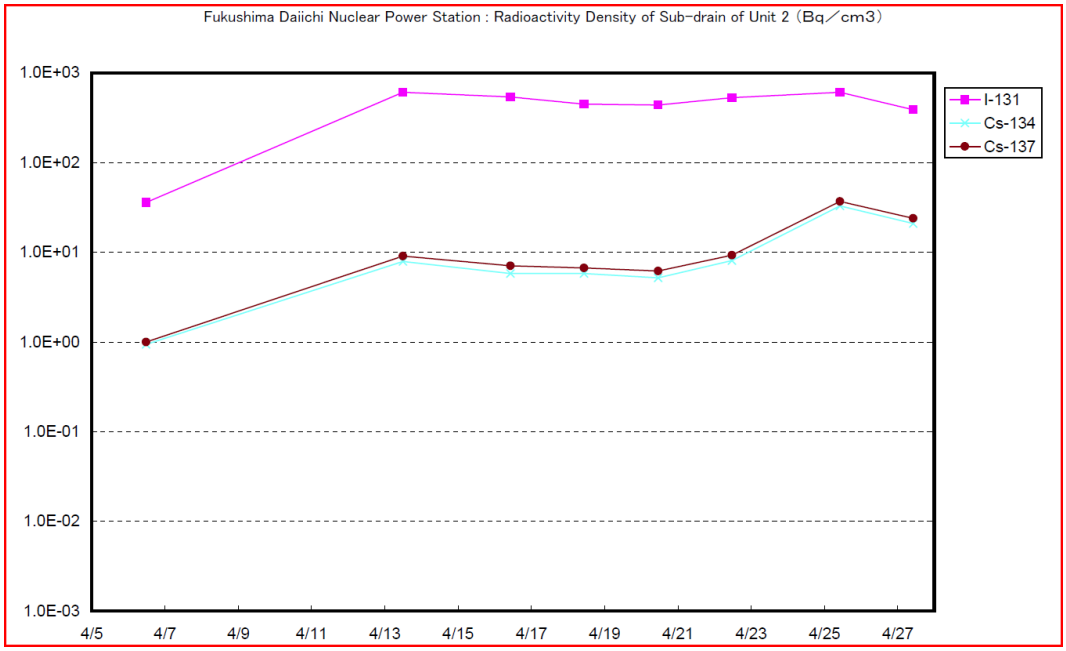
[6] http://www.glgroup.com/News/TEPCO-Data-Shows-Ongoing-Criticalities-Inside-Leaking-Fukushima-Daiichi-Unit-2-53751.html?cb=1

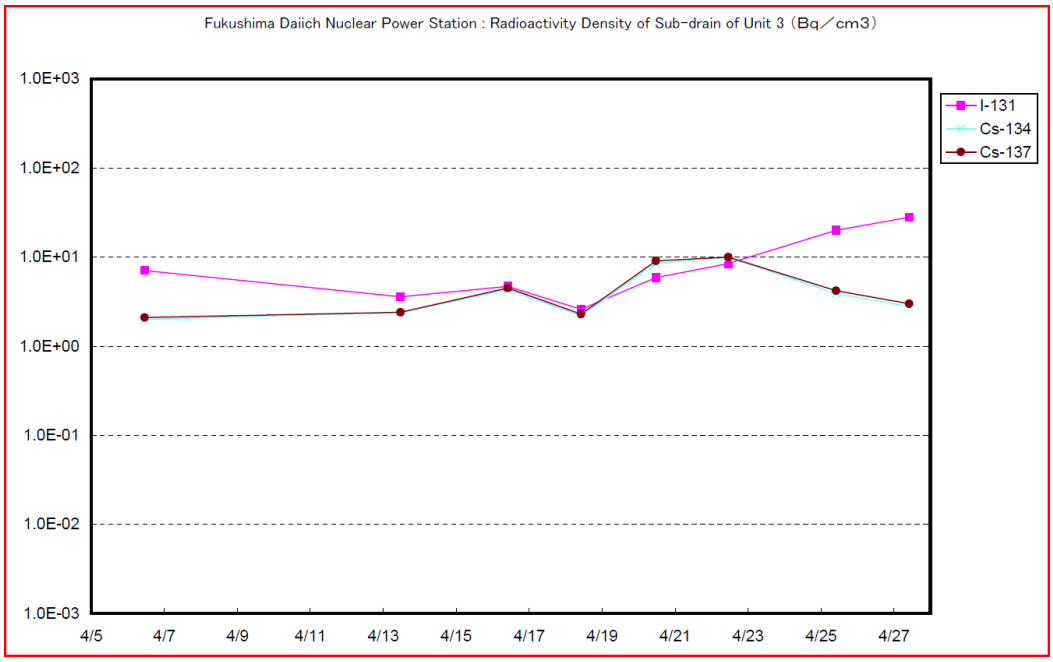
Graphs[7]

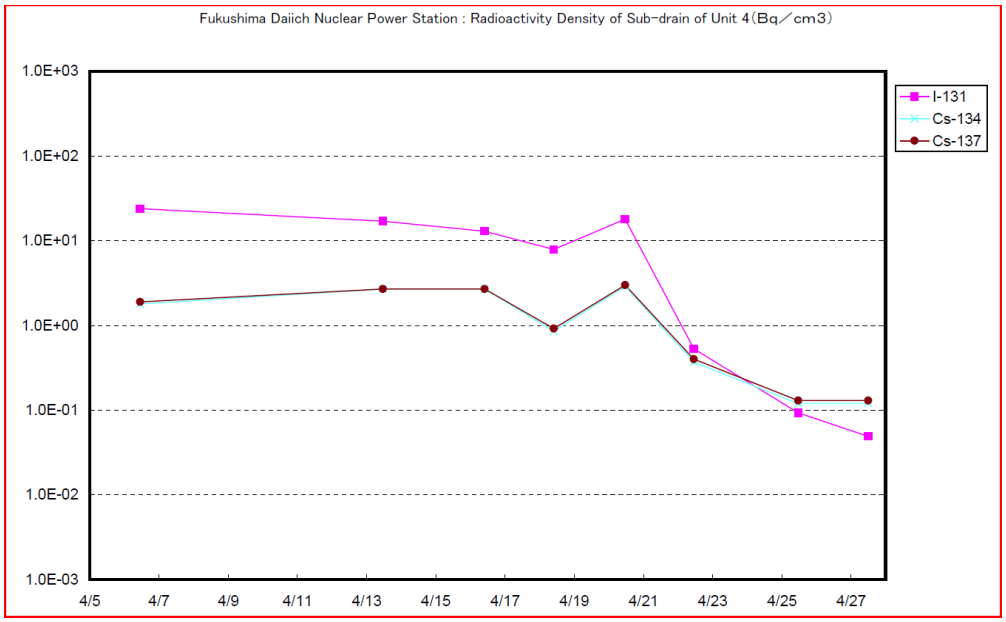


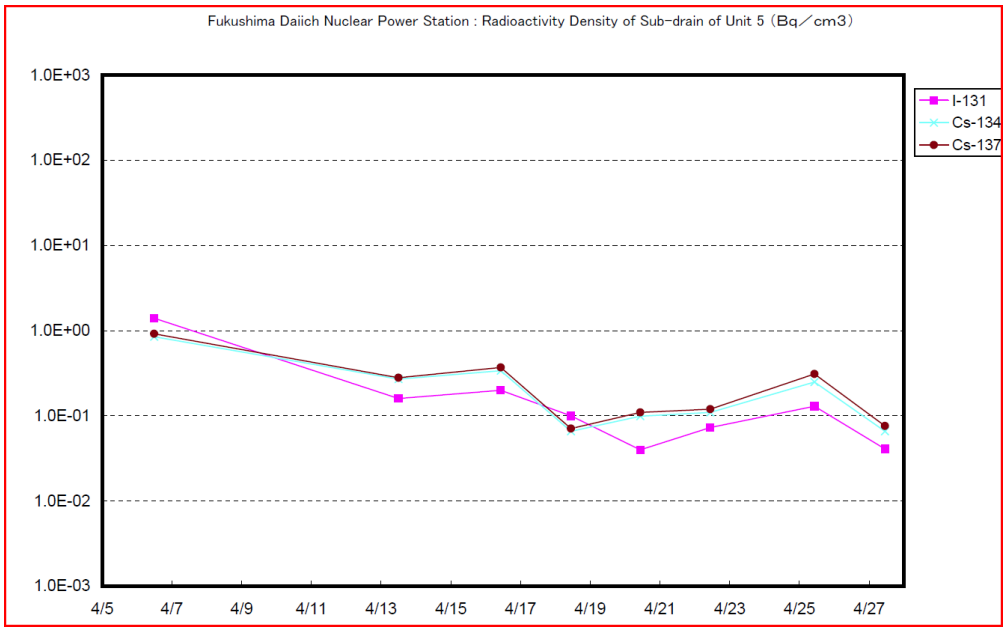


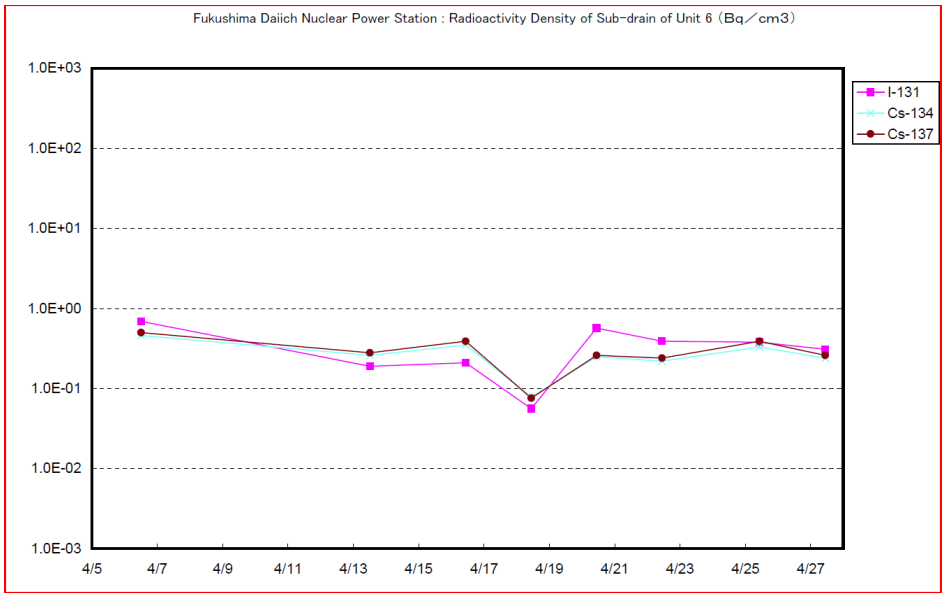
[7] http://www.tepco.co.jp/cc/press/betu11_j/images/110426l.pdf


Fukushima Daiichi Nuclear Power Station : Radioactivity Density of Sub-drain of Unit 2 (Bq／cm3)
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
4/5
4/7
4/9
4/11
4/13
4/15
4/17
4/19
4/21
4/23
4/25
4/27
I-131
Cs-134
Cs-137


Fukushima Daiich Nuclear Power Station : Radioactivity Density of Sub-drain of Unit 3 (Bq／cm3)
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
4/5
4/7
4/9
4/11
4/13
4/15
4/17
4/19
4/21
4/23
4/25
4/27
I-131
Cs-134
Cs-137


Fukushima Daiich Nuclear Power Station : Radioactivity Density of Sub-drain of Unit 4(Bq／cm3)
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
4/5
4/7
4/9
4/11
4/13
4/15
4/17
4/19
4/21
4/23
4/25
4/27
I-131
Cs-134
Cs-137


Fukushima Daiich Nuclear Power Station : Radioactivity Density of Sub-drain of Unit 5 (Bq／cm3)
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
1.0E-03
4/5
4/7
4/9
4/11
4/13
4/15
4/17
4/19
4/21
4/23
4/25
4/27
I-131
Cs-134
Cs-137



In summary, the reactors scrammed on March 11. Once that happened, U-235 should have no longer fissioned, and I-131 should have had no "parent" which would decay to create more I-131 as an ongoing process. At the time of the scam (t-0) the Bq of I-131 and Cs-134 and Cs-137 would all have been approximately equal; after five 1-131 half-lives, the "reactor density" radioactivity of I-131 should be only about 3% of the original.

But the above data by TEPCO reported, for example, on April 19, 2011 show instead of the level of I-131 being **below** the levels of the two cesium nuclides, I-131 is often twice as high as the two cesium nuclides reported.

The only apparent explanation is that, after almost two months, at least one of the scammed reactors (likely reactor 2) is still critical. This Lesson learned at Fukushima, that continued criticality can continue long after a reactor is scammed, requries Entergy to perform a fresh analysis to evaluate how these changes to assumptions and the resulting uncertainties would affect the overall cost benefit analysis.

V. THE CONTENTION IS TIMELY

Under 10 C.F.R 2.309(c), the determination whether the filing of a contention is "nontimely" is "based on a balancing of eight factors, the most important of which is "good cause, if any, for the failure to file on time." Crow Butte Resources, Inc. (North Trend Expansion Project), LBP-08-6, 67 NRC 241 (2008)

The factors, and how each points to the conclusion that this contention should be accepted, are set forth below.

1. Good cause, if any, for failure to file on time.

The Fukushima disaster began on March 11, 2011. The information upon which this contention is based is not yet fully available. However sufficient information has been released by TEPCO to file this request.

"Good cause" has been consistently interpreted to mean that a proposed new contention be based on information that was not previously available, and was timely submitted in light of that new information. Dominion Nuclear Connecticut, Inc. (Millstone Nuclear Power Station, Unit 3), CLI-09-5, 69 N.R.C. 115, 125-26 (2009) citing Pacific Gas & Electric Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 N.R.C. 1, 6 (2008). See also, NRC Digest, Prehearing Matters, 29: "Newly arising information has long been recognized as providing "good cause" for acceptance of a late contention. Consumers Power Co. (Midland Plant, Units 1 and 2), LBP-82-63, 16 NRC 571, 577 (1982), citing Indiana and Michigan Electric Co. (Donald C. Cook Nuclear Plant, Units 1 and 2), CLI-72-75, 5 AEC 13, 14 (1972); Cincinnati Gas and Electric Co. (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 574 (1980), appeal dismissed,ALAB-595, 11 NRC 860 (1980)."

Here is it clear that (1) the information is new and could not have been presented earlier, and (2) Pilgrim Watch acted reasonably and promptly after learning of the new information. See,Texas Utilities Electric Co. (Comanche Peak Steam Electric Station, Units 1 and 2), CLI-92-12, 36 N.R.C. 62, 69-73 (1992).

2. The nature of the requestor's/petitioner's right under the Act to be made a party to the proceeding.

Pilgrim Watch is already a party, and thus clearly has the right under the Act to be, a party to this proceeding.

3. The nature and extent of the requestor's/petitioner's property, financial or other interest in the proceeding.

As said in Pilgrim Watch's originally filed petition (Request For Hearing And Petition To Intervene By Pilgrim Watch –May 25, 2006. Pg.1), and as remains the case, "Pilgrim Watch is a non-profit citizens' organization located at 148 Washington Street, Duxbury, Massachusetts, 02332. It is represented pro se by Mary Lampert who makes her residence and place of occupation and recreation within ten (10) miles of Pilgrim Nuclear Power Station. Under 10 CFR § 2.309 Petitioners have standing to intervene in the license renewal proceedings of Pilgrim because they live within 10 miles of the facility. For reactor construction and licensing proceedings, the NRC has recognized a presumption that people who live within close proximity of the facility (50 miles) have standing to intervene in the proceedings."

4. The possible effect of any order that may be entered in the proceeding on the requestor's/petitioner's interest.

Petitioners believe that if Pilgrim is allowed to operate for an additional twenty years without re-evaluating its SAMA analyses to determine how changes to the assumptions regarding the duration of a release and figuring out how to model criticality occuring after a scam are likely to affect the cost benefit analyis the Petitioner's health, safety, property and finances of Petitioners' members who live, recreate, conduct business and own property within the vicinity of the Pilgrim Nuclear Power Station will be jepordized.

5. The availability of other means for protecting the petitioner's interests.

None of the factors suggesting "other means" referred to in Sec. 2,10.3.3.3E Factor #5 of the NRC Digest are present here. There is no state judicial forum or other NRC licensing procedure to which Pilgrim Watch can take its concerns regarding the fact that no government agency is willing to assume responsibility in the event of an accident at PNPS (See, Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-00-23, 52 NRC 114, 121-122 (2000)). "The suggestion that an organization could adequately protect its interest by submitting a limited appearance statement gives insufficient regard to the value of participatational rights enjoyed by parties - including the entitlement to present evidence. Similarly, assertions that the organization might adequately protect its interest by making witnesses available to a successful petitioner or by transmitting information in its possession to appropriate State and local officials are without merit." Duke Power Co. (Amendment to Materials License SNM-1773 -- Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146, 150 n.7

(1979)." NRC Digest, Prehearing Matters, 38. And a "petition under 10 C.F.R. § 2.206 for a show cause proceeding is not an adequate alternative means of protecting a late petitioner's interests.... Washington Public Power Supply System (WPPSS Nuclear Project No. 3), ALAB-747, 18 NRC 1167, 1175-1176 (1983). See Florida Power and Light Co. (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-90-5, 31 NRC 73, 81 (1990), aff'd, ALAB-950, 33 NRC 492, 495-96 (1991). After all, despite the long history of §2.206, the number of successful petitions brought under that section is extremely small. Dominion Nuclear Connecticut, Inc. (Millstone Nuclear Power Station, Units 2 and 3), LBP-05-16, 62 NRC 56, 67 (2005). (Id.)

6. The extent to which the petitioner's interest will be represented by existing parties.

The other parties to this proceeding are Entergy and the NRC Staff. Throughout this proceeding both NRC Staff and Entergy (in concert with each other) have consistently opposed Pilgrim Watch's interests. There is no reasonable basis to expect that leopard will change its spots.

The NRC has accurately recognized that,

> In weighing the [sixth] factor, a board will not assume that the interests of a late petitioner will be adequately represented by the NRC Staff. The general public interest, as interpreted by the Staff, may often conflict with a late petitioner's private interests or perceptions of the public interest. Washington Public Power Supply System (WPPSS Nuclear Project No. 3), ALAB-747,18 NRC 1167, 1174-1175 n.22 (1983).

NRC Digest, Prehearing Matters, 35; see also NRC Practice Digest, Prehearing Matters, 33: "Participation of the NRC Staff in a licensing proceeding is not equivalent to participation by a private intervenor."

The Board accurately summarized the realities in Turkey Point (NRC Practice Digest, Prehearing Matters, 34-35): "To what extent will Petitioners' interest be represented by existing parties?" must be answered, None. '

7. The extent to which petitioner's participation will broaden the issues or delay the proceeding.

This issues presented by this contention show that further analysis is required based on new and significant information.

However, this "factor includes only that delay which can be attributed directly to the tardiness of the petition. Jamesport, supra, ALAB-292, 2 NRC at 631; South Carolina Electric and Gas Co. (Virgil C. Summer Nuclear Station, Unit 1), LBP-81-11, 13 NRC 420, 425 (1981). Here, there is nothing "tardy" about Pilgrim Watch's petition to add this new petition. It is based on a severe accident that occurred March 11 and on on-going information that became public only a short time ago.

8. The extent to which petitioner's participation might reasonably assist in developing a sound record.

Absent Pilgrim Watch's participation, it is apparent that neither any other party nor the Board will develop any record whatever regarding the subject of this contention.

Pilgrim Watch intends to cover the inadequacies in Entergy's SAMA analysis and show that, new and significant information require a reevaluation of the duration of an accident.

Pilgrim Watch intends principally to rely upon government documents and testimony from David I. Chanin. It would be unreasonable at this date to expect a totally unfunded group to provide detailed testimony from these experts at this time. If it were so required, most members of the public, non-profit public interest groups, and local governments would be unable to file due to lack of resources. Resources for these groups necessarily must be preserved for expert witnesses required at the summary disposition and hearing stage of these proceedings. We trust that it is not the intent of the Commission to restrict participation only to insiders with deep pockets.

The Petitioner satisifies 10 C.F.R 2.309(d), Standing: The Petitioner already is a party to this hearing and has satisfied the requirements.

VI. CONCLUSION

With respect to adequate assurance of public health and safety, we respectfully request that the Board accepts this Request for Hearing so that public health and safety will be properly protected.

Electronically signed

Mary Lampert
Pilgrim Watch, pro se
148 Washington Street
Duxbury, MA 02332
Tel 781-934-0389
Email: mary.lampert@comcast.net
May 12, 2011

STATEMENT OF DAVID CHANIN

1. I have more than 25 years of professional experience in the development, application, maintenance, and verification/validation of large scientific codes, primarily for assessing the environmental impacts of radiological releases, and have worked with various federal agencies and contractors, including the United States Department of Energy (DOE), the United States Nuclear Regulatory Commission (NRC), and Sandia National Laboratories, as a senior risk analyst, project leader, and as a consulting expert, to review, evaluate, and develop risk models to assess the economic and environmental impacts of radiological releases in commercial, military, and government sectors.

2. I also consult as an independent expert to assess the consequences of accidental or intentional releases of radioactive materials to the atmosphere.

3. Through Sandia National Laboratories, I was an architect and developer of the MACCS2 computer code, and I am familiar with the code. MACCS2 is used by the DOE, NRC staff, and NRC licensees to model the doses, health effects, and economic consequences that result from unintended radiological releases into the atmosphere. NRC and its licensees use the MACCS2 code as part of the Severe Accident Mitigation Alternatives (SAMA) analysis.

4. As a consultant to DOE, I was involved in the review and finalization of the MACCS2 Guidance Document and the Final MACCS2 SQA Gap Analysis. I also wrote the User's Guide Code Manual for MACCS2.

5. Along with a colleague, Walter Murfin, I pioneered a model for analyzing the economic impacts if land and structures were contaminated with plutonium from a weapons accident. *Site*

Restoration: Estimation of Attributable Costs from Plutonium-Dispersal Accidents, SAND96-0957 (1996).

6. I have been the principal or collaborating author of a number of scientific and technical publications concerning nuclear risk modeling on behalf of Sandia National Laboratories, Los Alamos National Laboratory, American Nuclear Society Transactions, as well as for private industry and technical workshops.

7. I have read and reviewed the enclosed proposed contention and fully support all its statements.

Electronically signed

David Chanin
1125 Vassar Dr. NE
Albuquerque, NM 87106-2620
Tel: 505 254 1849
Email: David@chaninconsulting.com
Date: May 12, 2011