

The Importance of Transparency in Regulation

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The annual audit plan of the Office of the Inspector General (OIG) of the Nuclear Regulatory Commission (NRC), which was issued in November 2020, included an audit of the NRC's practice of allowing "drop-in" visits. These are closed meetings of senior executives of licensees and NRC management. NRC procedures assume that "drop-in" visits do not concern any matters that are related to pending regulatory decisions that could affect the interests of those licensees. The audit objective was to determine whether NRC policies and procedures for non-public interactions with industry stakeholders are adequate to prevent compromise of the independence of agency staff or the appearance of conflicts of interest. The results of this audit were issued in August 2022. In 2017, the OIG conducted another audit [USNRC, OIG-17-A-23, "Audit of NRC's 10 CFR 2.206 Petition Review Process," August 22, 2017, ADAMS No. MLI7234A561] that focused on the public's trust and confidence in the NRC. That audit examined the procedure that the NRC staff used to evaluate 10 CFR §2.206 enforcement petitions. The OIG found that the NRC staff had not issued a single enforcement order, as the result of 38 enforcement petitions that it had received in the prior three fiscal years, ending in 2016. The OIG concluded that the lack of such actions could adversely affect the public's perspective on the effectiveness of the agency's 10 CFR 2.206 petition process. Both audits are discussed in context with examples that illustrate the NRC's implementation of its policy of transparency, in theory and practice. [DOI: 10.1115/1.4056536]

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1 Introduction

The Nuclear Regulatory Commission's (NRC's) Office of the Inspector General (OIG) audited the NRC's *drop-in* meeting procedures, which are specified in Management Directive (MD) 3.5. [1] The OIG had also audited non-public meetings more than a decade ago. [2] That audit cited MD 3.5, but did not focus on *drop-in* meeting procedures.

The OIG's audit report [3] notes that external stakeholders have expressed concern about the frequency of senior agency management interactions with nuclear power industry representatives, some of which coincide with regulatory decisions such as backfit appeal. NRC guidance requires staff to avoid discussing specific details of regulatory matters with industry representatives in non-public interactions, although staff are permitted to discuss general information pertaining to agency activities.

The objective of this audit is *to determine whether NRC policies and procedures for non-public interactions with industry stakeholders are adequate to prevent compromise of the independence of agency staff or the appearance of conflicts of interest* [3].

In 2017, the OIG audited the procedures the NRC staff uses to evaluate 10 CFR §2.206 enforcement petitions [4]; 10 CFR §2.206 allows the public to petition the NRC to take enforcement action regarding issues that affect public health and safety. The OIG audit found that the NRC staff had not issued a single order, as the result of any of the 38 enforcement petitions that the NRC had received and evaluated over the previous three fiscal years (FYs), which ended in 2016. The OIG concluded that *The lack of such actions could adversely affect the public's perspective on the effectiveness of the agency's 10 CFR 2.206 petition process.* [4]

The two audits, labeled herein as the *Meetings Audit*, and the *Petitions Audit*, respectively, are discussed and illustrated with

examples in context with the NRC's transparency policy and how it implements it.

2 Transparency Policy

The NRC recognizes the public's interest in the proper regulation of nuclear activities and provides opportunities for citizens to be heard. For that reason, to be consistent with "The NRC Approach to Open Government", the agency is committed to providing opportunities for the public to participate meaningfully in the NRC's decision-making process [5].

This statement briefly describes the theoretical basis of NRC's transparency policy. In practice, the NRC does not consistently implement the policy. For example, *between 2010 and 2016, employees at the nation's nuclear power plants filed 687 whistleblower complaints with the NRC. The NRC staff investigated 235 of those complaints and upheld none.* [6]

3 The Meetings Audit

The audit plan [3] mentions, as an example, a *backfit appeal*, during which some non-public meetings were held. *Backfitting* is described, by the NRC, as the process by which it decides whether to issue new or revised requirements or staff positions to licensees of nuclear power reactor facilities. Backfitting is ordered only after passing a formal, systematic review to ensure that required changes are clearly defined, and technically justified. To this end, the NRC is required to conduct an analysis that shows the costs of implementing the backfit order are reasonable when compared to the safety benefit that could be realized. Backfit orders that compel licensees to correct errors or comply with regulations are not required to be justified by backfit analyses. These are called *compliance-based* backfits. This audit has been completed, and its findings were published in August 2022 [7].

The backfit appeal example merits a detailed discussion since it includes both transparent and non-transparent actions. Together,

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they illustrate the NRC's inconsistent application of its advertised policy of transparency.

The OIG's audit plan [3] and its report of findings [7] mention a backfit appeal. This refers to a specific backfit process that began before 2014 when a reviewer noticed several errors and omissions in one licensee's License Amendment Request (LAR) for a power uprating, which was then undergoing its technical review. When the licensee refused to correct the errors and omissions, the reviewer wrote a *compliance-based* backfit order [8] directing the licensee to make the necessary corrections. The NRC staff eventually issued the backfit order [9] in 2015, after almost two years of internal reviews and edits.

The introduction of the OIG's audit findings [7] provides a brief history of the backfit, the two appeals that followed, and the concerns they raised, among internal and external stakeholders, regarding the number and frequency of *drop-in* meetings that occurred during the NRC's evaluations of the backfit appeals. The report states, *External stakeholders and NRC staff have raised concerns to the OIG regarding drop-in meetings. For example, a September 2016 decision by the EDO drew attention to drop-in meetings. A nuclear power licensee appealed the 2015 staff determination that a backfit was necessary at (sic) two of its plants. (Note that four plants are affected: Byron Units 1 & 2, and Braidwood Units 1 & 2.) The Office of Nuclear Reactor Regulation director upheld the backfit determination. However, following the recommendation of a second, ad hoc review panel, the EDO overturned the staff determination in 2016. The reversal of the staff determination concerned both internal and external stakeholders. Freedom of Information Act requests about the backfit appeal revealed that licensee executives had made numerous visits to NRC headquarters during the appeals process. Because some of those visits were drop-in meetings rather than public meetings, stakeholders expressed concern that the backfit matter was discussed during the management meetings, contrary to the NRC meeting policy.*

Drop-in visits are non-public meetings between executives of licensee firms and members of the NRC's senior management. They are controlled by the NRC's Management Directive (MD) 3.5 [1] which states: *Senior executives of a licensee, applicant, or a potential applicant request the opportunity to conduct a "drop-in" visit or similar management meeting with the EDO (Executive Director of Operations), with other senior managers at agency headquarters, or with senior managers of the region in which their facility is located. Because these visits or meetings are usually limited to a general exchange of information not directly related to any regulatory action or decision, they would not typically be public meetings.* In practice, *drop-in* meetings are not open to the public.

Drop-in visits, like all visits, are recorded in the NRC's visitors' log [10]. The dates, times, and participants are listed, but not the discussion topics. Minutes or summaries are not published. It is the NRC's response [10] to an external stakeholder's Freedom of Information Act (FOIA) request for its visitor's log that revealed the specific *drop-in* visits at which this backfit matter might have been discussed.

The OIG's audit report [7] states that audit's objective is to *determine whether NRC policies and procedures for non-public interactions with industry stakeholders are adequate to prevent compromise of the independence of agency staff or the appearance of conflicts of interest.* However, the OIG's audit does not cover the period in which these *drop-in* visits occurred. The report [7] states that *OIG analyzed more than 300 briefing packages from calendar years 2018 through 2021 to understand the frequency of drop-in meetings.* If the OIG audit team wanted to understand the frequency of *drop-in* meetings, particularly meetings at which inappropriate subjects might have been discussed, then it should have looked at the period ending in 2017 (i.e., in Table 3).

The report does not state whether a briefing package was prepared for every *drop-in* meeting. If not, then the audit would be expected to consider the process of writing briefing packages; particularly how NRC management selects the meetings that will be

preceded by briefing packages. It should also discuss the definition of a *drop-in* meeting, and how it differs from other closed meetings. The availability of 300 briefing packages for *drop-in* meetings, conducted over two years suggests that, on average, there would be a 60% chance that a *drop-in* meeting would be occurring on any given day. (This is based upon an assumption of 260 working days per year that is reduced by ten federal holidays. Thus, 300 meetings, convened over a period of 500 working days, amount to the estimated 60% likelihood.)

The discussions, below, are offered as a response or supplement to the audit report [7], which does not consider the backfit, other than a mention in its introduction. Significantly, the audit does not address the period during which the NRC staff hosted dozens of *drop-in* visits with the appellant's executives, while the NRC staff was evaluating their appeals, and two associated 10 CFR §2.206 petitions from the public. The following text provides detailed examples of the NRC's transparent, and non-transparent operations, during the period that lies outside the audit's consideration.

3.1 Two Backfit Appeals. The backfit order [9] of 2015 was appealed, twice, by the licensee, as permitted by Title 10 Code of Federal Regulations (CFR) §50.109, the Backfit Rule. The first appeal was handled in a transparent manner and denied. The second appeal, which was identical to the first appeal, but not handled in a transparent manner, was granted.

The first appeal [11] was made to the issuing office, i.e., the Office of Nuclear Reactor Regulation (NRR). This was denied. [12] The second appeal was made directly to the Executive Director for Operations (EDO). [13] This appeal was granted. [14] The two backfit appeals illustrate transparent and non-transparent evaluations. In summary, the two appeals are one appeal that was submitted to two NRC Offices, each of which produced a different result.

3.1.1 First-Level Appeal. The NRR staff formed a review panel, which convened a public meeting on March 7, 2016 [15] to hear the licensee's appeal arguments, and to allow public stakeholders an opportunity to participate. After almost five months, the NRR review panel denied the licensee's appeal. [12]

Table 1 outlines a chronology of the NRR staff's review, which lists several apparently relevant, non-public meetings, in addition to the public meeting, all of which occurred during the staff's evaluation.

3.1.2 Second-Level Appeal. After the first appeal was denied, the licensee filed a second-level appeal, directly to EDO [13]. The EDO appointed a backfit appeal review panel (BARP) to render its recommendations. Page 2 of the BARP report discloses that *the purpose of this report is to provide information and recommendations to support the EDO's decision on the appeal.* [18] So, the BARP's objective was not to review the appeal. It was to support the EDO's decision.

The BARP did not convene any public meetings; but offered the licensee the option of a public meeting, which the licensee declined. The offer was unusual, and the licensee's response was logical, even expected. The licensee did not need a public meeting since it had the privilege of making *drop-in* visits, which it used frequently.

The BARP took less than 3.5 months to write a report that supported the EDO's decision (i.e., to recommend that the EDO grant the appeal) [14]. There were no public meetings during the BARP's evaluation of the licensee's second-level appeal.

Table 2 outlines a chronology of the BARP's review and the relevant *drop-in* visits that occurred during the review.

3.2 Technical Bases. The BARP's evaluation [18] and the EDO's appeal decision [14] were based solely upon whether the licensee's pressurizer safety valves (PSVs) were capable of water relief. The BARP and the EDO agreed that the PSVs could relieve water and then reseal properly. That, alone, was the

Table 1 Meetings during the First-Level Appeal

Fri	2/28/2014	An NRR reviewer finds errors in the licensee's LAR for a power uprating [8]
Wed	3/23/2015	Non-public meeting with licensee's Senior Vice President (VP) of Licensing & Regulatory Affairs [10]
Fri	10/9/2015	NRR issues a backfit order to Licensee regarding its Byron & Braidwood Nuclear Power Plants (NPPs) [9]
Tue	12/8/2015	Licensee files first-level appeal [11]
Wed	12/9/2015	Non-public meeting with licensee's Assistant General Counsel [10]
Fri	12/11/2015	Non-public meeting with licensee's Sr VP of Licensing & Regulatory Affairs and licensee's General Counsel [10]
Thu	12/17/2015	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	1/7/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Wed	1/20/2016	NEI writes to NRR Director in support of appeal [16]
Thu	1/21/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	3/3/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Fri	3/4/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Mon	3/7/2016	NRR convenes a public meeting to hear first-level appeal [15]
Tue	3/8/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Fri	3/11/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Wed	3/23/2016	Non-public meeting with licensee's General Counsel [10] [17]
Tue	3/29/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Wed	4/20/2016	Non-public meeting with licensee's General Counsel and Sr VP of Licensing & Regulatory Affairs [10]
Tue	5/3/2016	NRR denies Licensee's first-level appeal [12]

EDO's basis for overturning his staff's backfit order [14]. The EDO's decision stated that *In the absence of an assumed failure of the pressurizer safety valve to reseal, the concerns articulated in the backfit related to event classification, event escalation, and compliance with 10 CFR 50.34(b) and General Design Criteria 15, 21, and 29 are no longer at issue.* In this way, the EDO revoked the entire backfit order, including all its concerns that did not pertain to PSVs or their performance. The public was not involved or even informed of this evaluation until it was completed and published.

The EDO relied upon the BARP's report [18], which concluded that: *failures of PSVs to reclose need not be assumed to occur following water discharge if the likelihood is sufficiently small, based on well-informed staff engineering judgment.* The BARP also invoked engineering judgment to set aside other backfit concerns, which were not related to pressurizer safety valve (PSV) performance (e.g., 10 CFR 50.34(b) and General Design Criteria (GDCs) 15, 21, and 29). [9] That is, the BARP members accepted the licensee's claim that its PSVs have the ability to relieve water by way of engineering judgment.

3.3 After the Backfit Appeals. The licensee's *drop-in* visits did not end when the EDO granted its appeal. They continued for almost a year after the appeal was decided. Table 3 outlines a chronology of events, and meetings for that period.

After the EDO granted the licensee's second-level appeal, a member of the public filed two 10 CFR §2.206 enforcement

petitions [25,27] that identified almost two dozen errors and omissions, many of which did not concern PSV performance. The NRC's Petition Review Boards (PRBs) denied both petitions [31,33]. The PRBs repeatedly alluded to the EDO's backfit appeal decision [14] to dismiss the petitions without providing any supporting technical bases. The Petitions Audit, in Sec. 4, addresses the NRC's disposition of 10 CFR §2.206 enforcement petitions.

Less than two weeks after the second petition [33] was denied, the NRR staff re-evaluated the premise of the EDO's backfit appeal decision and concluded that it had *no confidence* in its underlying PSV test results [34]. Specifically, the NRR staff rejected the notion that PSVs would not fail after relieving water. The NRR staff stated that it had *no confidence that these test (EPRI) results provide reasonable assurance that the PSVs will reliably close following subcooled liquid discharge. ... The staff now believes that referencing the EPRI test results as a demonstration of PSV closure capability following subcooled liquid discharge to be inappropriate.* [34]

3.4 No Confidence Letter. So, the basis for the EDO's revocation of the NRC staff's backfit order was refuted by the NRR staff. The NRR staff went on to warn licensees that any future claims of water relief through PSVs would be closely reviewed. However, the EDO's appeal decision was not changed. This evaluation was also not transparent since the result became publicly available only in the NRC's heavily redacted response to a FOIA

Table 2 Meetings during the second-level appeal

Thu	6/2/2016	Licensee files second-level appeal (directly to the EDO) [13]
Thu	6/9/2016	EDO tasks the Committee to Review Generic Requirements (CRGR) to review the NRC's backfitting practice [19]
Thu	6/16/2016	NEI sends letter to EDO in support of licensee's second-level appeal [20]
Mon	6/20/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Wed	6/22/2016	EDO appoints and charters a backfit appeal review panel (BARP) [21]
Tue	6/28/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	6/30/2016	EDO and BARP chairman telephone the licensee's General Counsel [10]
Thu	7/14/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	7/21/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Tue	7/26/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	8/11/2016	PRA report of backfit appeal evaluation is issued [22] (this report is not used)
Tue	8/23/2016	BARP completes its review, without any public meetings, and issues its results [18]
Tue	9/13/2016	First CRGR public meeting [23] and a non-public meeting with licensee's Assistant General Counsel [10]
Wed	9/14/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	9/15/2016	EDO grants licensee's second-level appeal [14]
Fri	9/16/2016	Non-public meeting with licensee's Assistant General Counsel [10]
Thu	9/22/2016	NEI press release reporting the EDO's appeal decision as a <i>win for good government</i> [24]

Table 3 Meetings after second-level appeal (i.e., during evaluations of two petitions)

Tue	11/15/2016	10 CFR §2.206 petition (OEDO-16-00783) is filed [25]
Wed	11/16/2016	Non-public meeting with licensee's Sr VP of Licensing & Regulatory Affairs [10]
Wed	12/21/2016	Senate oversight committee scolds the NRC chairman for allowing the backfit [26] (The staffer who wrote this letter is later appointed to the Commission)
Wed	1/25/2017	10 CFR §2.206 petition (OEDO-17-00075) is filed [27]
Wed	2/1/2017	1 st public meeting regarding 10 CFR §2.206 petition (OEDO-16-00783)
Fri	2/10/2017	Non-public meeting with licensee's General Counsel and Sr VP of Licensing & Regulatory Affairs—both logged in at 6:45 am [10]
Mon	2/13/2017	Non-public meetings with licensee's Assistant General Counsel and outside attorney [10]
Thu	2/16/2017	Internal PRB meetings (i.e., the decision to dismiss the 10 CFR §2.206 petitions) and non-public meetings with licensee's Assistant General Counsel and Licensing Engineer [10]
Fri	2/17/2017	Non-public meeting with licensee's Assistant General Counsel [10]
Tue	2/28/2017	Second CRGR public meeting [28] (scheduled for 3 h; but shortened to 1 h)
Wed	3/15/2017	Second public meeting regarding 10 CFR §2.206 petition (OEDO-16-00783)
Thu	3/23/2017	Non-public meetings with licensee's Sr VP of Licensing and Regulatory Affairs [17] and Assistant General Counsel and licensee's engineering consultant [10]
Wed	3/29/2017	First public meeting regarding 10 CFR §2.206 petition (OEDO-17-00075) [27]
Tue	5/23/2017	Second public meeting regarding 10 CFR §2.206 petition (OEDO-17-00075) [27]
Tue	6/6/2017	NEI sends letter to EDO re GDCs and backfitting [29]
Wed	6/14/2017	BARP admits it did not receive the EPRI test results cited by the licensee [30]
Fri	6/23/2017	Closure of 10 CFR §2.206 petition (OEDO-16-00783) [31]
Tue	6/27/2017	CRGR issues its report regarding NRC's backfitting practice [32]
Tue	8/22/2017	OIG Audit Report (OIG-17-A-23) is published [4]
Wed	8/23/2017	Closure of 10 CFR §2.206 petition (OEDO-17-00075) [33]
Wed	9/6/2017	NRR staff rejects the premise of the EDO's appeal decision [34]
Mon	1/1/2018	Audit period begins. It covers calendar years 2018 through 2020
Thu	12/31/2020	Audit period ends [7,51]
Wed	5/15/2019	RIS 2005-29, "Anticipated Transients that Could Develop into More Serious Events", is withdrawn by the NRC [52]

request [34]. The redactions were justified by the NRC's judgment that they were part of a *deliberative* process (i.e., a final position had not been established) and thereby exempt from certain FOIA requirements. (The *deliberative* process exemption is frequently, and broadly applied to edit or avoid FOIA responses.)

Each Westinghouse-designed pressurized-water reactor (PWR) is typically equipped with three Crosby Model HP-BP-86, size 6M6 (6 in.), spring-loaded pop-type PSVs, which are opened by direct fluid pressure. Both Westinghouse and Crosby specify that these PSVs are qualified to relieve steam, not water.

There are dozens of Westinghouse-designed PWRs, in the United States and other countries, that employ these Crosby valves for overpressure protection, none of which are qualified to relieve water. That is, except for four of the appellant licensee's plants: Byron, Units 1 and 2, and Braidwood, Units 1 and 2, all of which are sited in Illinois. According to the EDO's backfit appeal decision [14] and the BARP's recommendations [18], the PSVs in these plants are accepted as safety valves that are capable of opening, relieving water, and then reseating.

In effect, the NRC is applying two bodies of regulations: one for a favored, influential licensee (i.e., the appellant), and one for everyone else. This was accomplished without any public comment, participation, or even knowledge (i.e., until this information was revealed in the NRC's response [34] to a FOIA request [17]).

3.5 Public and Non-public Meetings. Meetings, in general, may be closed to the public if they involve classified, proprietary, or personnel information. They may be closed in their entirety or for only the portions in which this sort of restricted information is discussed.

Drop-in meetings are always closed to the public. Their existence is not consistent with the NRC's Strategic Plan [5], which states: *The NRC recognizes the public's interest in the proper regulation of nuclear activities and provides opportunities for citizens to be heard. For that reason, to be consistent with "The NRC Approach to Open Government", the agency is committed to providing opportunities for the public to participate meaningfully in the NRC's decision-making process.*

3.6 Meetings During the First-Level Appeal. During its evaluation of the licensee's first-level appeal, the NRR staff convened a public meeting on March 7, 2016 [15] to hear the licensee's appeal. This meeting was attended by members of the licensee's legal staff, including its VP of Licensing and Regulatory Affairs and General Counsel, and its Assistant General Counsel. There were also persons representing (1) the Nuclear Energy Institute (NEI), (2) an outside law firm that represented the licensee, and (3) a supporting engineering services consulting firm. The NRC's visitor's log was searched for the names of these attendees. When found, their visits were noted and listed, chronologically, in Tables 1–3.

With one exception [17], there is very little or no information regarding the discussions that occur at non-public meetings. However, the metadata (e.g., *drop-in* visits' frequency, participants, and timing) implies that backfit appeal issues (i.e., matters that were not of general interest) were probably discussed.

During its review of the licensee's first-level appeal, the NRC staff held a public meeting and hosted 15 non-public meetings with the licensee's legal staff. Table 1 lists the non-public meetings with persons who attended the public meeting on March 7 [15].

There are generally no summaries or minutes of non-public meetings. However, the NRC's FOIA response [17] contains a reference to a series of internal e-mail messages, dated March 15, regarding a briefing package for an upcoming non-public meeting with the licensee's General Counsel. The visit was scheduled to occur on March 23, just 16 days after the public meeting of March 7. (*Drop-in* meetings are not casual walk-ins.) Among the six topics that were listed for discussion, one was the status of the backfit appeal.

3.7 Meetings During the Second-Level Appeal. Table 2 lists the non-public meetings with persons who had attended the public meeting of March 7 [15] and which occurred between the filing of the second-level appeal [13], and its approval. [14]

The record includes a proposed public meeting that did not occur. When the EDO received the licensee's second-level appeal, he appointed a five-member backfit appeal review panel (BARP) to

review it and render its recommendations. The BARP offered the licensee and NEI a public meeting. They declined the offer. The panel's report [18] states, *Both Exelon (Bradley Fewell, Senior Vice President of Regulatory Affairs) and NEI (Tony Pietrangelo, Senior Vice President and Chief Nuclear Officer) declined offers for a public meeting but indicated a willingness to provide information if the Panel identified the need. ... The Panel did not identify a need for additional information from either Exelon or NEI to complete the review documented in this report.* Apparently, the Panel did not identify a need to ask any public stakeholders if they wanted a public meeting.

It would be reasonable to ask why the BARP did not simply convene a public meeting, without consulting the licensee or NEI. Asking the appellant for permission to hold a public meeting raises many questions and conflicts with the NRC's policy of transparency [5]. (No offer of a public meeting was made to any other stakeholders.) The panel completed its review, and the EDO made its decision without convening any public meetings.

In hindsight, it is apparent that the BARP's offer of a public meeting gave the licensee an opportunity to refuse the meeting and thereby avoid answering any questions from the public. Anyway, the Licensee did not need a public meeting since its senior executives always had the option of *dropping in* for non-public meetings with the EDO and other senior NRC officials. This option was used, frequently, by the licensee. This option is not available to members of the public.

Table 2 lists eight non-public meetings during the second-level appeal evaluation. The first meeting was held on June 20, two days before the BARP was formed, and its review charter was defined. [21] Then, on June 30, the EDO and the BARP's chairman called the licensee's Senior Vice President of Regulatory Affairs & General Counsel (who had attended NRR's public meeting on March 7). The record [10] also indicates that the VP's assistant had visited the NRC just two days before the phone call. (This phone call is counted among the non-public meetings.)

Finally, on the day after the EDO's appeal decision was issued, the licensee's Assistant General Counsel paid another visit. (This last visit is not included in the total number of meetings since it occurred after the appeal was granted.)

Table 2 includes the publication of a Probabilistic Risk Assessment (PRA) report [22], 12 days before the BARP's report was issued. [18] The PRA was authorized by the EDO at the request of the licensee. It could have served as another avenue to challenge the backfit order via the cost-benefit study requirement of the Backfit Rule. However, the licensee's second-level appeal was granted. So, the PRA report was not necessary. The unused PRA, which was performed by four NRC employees and two contractors, consumed about a man-year of public resources.

Table 2 indicates that just one week after the licensee filed its second-level appeal, the EDO tasked the Committee to Review Generic Requirements (CRGR) to assess the NRC's backfitting requirements. [19] The CRGR held two public meetings, on September 13, 2016 [23] and on February 28, 2017 [28]. Its second was scheduled to last 3 h, but it was shortened to just 1 h.

3.8 Meetings After the Second-Level Appeal. Table 3 lists the non-public meetings that occurred in the aftermath of the

second-level appeal [13]. It covers the period between the NRC's receipt of two 10 CFR §2.206 backfit-related petitions [25,27], and the NRR staff's *no confidence* letter [34] regarding the basis of the EDO's backfit appeal decision. [14]

Table 3 also indicates that the CRGR held its second of two public meetings [28] and issued its report [32]. Its report stated, *In assessing the adequacy of existing NRC requirements, guidance, criteria, and procedures, the CRGR identified that, in general, these documents are still effective and clear for the topics they cover.*

When the EDO issued his backfit appeal decision [14], he tasked the NRR staff to review the recommendations of Westinghouse's Nuclear Safety Advisory Letter (NSAL) regarding PSV performance after water discharge [35], and the NRC's positions in RIS 2005-29 [36]. Among other things, the NRR staff's review led it to conclude that: *Based on a re-assessment of the EPRI test results, which identified that certain testing had to be terminated to avoid excessive damage to the valves that could adversely impact the ability of a valve to reclose, the staff no longer has confidence that these test results provide reasonable assurance that the PSVs will reliably close following subcooled liquid discharge.* [34] This is in direct conflict with the BARP report [18] which states: *The Panel concludes that the assumption that the PSVs stick open is not necessary for the case of Byron and Braidwood, based on the well-informed technical judgment of prior NRC approvals.* The EDO had relied upon the BARP's recommendations to justify his decision to grant the licensee's second-level appeal.

RIS 2005-29 [36] was withdrawn in 2019 [52]. The appellant licensee's lawyers had objected to the contents of RIS 2005-29 at NRR's public meeting of March 7, 2016 [15]. Since the withdrawal occurred during the OIG audit's period of review [7], it would have been interesting to see if the OIG audit report had specifically identified any drop in meetings with the licensee's lawyers before the date of withdrawal. It did not.

Table 3 also marks the NRC's receipt of a 10 CFR §2.206 enforcement petition [25] and the publication of OIG-17-A-23 [4], which reported the results of the OIG's audit of the NRC's 10 CFR §2.206 petition process. The audit examined 38 petitions that were received over three years. The OIG concluded, *NRC has not issued orders in response to any of the thirty-eight (38) 10 CFR 2.206 petitions filed from fiscal year (FY) 2013 through FY 2016. The lack of such actions could adversely affect the public's perspective on the effectiveness of the agency's 10 CFR 2.206 petition process.*

3.9 Summary of Public and Non-public Meetings. Table 4 lists 33 non-public and *drop-in* meetings involving NRC staff and certain members of the licensee's legal staff (i.e., every meeting included a person who had attended the public meeting of March 7, in which the licensee's first appeal was heard) [15]. Overall, that amounts to two meetings per month or about one meeting every other week.

The summary shows that the appeal decisions cannot be directly attributed to the frequency of non-public meetings. This is hampered by the dearth of information regarding the discussions that occur in such meetings. MD 3.5 claims that pending regulatory

Table 4 Summary

	Table 1 First Appeal: 12/8/2015	Table 2 Second Appeal: 6/2/2016	Table 3 Petitions: 11/15/2016
Appeal Decision	Denied: 5/3/2016	Granted: 9/15/2016	Revised: 9/16/2017
Duration	4.8 Months	3.5 Months	9.7 Months
Public meetings	1	0	4 (Meetings required by MD 8.11 [37] are not always required by the revised MD 8.11 [38])
Non-public meetings	15	6 + 1 phone call	11

matters are not discussed in *drop-in* meetings. It is notable, however, that a status review of the backfit appeal was listed on the agenda of one of these meetings. [17]

Interestingly, the sheer number of meetings that were held in each of the review phases is telling. It raises the question of why so many meetings, involving the licensee's legal principles, were held during these periods.

3.10 Omission of a Public Meeting. On September 15, 2016, the EDO issued his backfit appeal decision. [14] On the same day, the EDO issued SECY-16-0105 [39], in which he informed the Commissioners that *NRC holds over 1,000 public meetings every year, and the NRC will continue to ensure meaningful opportunities for the public and other stakeholders to participate in NRC regulatory activities, consistent with the openness strategies in NRC's strategic plan.* The were no public meetings convened to discuss the licensee's second-level backfit appeal and inform the EDO's decision to grant the licensee's second-level backfit appeal.

4 The Petitions Audit

10 CFR §2.206 was promulgated in 1974, before the NRC was separated from the old Atomic Energy Commission [40]; but its origin can be associated with 1791 (i.e., when the First Amendment was ratified). It prohibits Congress from infringing upon the right of the people to *petition the Government for a redress of grievances.* Arguably, this right can be linked to language in the Declaration of Independence (1776), which lists numerous colonists' grievances that were ignored or dismissed by Parliament. Prominent among these was taxation without representation. Since the NRC was created by Congress, it can be argued that it is subject to the First Amendment's requirements. According to 10 CFR §2.206, *Any person may file a request to institute a proceeding pursuant to §2.202 to modify, suspend, or revoke a license, or for any other action as may be proper.* A 10 CFR §2.206 enforcement petition can be regarded as a public grievance against the government, insofar as it demands that the NRC fulfill its mandate to protect public health and safety by taking specified enforcement action(s).

The OIG's audit of 2017 [4] found the NRC staff had not issued a single order, as the result of any of 38 enforcement petitions that the NRC staff had evaluated over the prior three FYs, which ended in 2016. The OIG concluded that: *The lack of such actions could adversely affect the public's perspective on the effectiveness of the agency's 10 CFR 2.206 petition process.* Two years later, the NRC staff revised Management Directive 8.11, which specifies its procedure for evaluating 10 CFR 2.206 petitions.

4.1 Revision of Management Directive 8.11. The NRC staff has revised MD 8.11, *Review Process for 10 CFR 2.206 Petitions* [37], which was last revised in 2000. One of the objectives of the proposed revisions is to simplify or *streamline* the review process. [38] The 2000 version of MD 8.11 [37] is 58 pages long. The revised version [38] is 36 pages long, and its accompanying desktop guide [41] is 63 pages long. So, the *streamlined* version of MD 8.11 is 99 pages long, or almost 71 percent longer than the original. The revisions are discussed in Ref. [42] and accompanied by a differing opinion. [43] In this case, there was a public meeting to discuss the revisions, on October 20, 2020. [44,45] (Not all the public stakeholders who had commented on prior versions of the proposed revisions, were notified of this public meeting.)

The *streamlined* version of MD 8.11 [39], among other things, shortens the procedure by deleting the text that specifies that Office Directors, *have overall responsibility for assigned petitions. Because 10 CFR 2.206 petitions request enforcement-related action, petitions are assigned to the Office of Nuclear Reactor Regulation, the Office of Nuclear Material Safety and Safeguards, the Office of Enforcement, or the Office of the General Counsel. Therefore, most of the actions described in this directive and the associated handbook apply only to those offices.* The revised MD 8.11

[38,41] does not exclude any unlisted offices, and it sidelines the offices of Enforcement and the General Counsel to advisory roles.

Notably, three years before the MD 8.11 was revised, a petition [25] was reviewed by a PRB that was led by a chairman who was appointed from the Office of Research, and an office that was not listed among the eligible offices and has no regulatory responsibilities. According to MD 8.11, he was not eligible to serve on any PRB. The revised MD 8.11 does not specify any such restriction.

Another part of the revised version of MD 8.11 introduces a procedure that allows the staff to put a petition into *abeyance* (i.e., a delay of an ill-defined duration).

4.2 The Nuclear Regulatory Commissioners' Meeting. On February 8, 2018, the NRC Commissioners held a public meeting with four external stakeholders, and five members of the NRC staff, to discuss proposed revisions to MD 8.11. [37] The meeting was billed as *Discussion of Potential Changes to the 10 CFR 2.206 Enforcement Petition Process.* This process, defined in MD 8.11, had not been revised since 2000. The purpose of the meeting was, *to provide the Commission with perspectives from the staff and stakeholders on the current status of the 10 CFR 2.206 enforcement petition process and potential changes to the process.* MD 8.11 was revised and expanded a year after this meeting [38,41].

The meeting [46] was organized into two 30-min sessions: one for external stakeholders, and one for NRC staff. Each stakeholder was allotted 60 min for a presentation, with slides [46–48]. The first presenter was a professor from George Washington University Law School who made a general presentation regarding *petition processes, and their successes and challenges.* She was followed by NEI's Vice President, General Counsel and Secretary. Then, there was a presenter from the Union of Concerned Scientists, and the last presenter was a petitioner.

The agenda [46] indicates that each participant was allowed just six minutes to speak. The petitioner was asked to address the following topics:

- *Scope and uses of the 2.206 enforcement petition process;*
- *Assessment of effectiveness and efficiency of 2.206 enforcement process;*
- *Views on the staff's proposed changes to the 2.206 enforcement process; and*
- *Recommendations for other potential changes to the 2.206 enforcement petition process.*

After the petitioner's time limit was reached, he was allowed to submit his slides to the meeting record [47]. The second 30-min session was devoted to presentations by the EDO, and four senior staff members from various divisions in NRR. Each presenter was allowed six minutes. The agenda called for the staff to address these topics:

- *Overview of 2.206 enforcement petition process;*
- *Lessons learned from implementing 2.206 enforcement petition process since 2000;*
- *Proposed changes to 2.206 enforcement petition process; and*
- *Public outreach on proposed changes.*

A reading of the agenda [46] reveals that the NEI representative was grouped with the external stakeholders, along with the Union of Concerned Scientists representative, and the petitioner.

NEI personnel often participate in NRC meetings, public and non-public, take positions on NRC policy, and write letters and reports to support or oppose policies, rulemakings, and regulations. There are many NEI reports and letters, among the documents listed in ADAMS, some with NRC support and endorsement. NEI has long been critical of any attempts, by the NRC staff, to issue backfit orders. In this case, NEI had represented the backfit appellant and supported both of its appeals with letters to the NRC [16,20]. NEI's support was also published in its newsletter [24], where it praised the EDO's decision as a *win for good government.*

NEI had even advised the NRC that compliance with GDCs [29] was not important. The backfit order of 2015 [9] identified several

instances wherein the appellant licensee, a major NEI sponsor, had failed to comply with several, specified GDCs.

NEI had supported the second backfit appeal with more than just a letter [20]. Page 3 of the BARP report [18] states: *Both Exelon (Bradley Fewell, Senior Vice President of Regulatory Affairs) and NEI (Tony Pietrangelo, Senior Vice President, and Chief Nuclear Officer) declined offers for a public meeting.* No such offers were made to any public stakeholders. MD 3.5 [1] extends the privilege of *drop-in* meetings to nuclear power industry representatives, but not to members of the public.

The Staff Requirements Memorandum, which was issued after the meeting, is available in Ref. [49]. There is also a video in Ref. [50].

5 Summary

5.1 The Meetings Audit. The backfit example, which is based upon two appeals, illustrates several instances of transparent and non-transparent applications by the NRC staff. The licensee's first appeal was evaluated by the NRC staff, transparently, and denied. The second appeal was evaluated by the EDO, in a non-transparent manner, and granted. The example illustrates how the NRC has employed transparent and non-transparent means to deal with a single issue and reached two different conclusions. The publicly available record lists numerous, frequent, strategically timed, non-public meetings, which occurred during the NRC staff's review and evaluation of both backfit appeals. A year after the second appeal, the NRC staff reviewed this decision and concluded that there was no technical basis for the EDO's evaluation of the second appeal. The public was not informed of the staff's review or its conclusion. This information was released to the public in response to a FOIA request and then only with extensive redactions [34].

Although the staff concluded that it had no confidence in the EDO's appeal decision, it did not (or could not) reverse it. This created a favored licensing status for four of the appellant's plants. In effect, there is now a two-tiered, undisclosed regulation regime at the NRC.

Recall that the OIG audit's objective was ... *to determine whether NRC policies and procedures for non-public interactions with industry stakeholders are adequate to prevent compromise of the independence of agency staff or the appearance of conflicts of interest.* The audit report puts the *appearance of conflicts of interest* into a footnote. The OIG was informed of numerous non-public meetings that occurred during the 18 months, ending 2017, during which the NRC staff was evaluating two backfit appeals and two 10 CFR 2.206 enforcement petitions. The OIG selected a 36-month period, beginning in 2018, for its examination of non-public or *drop-in* meetings. The OIG audit does not provide the audit team's selection criteria. Furthermore, it does not distinguish the difference between non-public and *drop-in* meetings. In this way, the audit's strategic time shift transfers its focus away from *compromise of the independence of agency staff or the appearance of conflicts of interest* and toward matters of administration, controls, communications, and training.

When the audit was concluded, the OIG made four recommendations:

- (1) *Develop and publish a public description of the purposes and benefits of, and the controls on, the drop-in meeting process.* (It is reasonable to ask whether the OIG wants the NRC staff to justify *drop-in* meetings to the public.)
- (2) *Develop guidance to systematize practices across the agency for consistently informing technical staff about drop-in meetings, both before and after the meetings.* (This recommendation pertains only to internal communications.)
- (3) *Develop guidance to systematize practices across the agency for consistently including staff observers as part of staff development and training efforts.* (This recommendation augments the previous recommendation with training and

development. Systematized practices can be used to provide the cover and means needed to avoid accountability in instances of potential conflicts of interest.)

- (4) *Once the new guidance is developed, train all managers on the new guidance and controls for drop-in meetings and related interactions with external stakeholders.* (This recommendation is about training. It mentions external stakeholders; but does not distinguish between public and industry stakeholders. They have very different interests. It is assumed that external stakeholders mean licensees and other industry stakeholders.)

The NRC staff has agreed to apply these recommendations by September 30, 2023.

It seems that if these recommendations were to be implemented, *drop-in* meetings would become more visible to members of the NRC staff, and maybe some industry stakeholders, but not necessarily to the public. It is difficult to see how the implementation of the audit recommendations would further its objective. (i.e., *to determine whether NRC policies and procedures for non-public interactions with industry stakeholders are adequate to prevent compromise of the independence of agency staff or the appearance of conflicts of interest.*)

5.2 The Petitions Audit. The Petitions Audit [4] concluded that the NRC's treatment of 10 CFR §2.206 enforcement petitions undermined the public trust and confidence in the regulator's treatment of petitions. The NRC staff has since revised its procedures for reviewing 10 CFR §2.206 enforcement petitions in ways that make it easier and faster for the staff to dismiss and delay petitions. They appear to serve the staff's interests, not the public's interests. So, the NRC seems to be moving away from transparency, not toward it.

6 Conclusions

The NRC projects an appearance of transparency by advertising a policy of transparency while allowing *drop-in* visits during evaluation periods. Notably, an important evaluation period was not examined by the **Meetings Audit**. The lack of transparency, as seen in the backfit appeals examples, has undermined the NRC staff's confidence in the use of backfit orders, as a tool to correct errors and compel compliance with applicable regulations and standards. Consequently, the staff is not likely to issue any backfit orders, of any kind, until it can be confident that it will not be overruled through non-public interactions with industry stakeholders (e.g., backfit order appellants).

The OIG's **Petitions Audit** preceded a revision of MD 8.11 that allows the NRC to reject, delay, and dismiss petitions with greater efficiency. The NRC's action, after the audit findings were published, indicates the staff values expediency over its mandate to protect public safety, and its responsibility as an independent regulatory agency, created by Congress, to abide by the First Amendment.

Public trust and confidence can be earned by conducting honest reviews of 10 CFR 2.206 petitions, and by reducing or eliminating *drop-in* visits, and/or by opening some meetings to the public. The NRC could also address the ethical issues and public concerns that are created by two-tiered regulation.

The NRC merely projects an appearance of transparency. In practice, the NRC implements its transparency policy in a very selective manner. Consequently, The NRC suffers an erosion of public trust and confidence. The results of both audits predict that this erosion will grow, as the NRC incorporates (i.e., systematizes) non-transparent practices into its regulations, evaluation criteria, and procedures, and even into the methodology of the recent **Meetings Audit**. So, it is not likely that the NRC staff will ever issue another backfit order or resolve the issue of favoring one licensee over others, or ever issue an enforcement order as the result of a 10 CFR 2.206 petition. It seems that the NRC is compromised, like too many other three-letter federal agencies.

Conflict of Interest

There are no conflicts of interest. This article does not include research in which human participants were involved. Informed consent is not applicable. This article does not include any research in which animal participants were involved.

Data Availability Statement

The data and information that support the findings of this article are freely available. <https://www.nrc.gov/reading-rm/adams.html>

Nomenclature

ADAMS = Agencywide Documents Access and Management System (www.nrc.gov)
ECCS = Emergency Core Cooling System
EPRI = Electric Power Research Institute
LAR = License Amendment Request
NRC = Nuclear Regulatory Commission
NRR = Office of Nuclear Reactor Regulation
PWR = pressurized-water reactor

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