



# **ALLEGATION PROGRAM**

## **ANNUAL TRENDS REPORT**

**Calendar Year 2017**

**U.S. Nuclear Regulatory Commission  
Office of Enforcement  
Washington, DC 20555**

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**EXECUTIVE SUMMARY**

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U.S. Nuclear Regulatory Commission (NRC) Management Directive 8.8, "Management of Allegations," dated January 29, 2016, requires the Agency Allegation Advisor to prepare an annual report for the Executive Director for Operations that analyzes allegation trends. This annual report fulfills that commitment by providing national, regional, and site-specific trend analyses. In addition, this report discusses staff activity in calendar year 2017 involving the Allegation Program and related policies. The allegation staff continues to facilitate the agency-sponsored preinvestigation alternative dispute resolution process for discrimination allegations. The NRC believes this preinvestigation process is beneficial to the environment for raising concerns. The preinvestigation alternative dispute resolution process gives an individual and his or her employer (or former employer) the opportunity to resolve an allegation of discrimination through mediation, potentially avoiding lengthy litigation, or an NRC investigation, or both. About 52 percent of the 2017 mediated discrimination concerns reached settlement.

In the 5-year period between 2013 and 2017, the NRC received between 350 and 550 allegations per year<sup>1</sup> concerning reactor plants, materials facilities, and vendors. Over this 5-year period, the number of allegations decreased approximately 30 percent. A number of reactor plants have ceased operations during this time period, and one stopped construction activities; however, all but two of those plants were the subject of very few allegations before they changed status and therefore had little impact on the declining trend in allegations year to year. Although the change in status of the two sites, which were previously the subject of more than an average number of allegations, could certainly have contributed to the decline, that alone does not fully explain the drop in allegation volume. The decline, therefore, might also suggest stronger environments for raising concerns at most regulated entities, both the overall decline and, specifically of note, the marked decrease in discrimination and chilled work environment concerns during this period.

Each allegation can include multiple concerns. Over the past 5 years, the trend in the total number of concerns has paralleled the trend in total allegations (i.e., as the number of allegations has increased or decreased, the number of concerns has increased or decreased correspondingly). In 2017, coinciding with the overall decrease in allegations received, the total volume of allegation concerns received decreased as well. More specifically, the number of allegation concerns received in two of the four regional offices decreased. Region II alone received 47 percent fewer allegation concerns in 2017 than it did in 2016, in part caused by the drop in concerns from two reactor construction sites and one operating reactor site.

Discrimination concerns constituted the largest percentage of nationwide reactor allegations. In 2017, discrimination concerns decreased by 34 percent compared to the previous year. As was the case in 2016, more than half of the claims were made by contractor employees, both current and former. Workers at one reactor site under construction represented approximately 26 percent of the discrimination concerns raised. The most often alleged retaliatory action taken was termination for engaging in the protected activity of raising a concern to a supervisor or a supervisor's manager. Alleged discrimination for raising concerns to all the other reporting avenues combined, including senior management, corrective action program, employee concerns program, and the NRC, constituted less than half of the remaining discrimination claims.

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<sup>1</sup> An allegation is defined as "a declaration, statement, or assertion of impropriety or inadequacy associated with NRC-regulated activities, the validity of which has not been established" in Management Directive 8.8.

Chilling effect or chilled work environment concerns constituted the second highest percentage of reactor licensee concerns received nationwide in 2017, although 56 percent fewer were received than the previous year. The most often mentioned behaviors alleged by individuals to cause them or others to hesitate to raise safety concerns involved a perception that management retaliated against others for raising concerns or that management did not address concerns previously raised by employees.

For some in the regulated community, the NRC received allegations in numbers that warranted additional analysis.<sup>2</sup> In preparing this report, the staff reviewed a 5-year history of allegations for reactor and materials licensees and vendors to identify adverse trends. The analysis focused on allegations that originated from onsite sources to help inform the NRC's review of the environment for raising concerns. Because a large volume of allegations from onsite sources could be indicative of a chilled work environment, the staff selected the following two operating reactor sites and one reactor site under construction for more indepth review:

- Watts Bar Units 1 and 2
- Pilgrim
- Vogtle Units 3 and 4

This report discusses allegation trends at each of these sites. In summary, the trends did not suggest a concern about the environments for raising concerns. For those sites that had previously been determined to be chilled (i.e., not conducive to raising safety concerns internally), or through substantiated 2017 allegations had identified challenges to the environment for raising concerns in certain departments on site, the licensees are taking actions to address the weaknesses, and the NRC is closely monitoring the ongoing activities.

Finally, in 2017, the NRC reviewed the effectiveness of nine Agreement State responses to concerns and concluded that, in all but one case, the Agreement States continue to address concerns promptly, thoroughly document their investigations and closeout actions, inform the concerned individuals of the outcomes, and protect the concerned individuals' identities. One State's practices were found to be satisfactory but in need of improvement.

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<sup>2</sup> The total number of allegations received concerning reactor and fuel facility licensees from all sources, as well as other information concerning the Allegation Program, appears on the NRC's public Web site at <http://www.nrc.gov/about-nrc/regulatory/allegations/statistics.html>.

## TRENDS IN ALLEGATIONS

The U.S. Nuclear Regulatory Commission (NRC) monitors allegations to discern trends or marked increases that might prompt the agency to question a licensee about the causes of such changes. In preparing this report, the staff reviewed a 5-year history of allegations received for reactor and materials licensees and vendors. The staff focused on allegations with the potential to offer insights into the environment for raising concerns (i.e., safety conscious work environment (SCWE)) at a given facility. Such allegations include those submitted by current or former licensees, contractor employees, or anonymous sources that indicate a hesitance to raise safety concerns internally. For power reactor facilities, the staff analyzes recent allegation activity in support of the Reactor Oversight Process (ROP) end-of-cycle assessments. In addition, the staff might analyze a particular site or licensee whenever allegations or inspection findings indicate that such an analysis is warranted.

The staff also reviews national trends for reactor and materials allegations, shifts in users of the Allegation Program, and the effect that the implementation of the program has on the workload in the NRC regional and program offices. The following section discusses these trends.

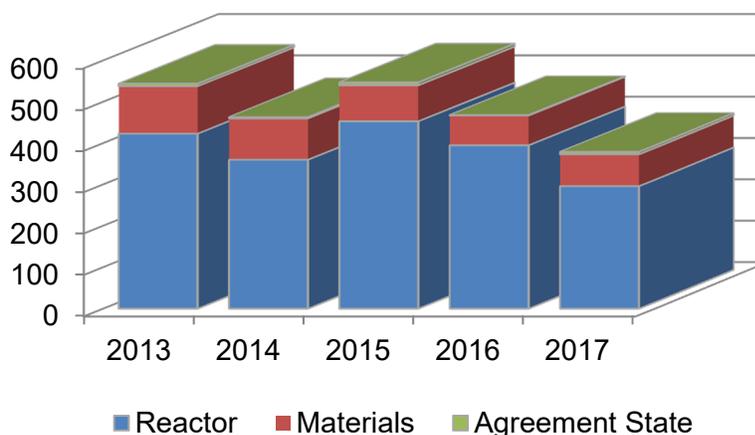
### National Trends

National trends inform the staff about the effect of external factors, plant events, and industry efforts to improve the SCWE at NRC-licensed facilities. The staff can use national trends to help develop budget and planning assumptions to support future agency and Allegation Program needs.

Figure 1 shows that the NRC receives between 300 and 600 allegations each year and that there has been a declining trend in the total number of allegations received from calendar year 2013 through 2017. Although there was a decrease in allegations involving reactor licensees in 2013,

allegations involving a number of materials licensees increased. The decrease in allegations involving reactor licensees continued in 2014, and those involving materials decreased as well. Despite the trend of reactor-related allegations reversing itself in 2015, in large part because of concerns raised about construction site activities associated with new reactors, it declined again in 2016 and 2017. Over this 5-year period, the number of allegations decreased approximately 30 percent. A number of reactor plants ceased operations during this time period, and one that ceased construction activities; however, all but two of those plants were the subject of very few allegations before they changed status and therefore had little impact on the declining trend in allegations year to year. Even for the two sites that were the subject of more than an average number of allegations before their change in status, their contribution to the decline could, at

**Figure 1 Allegations Received by Calendar Year**



best, account for less than 40 percent. The decline, therefore, might also suggest stronger environments for raising concerns at most regulated entities.

The number of allegations that the NRC processed for Agreement State matters continues to be minimal. Under the authority granted in Section 274b of the Atomic Energy Act of 1954, as amended, the NRC may relinquish its authority to regulate certain byproduct material, source material, and limited quantities of special nuclear material to a State Government through a mutual agreement. A State that has entered into this agreement with the NRC is called an Agreement State. When individuals contact the NRC with concerns about Agreement State licensees, the NRC staff will explain the Agreement State program to the individual. Most of these individuals will then indicate a willingness to contact, and be contacted directly by, Agreement State personnel about the evaluation of their concerns. The NRC forwards these matters to the Agreement State and does not process them as allegations. Generally, the NRC only uses the Allegation Program to track the evaluation of concerns about Agreement State licensees when the concerned individual does not want his or her identity to be revealed to the Agreement State.

Because each allegation can include multiple concerns, the number of concerns received can supply more specific information on the staff effort needed for an appropriate response. Typically, each allegation represents two to three concerns. Over the previous 5 years, the trend in the total number of concerns has paralleled the trend in total allegations (i.e., as the number of allegations has increased or decreased, the number of concerns has increased or decreased correspondingly). In 2017, coinciding with the overall decrease in allegations received, the total volume of allegation concerns decreased as well. More specifically, the number of allegation concerns decreased in Region II and Region III, as well as in the Office of Nuclear Reactor Regulation, the Office of New Reactors, and the Office of Nuclear Security and Incident Response. Region II alone received 47 percent fewer allegation concerns in 2017 than it did in 2016, in part because of the drop in concerns from the new construction sites and one operating reactor site. Region I, Region IV, the Office of Nuclear Material Safety and Safeguards, and the Office of International Programs received more allegation concerns in 2017 than the previous year.

### Reactor Licensee Trends

To offer further insight into areas in which the NRC is allocating resources for the evaluation of reactor-related allegations, Figure 2 shows the 12 functional areas that represent approximately 80 percent of the issues about which allegations were received nationwide in 2017.<sup>3</sup>

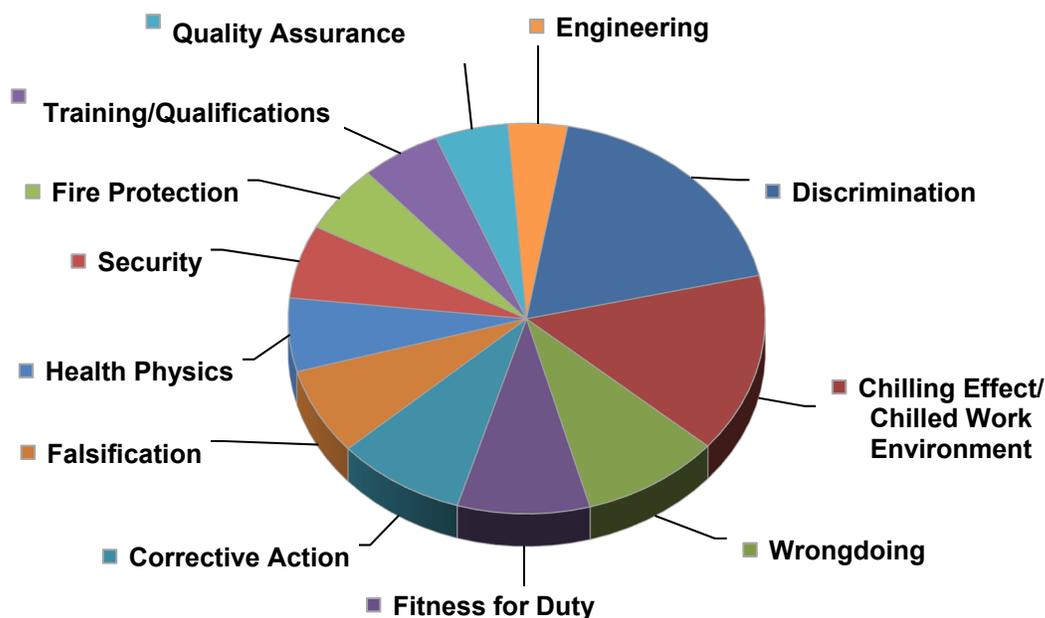
Figure 2 shows that discrimination concerns constituted the largest percentage of allegations received nationwide. A review of all discrimination concerns received in 2017 found trends in both the source and site variables. As was the case in 2016, more than half of the claims were made by contractor employees, both current and former. Workers at one reactor site under construction represented approximately 26 percent of the discrimination concerns raised. The most often mentioned retaliatory adverse action taken was termination; however, there were also a number of complaints alleging unfavorable performance appraisals. A variety of perceived reasons the adverse action was taken was expressed, including raising concerns to

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<sup>3</sup> The agency received few allegations about concerns in areas not shown in Figure 2, which represent the remaining 20 percent of the issues received. These areas include access authorization, chemistry, civil and structural, construction, electrical, emergency preparedness, employee concerns programs (ECPs), fatigue and overtime, industrial safety, instrumentation and control, licensing, maintenance, mechanical, operations, procurement, radwaste, safeguards, and safety culture.

the NRC or to an ECP; however, the majority of the alleged protected activity was raising concerns to supervisory management. At the time this report was prepared, none of the discrimination concerns raised in 2017 had yet been substantiated by the agency; however, over half were still open and were either being investigated or were within the NRC's preinvestigation alternative dispute resolution (ADR) process. About 52 percent of the 2017 ADR-mediated discrimination concerns reached settlement. Finally, approximately 8 percent of alleged filers filing a discrimination concern that were offered either ADR or an investigation withdrew their complaint before the agency reached a conclusion.

**Figure 2 Reactor Concerns Nationwide 2017**



In 2017, chilling effect/chilled work environment concerns decreased by 56 percent compared to 2016. The NRC uses the term chilling effect to describe a condition that occurs when an event, interaction, decision, or policy change results in a perception that the raising of safety concerns to the employer or to the NRC is being suppressed or is discouraged. A chilled work environment is a condition where the chilling effect is not isolated (e.g., multiple individuals, functional groups, shift crews, or levels of workers within the organization are affected). A chilled work environment is often referred to as a condition that is the opposite of a SCWE. Concerns of this nature were received at a consistent rate throughout the year and from licensee, contractor, and anonymous employees in almost equal numbers. More concerns about the environment for raising concerns in maintenance and security departments were received than other reactor organizations. Two-thirds of the alleged chilled work environments in the maintenance department were raised about two reactor sites in Region IV, while almost half of the concerns involving security department work environments involved multiple Region II reactor sites. The most often mentioned behaviors alleged by individuals to cause the chilling effect involved a perception that management retaliated against others for raising concerns or that management did not address concerns raised by employees.

As for the wrongdoing-related concerns received in 2017, over a third were brought to the NRC's attention by licensee management. As discussed later in this report on the different

sources of allegation concerns, a licensee representative, acting in his or her official capacity, will sometimes report to the NRC potential wrongdoing issues he or she is evaluating. The agency staff assigns an allegation process tracking number to such items so that the evaluation progress related to the alleged wrongdoing issue may be tracked. These concerns involved multiple reactor sites, and the largest percentage of wrongdoing concerns were related to persons providing inaccurate and incomplete information to or withholding information from the regulator.

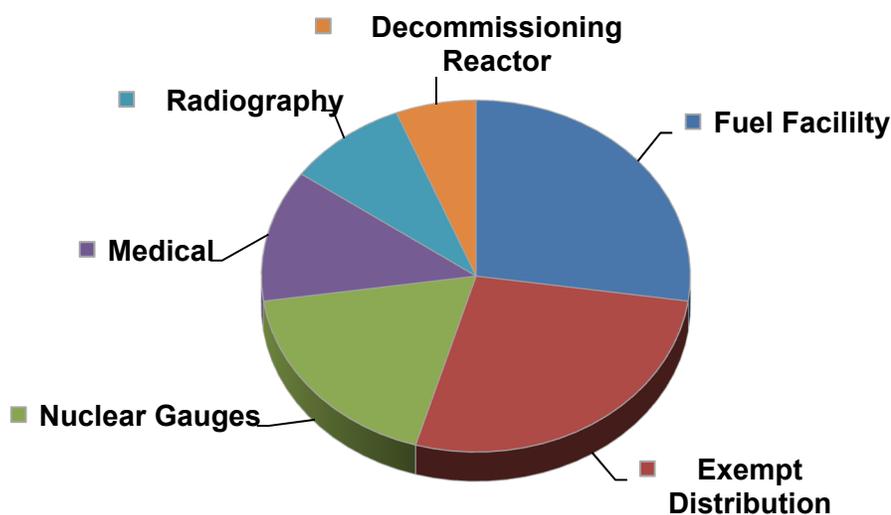
The number of concerns involving the NRC's fitness-for-duty regulations was one of the few areas that increased in 2017. Again, the concerns involved multiple reactor sites but approximately a quarter were associated with one new reactor construction site. The concern most often raised involved fitness-for-duty procedural noncompliance.

The only trend of note in the corrective-action-related concerns was that the majority of concerns were raised by licensee, as opposed to contractor, employees. The concerns about the corrective action program (CAP) primarily dealt with the program not being implemented in accordance with procedures or reported problems not being properly addressed. Multiple reactor sites were involved and few were the subject of more than one concern.

### Materials Licensee Trends

A comparison of the types of materials issues in received allegations does not produce meaningful results because there are many different types of materials licensees and the activities they perform vary greatly. To offer insights into areas in which the NRC focused its attention on materials-related allegations, Figure 3 shows the six types of materials licensees that accounted for about 80 percent of allegation concerns that the NRC received nationwide.<sup>4</sup>

**Figure 3 Allegations by Type of Materials Licensee Nationwide 2017**



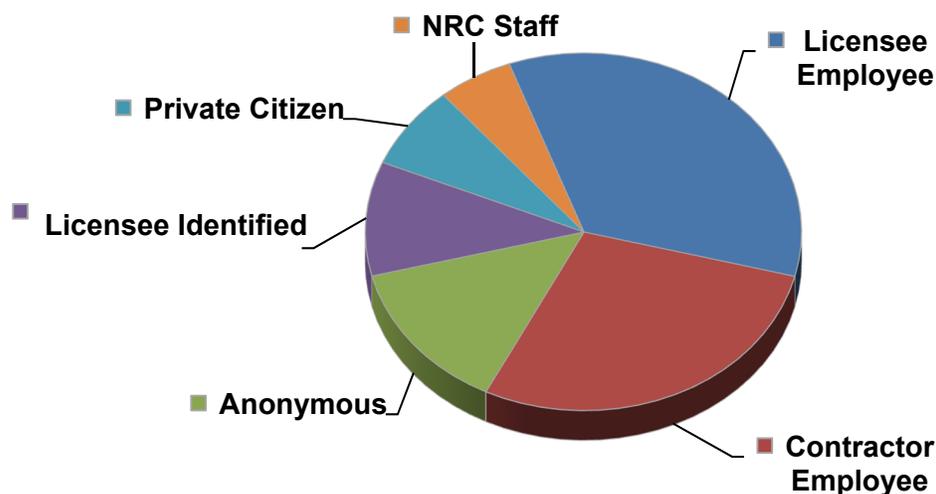
<sup>4</sup> The agency received few concerns about the materials licensee types that are not shown in Figure 3, which represent the remaining 20 percent of the issues received. These licensee types include decommissioning materials, academic, casks, irradiators, research and development, transportation, uranium recovery, tritium

The NRC received about 14 percent more materials allegations in 2017 compared to the previous year. For several years, the number of allegations related to fuel cycle facilities has constituted the highest percentage of materials allegations. For this reason, overall fluctuations in the receipt rate of materials allegations have primarily been the result of changes involving one or more fuel cycle facilities. In 2017, however, although the number of allegations concerning fuel facilities decreased, the number of concerns about exempt distribution products doubled, explaining the overall increase in materials-related allegations. Exempt distribution products include, among other things, silicon chips, gunsights, and smoke detectors that are distributed by persons who have a specific license from the Commission authorizing such distribution to persons exempt from the requirements for an NRC license.

### Source Trends

Figure 4 shows a breakdown of 97 percent of the sources for reactors and materials allegations received in 2017.<sup>5</sup> The data indicate that the distribution of source categories remained consistent from 2013 to 2017. That is, employees of licensees (or former employees) and contractors (or former contractors) continue to be the primary sources of allegations. Although the number of licensee and contractor employees raising allegations decreased by about 28 percent in 2017, they continued to be the largest groups of allegers coming to the NRC. Persons wishing to remain anonymous continued to be the third largest source of allegations, and the number of anonymous allegers increased slightly. In considering those allegation sources mentioned previously that have the potential to offer insights into the SCWE at a given facility (i.e., allegations submitted by current or former licensee or contractor employees or by anonymous sources), the percentage of allegations from these sources has consistently remained around 75 percent annually. Two of the source categories deserve some explanation.

**Figure 4 Allegations by Source Category Nationwide 2017**



light sources, and general licensees.

<sup>5</sup> The NRC received few concerns from the 3 percent of sources not shown in Figure 4. These sources include news media, State agencies, special interest groups, and other Federal agencies.

The source category “NRC Staff” designates an NRC staff member who suspects that a regulatory requirement has been violated deliberately or because of careless disregard, thus prompting the initiation of an investigation by the NRC Office of Investigations. The volume of NRC staff-suspected concerns declined in 2017 by approximately 33 percent. The source category “Licensee Identified” denotes that a licensee representative, acting in his or her official capacity, has reported potential wrongdoing to the NRC. The agency staff assigns an allegation process tracking number to such items so that the evaluation progress related to the alleged wrongdoing issue may be tracked. Licensee-identified wrongdoing concerns also decreased in 2017.

### **Allegation Trends for Selected Reactor Sites**

Trending the number and nature of allegations for specific reactor sites, individually and in the aggregate, is one method the NRC staff uses to monitor the SCWE at reactor sites. The appendix to this report offers statistics on allegations for all operating and nonoperating reactor sites. The NRC received the listed allegations during the 5-year period between January 2013 and December 2017 and includes only allegations received from onsite sources (i.e., those that might indicate the health of the SCWE). Onsite sources include current or former licensee employees, current or former contractor employees, and anonymous alлегers. For the purpose of this analysis, the NRC assumed that anonymous allegations came from onsite personnel.

Because a large volume of allegations from onsite sources might indicate a SCWE at risk, the staff conducted a more indepth SCWE review of certain sites with larger numbers of onsite allegations. And because sites with a larger population of employees and contractors (such as three-unit reactor sites) typically generate more allegations, it is important to normalize the data to help ensure that the NRC does not disproportionately choose larger sites for further analysis. The following algorithm based on the median number of allegations received at operating reactor sites over the calendar year, and that considers the varying workforce size at different sites, determines what sites warranted this additional review:

- 1-unit reactor sites (or any site with fewer than 800 persons) with an onsite allegation volume greater than 2.25 times the median
- 2-unit reactor sites (or any site with 800 to 1,000 persons) with an onsite allegation volume greater than 3 times the median
- 3-unit reactor sites (or any site with more than 1,000 persons) with an onsite allegation volume greater than 4.5 times the median

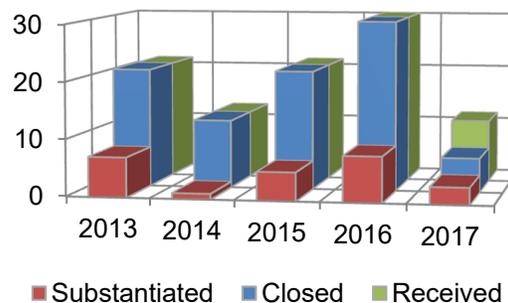
The staff recognizes, and takes into consideration when applying the above criteria, that during times of significant site activity, the site population might increase substantially.

For 2017, the median number of allegations per operating reactor site was three. The following reactor sites met the criteria for additional review: Watts Bar Units 1 and 2 (11) and Pilgrim (8). The NRC also applied the criteria to nonoperating (e.g., preoperating license) sites and found that Vogtle Units 3 and 4 (35) also met these criteria. The following sections discuss the staff’s analyses of the SCWE at these reactor sites.

### Watts Bar Units 1 and 2

The number of allegations received by the NRC from onsite sources regarding Watts Bar Units 1 and 2 in 2017 decreased significantly after a 2-year increasing trend. Furthermore, the rate of receipt throughout the year also decreased, after a spike in the second quarter corresponding to a forced outage in Unit 2. The NRC received allegations in equal numbers from licensee employees and contractors and in a number of diverse disciplines. The 11 allegations received involved multiple concerns and slight trends were noted in the operations, mechanical maintenance, and fire protection departments. The trend in discrimination concerns mirrored those of other concerns in that the number of discrimination concerns decreased in 2017 after increasing the previous 2 years. The NRC received four discrimination concerns associated with the site in 2017. Three were still open and in the NRC's preinvestigation ADR process at the time this analysis was prepared. No discrimination concerns have been substantiated in the past 5 years, although some claims have been successfully mediated and reached settlement using the NRC's preinvestigation ADR process.

**Figure 5 Watts Bar 1 and 2 Allegations**



The NRC received three allegation concerns in 2017 asserting a chilled work environment or chilling effect. This is a significant decline from the 15 received in 2016, many of which were received after the NRC issued the licensee a Chilling Effect Letter (CEL) on March 23, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16083A479), concluding that the operations department was chilled. All three 2017 chilled work environment allegations were received anonymously. They were the only allegations received anonymously and, like the trends in all allegation concerns, represented a declining trend in anonymous concerns compared to 2016. The NRC received two of the three chilled work environment concerns in the second quarter of the year and received the final concern late in the third quarter. The staff evaluated two of the three concerns and did not substantiate them. The remaining concern was too vague to evaluate and, because it was received anonymously, the staff was unable to get additional information from the concerned individual to facilitate a meaningful evaluation.

The NRC conducted the most recent biennial problem identification and resolution inspection (PI&R) in the fall of 2016 and included an evaluation of the licensee's SCWE. PI&R inspection activities occurred on site beginning the week of September 12, 2016 (Part 1, ADAMS Accession No. ML16300A409), and continued on October 31, 2016 (Part 2, ADAMS Accession No. ML17069A133). The PI&R Part 1 inspection focused on the overall status of the Watts Bar work environment and corrective actions taken to improve the SCWE since the issuance of the CEL, and Part 2 included a review of the licensee's evaluation of the root cause of the chilled work environment in operations. The inspection concluded that the initial root cause evaluation did not include all pertinent events before June 2015, nor did it provide an adequate basis to close the licensee's extent-of-condition review. Based on interviews and document reviews conducted by the NRC during Part 2 of the PI&R inspection, the team concluded that the conditions that prompted the issuance of CEL extended beyond the operations department, and the corrective actions to address the CEL should appropriately be extended sitewide. The

inspection team also found a lack of documentation and tracking of department-specific actions outside of the operations department that could have impeded the site's ability to thoroughly evaluate the effectiveness of actions to fully address the sitewide SCWE challenges. Finally, an apparent violation of the 2009 Confirmatory Order (CO) was also identified. The apparent violation involved the licensee's failure to implement a process to review proposed licensee adverse employment actions at Watts Bar, to determine whether the proposed action comports with employee protection regulations, and to ascertain whether the proposed actions could negatively affect the SCWE at the site. In response to the apparent violation, the NRC and licensee, Tennessee Valley Authority (TVA), participated in a successful ADR mediation, which resulted in a new CO issued on July 27, 2017 (ADAMS Accession No. ML17208A596).

Since that time, the licensee has taken a number of actions to address both the CEL and CO, including revising training and processes and conducting safety culture assessments. Oak Ridge Associated Universities conducted a safety culture assessment in the late summer of 2017, concluded that the safety culture was improving but identified challenges in the safety culture traits, "leadership safety values and actions," "effective safety communications," and "respectful work environment," and made recommendations to TVA management to address those areas.

An NRC integrated inspection (ADAMS Accession No. ML17326A222) found, in the July–September 2017 timeframe, no reluctance to report safety concerns among those interviewed in operations, licensing, and engineering organizations. Furthermore, inspectors saw evidence of management emphasizing the importance of employees raising concerns and making avenues for reporting readily accessible. Another NRC inspection in early 2018 specifically addressed the licensee's actions to date to address both the CEL and CO. The inspection report dated March 14, 2018 (ADAMS Accession No. ML18073A202), verified the earlier finding that the work environment supports operators, the subject of the CEL, to raise nuclear safety concerns without fear of retaliation, and concluded that TVA has made progress in improving the nuclear safety culture at the Watts Bar site. Nonetheless, observations by the inspection team identified some areas for improvement.

TVA's ECP in 2017 received few concerns associated with NRC-regulated activities requiring a full investigation, although the number did represent an increase compared to 2016. Overall, the ECP had approximately 120 contacts in 2017, which also represented an increase over the previous year. Most of the activity involved rapid resolutions or referrals to other programs on site. According to discussions with TVA ECP personnel, the program saw discipline trends in maintenance, radiation protection, and modifications. These differ from those trends the NRC observed in allegations, in that the ECP saw few operations concerns, despite monthly pulsing in that organization. Like the NRC, the ECP received concerns at a declining rate after the Unit 2 forced outage. The licensee is addressing the trends by increasing information meetings between the workers and supervisors and the managers' field presence, which parallels the recommendations made by the independent safety culture assessment team.

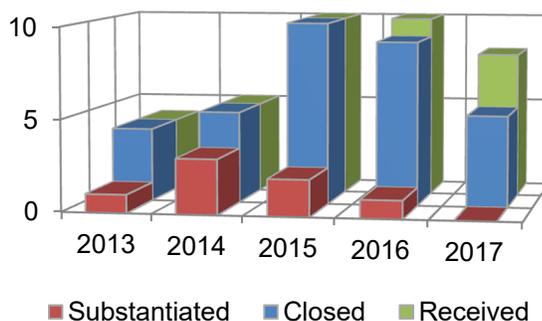
In summary, a review of the number and nature of the allegations associated with the Watts Bar site in 2017 indicates an improving SCWE. There were significantly fewer allegations, including discrimination concerns, and they were received at a declining rate after a spike in the second quarter, at which time Unit 2 was in an extended forced outage. The Unit 1 refueling outage in the fall did not produce a spike in concerns to the NRC or the ECP. Furthermore, NRC inspection results late in the year and early in 2018 indicate an improving environment, as does the licensee's independent safety culture assessment. The NRC will continue to follow up on

commitments in response to the CEL and CO to assess the sustainability of these improvements.

### Pilgrim Unit 1

The number of allegations received about Pilgrim from onsite sources in 2017 decreased slightly from the number received in the previous year. The majority of the allegations were from licensee employees. The subject of the concerns varied but a trend involving security-related issues was noted. Allegation receipt was spread evenly throughout the first three quarters of the year, and none were received in the fourth quarter. Five of the concerns raised in 2017 asserted a chilled work environment, which is an increase compared to the previous year; however, all but one did not include enough detail, nor upon inquiry was detail provided, to support a meaningful evaluation by the agency. The NRC evaluated the remaining concern but did not substantiate the allegation that the workers were hesitant to raise nuclear safety concerns. Four of the five chilled work environment concerns were received during the first half of the year and during a refueling outage. The chilled work environment concerns do not appear to be connected by a particular issue or indicative of a larger problem within a group or department on site. There was one discrimination concern submitted to the NRC regarding the Pilgrim site in 2017, which is currently being investigated by the Office of Investigations. No discrimination concerns have been substantiated in the past 5 years.

**Figure 6 Pilgrim Allegations**



Pilgrim has been in the Multiple/Repetitive Degraded Cornerstone Column of the ROP Action Matrix since early 2015 following the completion of a white final significance determination finding under the Mitigating Systems Cornerstone while the site had been in the Degraded Cornerstone Column for two white Initiating Events Cornerstone performance indicators for more than five consecutive quarters. The NRC conducted inspection 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," in three phases in 2016 and 2017. Phase 'A' of the 95003 inspection (ADAMS Accession No. ML16060A018), completed on January 15, 2016, determined that there were no long-standing, risk-significant issues documented in the CAP that were not addressed or assigned appropriate corrective actions and due dates. Additionally, appropriate actions were developed to correct past NRC violations, and condition reports were appropriately classified as adverse or nonadverse. Phase 'B' of the 95003 inspection (ADAMS Accession No. ML16144A027), completed on April 8, 2016, determined that problems were generally identified, entered into the CAP, properly prioritized, and evaluated commensurate with safety significance. However, four condition reports were not closed out in accordance with process requirements. The NRC completed Phase 'C' of the 95003 inspection (ADAMS Accession No. ML17129A217) on January 13, 2017, and focused on CAP and safety culture assessment, human performance, and procedure quality and equipment performance. Although the NRC noted some improvement in CAP performance, it identified 11 findings that warranted continued enhanced NRC oversight. Entergy revised and expanded their Recovery Plan to address the weaknesses detailed in the inspection report. The results of the Phase 'C'

inspection were also used to inform and finalize the confirmatory action letter (CAL) issued on August 2, 2017. The CAL confirmed Energy's commitment to perform specific corrective actions to resolve the underlying causes for the performance decline that led to the transition to Column 4 of the ROP Action Matrix. The CAL also identified a subset of the corrective actions described in the Recovery Plan that the NRC staff determined were necessary to address the key performance issues. The NRC is inspecting and monitoring the effectiveness of Entergy's implementation of these identified corrective actions.

The assessment of the environment for raising concerns conducted during the Phase 'C' inspection determined that nearly all personnel interviewed and in focus groups felt free to raise nuclear safety concerns through many avenues, including their supervisors, the CAP, the ECP, and the NRC. There were no ongoing indications of potential issues with the environment for raising concerns, and there was a general willingness of station personnel to stop work and raise concerns when they were in doubt. No findings were assigned cross-cutting aspects within the safety culture trait of environment for raising concerns.

The NRC conducted the most recent biennial PI&R inspection (ADAMS Accession No. ML17355A479) in September 2017 and found the site to be generally effective in identifying, evaluating, and resolving problems. However, the inspection team identified the level of detail associated with the documentation of issues being entered into the CAP as less than adequate and potentially challenging Pilgrim's ability to effectively classify and evaluate issues. Otherwise, the inspection found no evidence of problems affecting the environment for raising concerns. Small group interviews conducted with employees found them willing to raise nuclear safety concerns through at least one of the several avenues available.

Based on discussions with plant personnel, the Pilgrim ECP received more than twice as many concerns requiring investigation in 2017 than the previous year. The total number of all types of 2017 ECP cases, including rapid resolutions and referrals, is consistent with the number received in 2016. Security concerns remain the predominant category of issues raised to the ECP. A July 2017 survey conducted by the licensee identified some improvement in the safety culture sitewide but identified the security organization as needing focused attention by management. The ECP received the majority of all concerns in the first two quarters of 2017, which could be attributed to increased oversight associated with the 95003 inspection, performance reviews, and the start of the refueling outage.

In summary, the number and nature of allegations received from onsite sources at Pilgrim in 2017 do not appear to indicate a work environment problem. In fact, the number of allegations has decreased since 2016, and the NRC received no allegations in the last quarter of 2017. Pilgrim is currently in the Multiple/Repetitive Degraded Cornerstone Column of the ROP Action Matrix. While currently available information does not indicate an SCWE problem at Pilgrim, sustained poor performance can ultimately manifest itself in problems with the SCWE and other safety culture attributes if improvements are not made. SCWE performance at Pilgrim will be monitored as part of the followup performance reviews and quarterly CAL followup inspections.

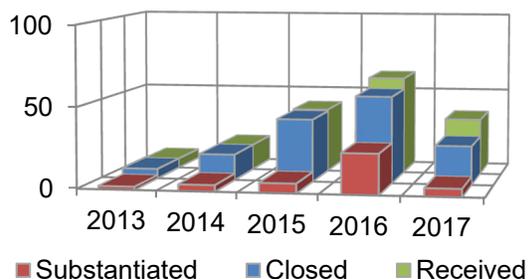
#### Vogtle Units 3 and 4

The number of allegations received by the NRC from onsite sources about the Vogtle Unit 3 and 4 construction site in 2017 decreased significantly from the number received in 2016 and 2015, breaking an upward trend over the past 3 years. The rate of receipt also declined throughout the year. Allegation sources were concentrated in the contractor and former contractor categories. Two alлегers came to the NRC anonymously. Concerns related to chilling effect and safety

culture significantly declined from the number received in 2016. The majority of the chilling effect and safety culture concerns were raised in the first quarter of the year. Many of the same concerns came from multiple alлегers. Two concerns of a chilled work environment were substantiated. Corrective actions taken by the licensee and contractor included training, coaching, and monitoring the affected areas to ensure the actions were effective. Almost one-third of the concerns raised in 2017 were in the fitness-for-duty area.

As with allegations in general, the site's subset of discrimination allegation concerns also trended downward as compared to the previous year. The rate of receipt throughout 2017 mirrored the decline in all allegation concerns, with the most brought to the NRC early in the year. Of the discrimination concerns submitted to the NRC in 2017, more than half were still open at the time this analysis was prepared. The NRC has not substantiated any discrimination concerns in the past 5 years; however, several are still open and are either being investigated or are in the preinvestigation ADR process.

**Figure 7 Vogtle 3 and 4 Allegations**



In May 2017, the staff completed a focused safety culture review of the site contractor's Site Operations Division's Fitness-for-Duty and Access Authorization Group (ADAMS Accession No. ML17226A034). The inspection consisted of interviews with approximately 40 personnel. Specifically, the inspectors interviewed personnel to determine if the environment for raising concerns was being maintained, if the licensee's and contractor's ECPs were effectively addressing conditions adverse to quality, if management oversight of the corrective actions to address the nuclear safety culture enhancement within this division was adequate, and if licensee and contractor personnel were reluctant to report safety issues using specific avenues. Most individuals interviewed communicated a clear understanding of avenues to report concerns, and some indicated that they would use avenues other than their immediate supervisor, including senior leadership, to address nuclear safety concerns, if needed. The inspectors reviewed ongoing corrective actions in areas previously identified by the site as requiring attention, and the inspection team concluded that these actions and increased leadership focus were likely to enhance the nuclear safety culture within this division.

The region completed its annual inspection of the licensee's CAP and SCWE in August 2017 (ADAMS Accession No. ML17263B207). Based on the inspection sample, the inspection team concluded that the implementation of the program and overall performance related to identifying, evaluating, and resolving problems at Vogtle Units 3 and 4 was adequate. Licensee- and contractor-identified problems were entered into the CAP at an appropriate threshold. Problems were prioritized and evaluated commensurate with the safety significance of the problems. Corrective actions were effectively implemented in a timely manner commensurate with their importance to safety and addressed the identified causes of problems. Lessons learned from industry construction experience were effectively reviewed and applied when appropriate. Based on interviews conducted during the inspection and a review of the employee concerns program, employee freedom to raise nuclear safety concerns without fear of reprisal appeared to be demonstrated.

Based on discussions with the licensee and contractor ECP representatives, more than 6,000 people worked on the Vogtle Unit 3 and 4 site during this review period. The primary contractor was on site until August 1, 2017. At that time, the site construction management transferred to the licensee. The contractor maintained its own ECP until the transfer and received over 450 concerns requiring an investigation, rapid response, or referral. In addition, the licensee's ECP received approximately 350 concerns requiring an investigation, rapid response, or referral throughout 2017, which represents a slight decrease from those received the previous year. The contractor and licensee saw a spike in the number of employee concerns received in the second quarter of 2017 that they believe were associated with a layoff announcement. Approximately 14 percent of the concerns were received anonymously, a decrease from the approximately 25 percent received in 2016.

In 2017, the licensee and contractor conducted multiple work environment assessments. Multiple work groups were noted to have issues involving negative management behaviors. At no time did the licensee find these employees hesitant to raise concerns using the CAP or ECP, but recognizing their deteriorating relationship with management, corrective actions were taken which included discipline, procedural modification, changes to management, and training of managers. The licensee found that the groups that were reassessed before this analysis was complete had a healthy safety culture and managers that support a SCWE.

In summary, there was a noticeable decrease in allegations involving the Vogtle Unit 3 and 4 construction site in 2017, especially those in the areas of chilled work environment and discrimination. It is noted that the contractor saw a spike in ECP contacts in the second quarter of 2017 after announcements of layoffs; however, the NRC did not see an increase of allegations in that quarter. Also, although there were a number of chilled work environment allegations substantiated by both the licensee and the NRC, the NRC inspections and licensee reassessments indicate that Vogtle has taken effective corrective actions to address the issues identified. The NRC will maintain its oversight of the SCWE at Vogtle Units 3 and 4 through normal inspection activities to ensure that corrective actions are completed and result in sustained performance improvements.

### **Allegation Trends for Selected Materials Licensees**

The NRC Web site posts allegation statistics for certain fuel cycle facilities (see the appendix to this report). Because of the small number of allegations and the smaller workforce sizes associated with the overwhelming majority of other smaller materials licensees, the potential for a licensee or contractor to identify an allegor is increased. For this reason, tables of statistics on allegations about materials licensees, other than fuel cycle facilities, have not been offered publicly or included in this report. None of the materials licensees, fuel cycle facilities or otherwise, received a sufficient number of allegations to discern a trend or pattern or to provide insights into the SCWE. Therefore, this report does not include more indepth reviews of specific materials licensees.

### **Allegation Trends for Selected Vendors**

Neither this report nor the NRC Web site offers statistics by contractor or vendor for reasons similar to those outlined above for materials licensees. None of the vendors received a sufficient number of allegations to discern a trend or pattern or to provide insights into the SCWE. Therefore, this report does not include more indepth reviews of specific vendors. Regulatory action at one vendor, however, warrants mention.

Previous NRC trend reports have included discussion of a 2014 NRC CO issued to Chicago Bridge and Iron (CB&I), resulting from a successful post-investigation ADR session with the agency (ADAMS Accession No. ML14248A445). Many of the requirements of the CO that CB&I agreed to take to improve their nuclear safety culture were one-time actions that CB&I has completed. The inspection of these actions were documented by the NRC in May 2015 inspection report (ADAMS Accession No. ML 15169A231). Actions to address the remaining CO requirements involve maintaining nuclear safety culture and SCWE processes, which, by their nature, have no end date. Nonetheless, the NRC does have the authority to relax or rescind conditions of the CO upon demonstration by CB&I of good cause. In a December 27, 2016, letter (ADAMS Accession No. ML 17138A215), CB&I requested that the NRC staff consider such a relaxation given a demonstrated improvement in its nuclear safety culture, a significant reduction in its work force that is involved in NRC-regulated activities, and the coverage under licensees' nuclear safety culture infrastructures of any worker still performing NRC-related activities.

Based on the information provided by CB&I, the NRC staff concluded that the material circumstances had substantively changed since the issuance of the CO and that the underlying purpose of the CO has been largely met through the actions taken by CB&I to date. As a result, the staff determined that certain CO requirements could be relaxed or withdrawn without resulting in an adverse impact on public health and safety, and by letter dated February 21, 2018 (ADAMS Accession No. ML18036A179), withdrew all uncompleted requirements, subject to certain exceptions involving requirements for record retention and any workers not covered by a licensee's program.

### **Trends in the Agreement States**

As explained earlier in this report, the NRC may relinquish its authority to regulate certain byproduct material, source material, and limited quantities of special nuclear material to a State Government through a mutual agreement. A State that has entered into this agreement with the NRC is called an Agreement State. Before entering into this agreement, States must first demonstrate that their regulatory programs are adequate to protect public health and safety and are compatible with the NRC's program, and the NRC has a statutory responsibility to periodically review the actions of the Agreement States to ensure that they adequately maintain their programs.

The NRC uses the Integrated Materials Performance Evaluation Program (IMPEP) to satisfy its statutory responsibility. More information on the NRC's Agreement State program and IMPEP is available on the Web site for the NRC's Office of Nuclear Material Safety and Safeguards at <https://scp.nrc.gov>. Figure 8 shows the 37 Agreement States.



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## OVERVIEW OF PROGRAM ACTIVITIES

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Activities in 2017 in areas closely related to the Allegation Program and SCWE policy are discussed below, including statistics associated with the agency-sponsored preinvestigation ADR program. The staff gathers insights into the SCWE at a particular site in several ways (e.g., by reviewing the number and nature of allegations concerning that site and through documented observations based on interviews with the licensee's workers and the review of pertinent documents during the baseline PI&R inspections). If the staff discerns that a work environment is chilled (i.e., not conducive to raising safety concerns internally), or there is a finding of discrimination that has the potential to chill the work environment, the NRC may request, in writing, information about the licensee's SCWE.

### Requests for Information Regarding Discrimination Findings

The U.S. Department of Labor or a Federal authority other than the NRC (e.g., U. S. Circuit Court) periodically substantiates a discrimination concern under Section 211 of the Energy Reorganization Act of 1974, on which NRC's employee protection regulations are based. In such cases, while NRC enforcement action is being considered, the staff typically will issue a request for information to the regulated entity. Such letters inform the licensee or contractor of the NRC's knowledge of the finding and interest in understanding the licensee's or contractor's position, including any actions that have been taken or are planned to assess and mitigate the potential chilling effect that might be caused by the finding. It also informs the workforce of the NRC's interest in the state of the environment for raising concerns at the site. At the time such letters are issued, the NRC has confirmed neither that enforcement is necessary nor that the work environment is chilled. Rather, information is sought to help inform the NRC's potential evaluation efforts going forward. The NRC issued no requests of this nature in 2017.

### Chilling Effect Letters

When NRC inspection observations or allegation insights result in the NRC's conclusion that a licensee or contractor's work environment is chilled and corrective actions are warranted, the agency will issue what is referred to as a CEL. A CEL is meant to ensure that the licensee is taking appropriate actions to foster a workplace environment that encourages employees and contractors to raise safety concerns and to feel free to do so without fear of retaliation. The NRC issued no CELs in 2017.

### Preinvestigation Alternative Dispute Resolution Process

The NRC's ADR program includes the opportunity to use voluntary dispute resolution early in the allegation process for cases of alleged discrimination, before the NRC investigates the allegation. Preinvestigation ADR gives parties extra opportunities to resolve their differences outside the normal regulatory framework, and it uses a neutral third party to facilitate discussions and the timely settlement of the discrimination concern. The NRC believes that voluntary dispute resolution by the parties, using the communication opportunities that the preinvestigation ADR process supplies, can stem the inherent damage such disputes can inflict on the SCWE more quickly than an investigation. At any time, either party can exit the ADR process, at which point an NRC investigation remains an option if the alleger is still interested in pursuing the discrimination matter.

Should such an investigation and resulting enforcement panel conclude that enforcement is warranted, the NRC and licensee may engage in what the agency refers to as enforcement

ADR, formally referred to as postinvestigation ADR. More information on that process can be found at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr/post-investigation.html> on the NRC's public Web site. If, however, the parties reach a settlement during ADR, the staff will not pursue an investigation or subsequent enforcement about the discrimination finding. The NRC also considers settlements resulting from licensee-initiated mediation as equivalent to settlements reached under the preinvestigation ADR program.

At the time this report was prepared, 21 of the preinvestigation ADR offers made by the NRC in association with discrimination allegations raised in 2017 resulted in agreements to mediate. Of those 21 cases, 11 resulted in the parties reaching a mutually agreeable settlement. The remaining 10 cases are either still being processed or were referred to the NRC's Office of Investigations because the parties did not reach a settlement.

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**CONCLUSIONS**

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The total number of allegations received from 2013 through 2017 declined over the 5-year period. The decline may be the result of a number of factors, including plant shutdowns and continuing efforts by the regulated industry to develop and maintain strong environments for raising concerns using onsite reporting avenues. In 2017, coinciding with the overall decrease in allegations received, the total volume of allegation concerns decreased, as well.

The analyses of allegations have supplied insights into the SCWE at several facilities. The NRC has taken action to engage licensees about their work environments when this has been warranted, and the staff will continue to monitor these sites with interest.

To date, the agency's preinvestigation ADR process resulted in 11 discrimination allegations being settled between the parties before the start of an NRC investigation. The staff believes that voluntary dispute resolution by the parties using the communication opportunities afforded in preinvestigation ADR can stem the inherent damage such disputes can have on the SCWE more quickly than an investigation could stem such damage.

## APPENDIX

ALLEGATION STATISTICS FOR  
OPERATING REACTORS, NONOPERATING REACTORS, AND FUEL CYCLE FACILITIES

## OPERATING REACTOR ALLEGATIONS RECEIVED FROM ONSITE SOURCES

| Site                   | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------------|------|------|------|------|------|
| ARKANSAS 1 & 2         | 1    | 2    | 10   | 7    | 5    |
| BEAVER VALLEY 1 & 2    | 1    | 5    | 1    | 0    | 0    |
| BRAIDWOOD 1 & 2        | 2    | 0    | 2    | 2    | 4    |
| BROWNS FERRY 1, 2, & 3 | 15   | 11   | 6    | 10   | 6    |
| BRUNSWICK 1 & 2        | 1    | 0    | 2    | 2    | 3    |
| BYRON 1 & 2            | 0    | 0    | 2    | 1    | 0    |
| CALLAWAY               | 6    | 3    | 5    | 2    | 5    |
| CALVERT CLIFFS 1 & 2   | 3    | 2    | 1    | 0    | 4    |
| CATAWBA 1 & 2          | 1    | 5    | 3    | 0    | 0    |
| CLINTON                | 1    | 0    | 1    | 0    | 1    |
| COLUMBIA PLANT         | 5    | 1    | 3    | 4    | 3    |
| COMANCHE PEAK 1 & 2    | 3    | 5    | 3    | 5    | 1    |
| COOK 1 & 2             | 5    | 4    | 5    | 2    | 4    |
| COOPER                 | 4    | 2    | 1    | 1    | 0    |
| DAVIS-BESSE            | 5    | 5    | 1    | 3    | 1    |
| DIABLO CANYON 1 & 2    | 6    | 1    | 4    | 3    | 2    |
| DRESDEN 2 & 3          | 2    | 7    | 3    | 2    | 1    |
| DUANE ARNOLD           | 3    | 4    | 1    | 1    | 1    |
| FARLEY 1 & 2           | 6    | 3    | 2    | 4    | 4    |
| FERMI                  | 1    | 0    | 9    | 2    | 2    |
| FITZPATRICK            | 0    | 1    | 1    | 0    | 0    |
| FORT CALHOUN           | 5    | 4    | 6    | 3    | 1    |
| GINNA                  | 0    | 1    | 0    | 2    | 1    |
| GRAND GULF             | 2    | 0    | 4    | 6    | 3    |
| HARRIS                 | 2    | 2    | 6    | 2    | 5    |
| HATCH 1 & 2            | 3    | 5    | 5    | 4    | 2    |
| INDIAN POINT 2 & 3     | 13   | 6    | 2    | 6    | 1    |
| LASALLE 1 & 2          | 2    | 1    | 1    | 3    | 0    |
| LIMERICK 1 & 2         | 1    | 3    | 1    | 0    | 1    |
| MCGUIRE 1 & 2          | 3    | 1    | 5    | 1    | 1    |
| MILLSTONE 2 & 3        | 4    | 6    | 4    | 8    | 8    |
| MONTICELLO             | 1    | 3    | 0    | 0    | 0    |
| NINE MILE POINT 1 & 2  | 0    | 1    | 0    | 2    | 2    |
| NORTH ANNA 1 & 2       | 1    | 0    | 3    | 0    | 3    |
| OCONEE 1, 2, & 3       | 3    | 5    | 7    | 5    | 1    |
| OYSTER CREEK           | 1    | 2    | 3    | 1    | 3    |

| Site                 | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------|------|------|------|------|------|
| PALISADES            | 11   | 8    | 3    | 1    | 4    |
| PALO VERDE 1, 2, & 3 | 10   | 12   | 15   | 12   | 1    |
| PEACH BOTTOM 2 & 3   | 7    | 2    | 2    | 1    | 0    |
| PERRY                | 7    | 1    | 2    | 0    | 1    |
| PILGRIM              | 4    | 5    | 10   | 10   | 8    |
| POINT BEACH 1 & 2    | 3    | 4    | 2    | 2    | 1    |
| PRAIRIE ISLAND 1 & 2 | 11   | 8    | 2    | 2    | 0    |
| QUAD CITIES 1 & 2    | 3    | 1    | 4    | 2    | 2    |
| RIVER BEND           | 3    | 2    | 3    | 4    | 3    |
| ROBINSON             | 4    | 0    | 0    | 2    | 2    |
| SALEM/HOPE CREEK     | 12   | 8    | 14   | 9    | 7    |
| SEABROOK             | 5    | 2    | 1    | 1    | 1    |
| SEQUOYAH 1 & 2       | 5    | 7    | 7    | 17   | 7    |
| SOUTH TEXAS 1 & 2    | 5    | 4    | 7    | 8    | 9    |
| ST LUCIE 1 & 2       | 8    | 4    | 6    | 4    | 5    |
| SUMMER               | 0    | 4    | 4    | 3    | 2    |
| SURRY 1 & 2          | 1    | 1    | 2    | 1    | 2    |
| SUSQUEHANNA 1 & 2    | 9    | 14   | 3    | 2    | 6    |
| THREE MILE ISLAND    | 0    | 3    | 0    | 0    | 2    |
| TURKEY POINT 3 & 4   | 6    | 2    | 8    | 8    | 3    |
| VOGTLE 1 & 2         | 2    | 3    | 5    | 3    | 3    |
| WATERFORD            | 4    | 3    | 2    | 6    | 3    |
| WATTS BAR 1 & 2      | 21   | 12   | 21   | 30   | 11   |
| WOLF CREEK           | 6    | 9    | 12   | 7    | 4    |

**NONOPERATING REACTOR ALLEGATIONS RECEIVED FROM ONSITE SOURCES**

| Site             | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------|------|------|------|------|------|
| FORT CALHOUN     | 5    | 4    | 6    | 3    | 2    |
| HUMBOLDT BAY     | 0    | 0    | 1    | 0    | 0    |
| LA CROSSE        | 1    | 0    | 0    | 1    | 0    |
| SAN ONOFRE 2 & 3 | 9    | 3    | 0    | 0    | 0    |
| SUMMER 2 & 3     | 6    | 12   | 30   | 14   | 8    |
| VERMONT YANKEE   | 1    | 1    | 0    | 1    | 2    |
| VOGTLE 3 & 4     | 6    | 16   | 40   | 61   | 35   |
| ZION             | 2    | 1    | 0    | 0    | 0    |

**FUEL CYCLE FACILITY ALLEGATIONS RECEIVED FROM ONSITE SOURCES**

| Site                   | 2013 | 2014 | 2015 | 2016 | 2017 |
|------------------------|------|------|------|------|------|
| AREVA RICHLAND         | 0    | 1    | 0    | 0    | 0    |
| BWXT                   | 1    | 2    | 0    | 3    | 2    |
| CB&I AREVA MOX         | 4    | 1    | 2    | 3    | 1    |
| GLOBAL NUCLEAR         | 2    | 1    | 3    | 4    | 4    |
| HONEYWELL              | 6    | 10   | 5    | 4    | 2    |
| LOUISIANA ENERGY SVCS. | 9    | 5    | 4    | 1    | 1    |
| NUCLEAR FUEL SVCS.     | 6    | 4    | 3    | 2    | 1    |
| PADUCAH                | 2    | 1    | 0    | 0    | 0    |
| WESTINGHOUSE           | 0    | 0    | 1    | 1    | 2    |