



Pension Benefit Guaranty Corporation
Office of Inspector General
Management Advisory Report

**Ensuring the Integrity of Policy Research and
Analysis Department's Actuarial Calculations**

May 21, 2012

OIG MAR-2012-10/PA-12-87



Pension Benefit Guaranty Corporation

Office of Inspector General

Ensuring the Integrity of Policy Research and Analysis Department's Actuarial Calculations

Executive Summary

Attached is a Management Advisory Report (MAR) prepared to inform PBGC management of a serious internal control issue that came to OIG's attention as a result of the review of a whistleblower complaint received through the OIG Hotline. Our review confirmed the complainant's assertion that the Present Value of Financial Assistance Payments for multiemployer plans, as reported in PBGC's FY 2010 Annual Exposure Report issued November 10, 2011, was unrealistically low. Based on a review of available documentation, interviews with key PBGC officials, and analysis, we concluded that PBGC had issued the report with errors and inconsistencies in both the multiemployer and single-employer sections. This occurred because PBGC had not established a quality control or quality review process to ensure the integrity of reported actuarial estimates. Early in our review, the Policy Research and Analysis Department (PRAD) Director acknowledged the errors and explained that his department did not have policies in place for quality control.

To ensure the quality of actuarial work products issued by PRAD, PBGC should take a number of actions, including developing, documenting, and enforcing policies and procedures for quality review of PRAD actuarial work, whether in an issued report or in response to ad hoc inquiries. Other necessary actions include developing, implementing, and enforcing policies to ensure the adequate and efficient review of contractor work performed with PIMS and the retention of supporting documentation for work performed by PRAD actuaries and of all accepted actuarial contractor deliverables. A strategic review should be conducted to address the processes involved in creating PRAD actuarial reports from start to finish. Additionally, PBGC should conduct a records management review of PRAD to determine what records must be maintained as Federal records.

PBGC's May 21, 2012 response to the MAR is also included as an attachment. The response from the Deputy Director for Policy is generally positive and includes a commitment to strengthening and documenting the quality assurance process, to posting a corrected report on PBGC's website, and to noting the errors in the forthcoming FY 2011 Exposure Report. Each of these actions is important and will enhance the integrity of PRAD's actuarial work.

PBGC's response includes the problematic statement, "Last year, we made changes to ensure such errors do not recur. On the instruction of the PBGC Director, all estimates used for PBGC reports are now being reviewed outside PRAD." However, our review showed that last year's changed review process was still quite limited in scope and would not likely

prevent the recurrence of errors. In a December 28, 2011 email, the reviewing actuary documented the results of the changed review process for the FY 2011 Exposure Report:

... no attempts were made to validate the model inputs or outputs. No actuarial analysis was done on either report. That is, the data and assumptions used in the modeling were not examined for accuracy or completeness. Likewise, the model outputs were not examined for accuracy and were taken as given. ... To the extent that errors exist in the spreadsheets – either in numerical model outputs or the labeling of the outputs – the same errors will carry over to the reports. All results were hardcoded; no formulas existed in the spreadsheets so it was not possible to validate the model results.

The PBGC Director instructed that all estimates used for PBGC reports be reviewed outside PRAD. However, instead of requesting a quality assurance review, the PRAD Director implemented the PBGC Director's guidance by instructing the actuary "to dot our numbers for the 2011 Exposure Report, both SE and ME." [emphasis added] As described in the attached MAR, the process of "dotting" is simply verification that a particular value is correctly copied and transferred from one place to another. The process of dotting does not involve verification of underlying calculation or supporting documentation and is not sufficient for quality control. Thus, based on our review of the changes referenced in the attached response from PBGC, the revised process is still inadequate to ensure the integrity of PRAD's actuarial estimates.

The attached MAR includes a request for PBGC to provide a written response detailing the actions to be taken to address the reported issues. As part of that response, PBGC should include information about additional enhancements – over and above the process of "dotting" – to ensure that the actuarial data published by PBGC is accurate and supported by appropriate documentation.



Pension Benefit Guaranty Corporation

Office of Inspector General

1200 K Street, N.W., Washington, D.C. 20005-4026

May 18, 2012

Josh Gotbaum, Director
Pension Benefit Guaranty Corporation

Management Advisory Report

Ensuring the Integrity of Policy Research and Analysis Department's Actuarial Calculations

This Management Advisory Report (MAR) is to advise PBGC management of a serious internal control issue that came to our attention during our review of a complaint received through OIG's Hotline. The complainant alleged, among other things, that the Present Value of Financial Assistance Payments for multiemployer plans, as reported in PBGC's FY 2010 Annual Exposure Report, issued November 10, 2011, was unrealistically low. Our review of the issue confirmed that the figure questioned by the complainant was indeed incorrect; additionally, we found that the FY 2010 Exposure Report contained numerous other unsupported and incorrect calculations. These errors and omissions were not identified and corrected by PBGC prior to publication of the Exposure Report because the Policy Research and Analysis Department (PRAD) lacked a quality control or quality review process and thus was unaware of the errors.

This report describes the results of our review of a Hotline complaint. Our review was neither an audit nor an investigation on this issue; other errors and internal control weaknesses may be present but not identified by this review, due to the targeted nature of our work. Additionally, we did not perform tests of the revised actuarial data provided by PBGC in response to our inquiries. Our work was done in accordance with *Quality Standards for Federal Offices of Inspector General* issued by the Council of Inspectors General on Integrity and Efficiency.

Summary

PBGC issued its statutorily required annual FY 2010 Exposure Report with errors and inconsistencies in both the multiemployer and single-employer sections. The issued report did not meet quality information standards for Federal agencies or PBGC policy. Errors were not identified and corrected before publication of the report because PBGC had not established a quality control or quality review process to ensure the integrity of reported estimates. PRAD's limited review of the report focused on determining that PBGC staff had accurately copied numerical values from one place to another. PRAD provided no evidence to show that PBGC reviewed PRAD's actuarial estimates for the accuracy of the underlying PIMS input data, calculations or assumptions. Further, based on our interview with the PRAD Director and staff, we concluded that the underlying support for PRAD's actuarial reports was not subjected to any type of documented

review. The provision of erroneous information in PBGC's FY 2010 Exposure Report is inconsistent with PBGC's statutory responsibility and could have a negative impact on PBGC's reputation. Because the information in the FY 2010 Exposure report is required by ERISA¹ and has been made publicly available on PBGC's website, PBGC should issue a corrected version of the report and ensure that it is disseminated to those who received the original, incorrect version.

Background

PRAD is the department within PBGC that develops policy for PBGC's insurance programs and conducts related research and modeling. PRAD's research encompasses actuarial and financial issues intended to support policy development and involves modeling for forecasting purposes. PRAD is one of three departments under the Deputy Director of Policy within the Office of Policy and External Affairs.

PBGC reports that PIMS is a stochastic (randomly determined) simulation model designed to quantify the amount of risk facing PBGC's insurance programs. PIMS has a database of information about pension plans insured by PBGC, including plan demographics, plan benefit structure, asset values, liabilities and actuarial assumptions. The PIMS model produces thousands of projections and generates a range of possible outcomes for pension plans and for the PBGC. PIMS does not predict future claims, but instead provides a range of possible future outcomes and quantifies the likelihood of these outcomes. PBGC uses PIMS to produce reports that provide influential information for stakeholders, to include PBGC management, PBGC's Board, the Executive and Legislative branch staff, Congressional Budget Office, Joint Committee on Taxation, Office of Management and Budget (OMB), Department of Labor (DOL), Government Accountability Office (GAO), and private sector employee benefit organizations.

ERISA §4008 requires PBGC to publish an annual report with very specific information, including a summary of PIMS results with "the specific simulation parameters, specific initial values, temporal parameters, and policy parameters used to calculate the financial statements for the corporation." PBGC describes this as an actuarial evaluation of its expected operations and financial status. The report – referred to as the Annual Exposure Report – contains estimates and projections of significant impact for the single-employer (SE) and multiemployer (ME) programs over the next decade, as well as future position projections for two decades. To project its long-term exposure to risk, PBGC uses two systems: the SE Pension Insurance Modeling System (SE PIMS) and the ME Pension Insurance Modeling System (ME PIMS). The PIMS models rely on various parameters provided by PBGC analysts and economists, as well as data from other systems/contractors, in order to produce many scenarios which derive a range of projected outcomes.

¹ Employee Retirement Income Security Act of 1974, as amended.

Review Results

PBGC's statutorily required FY 2010 Exposure Report contained numerous errors and inconsistencies and did not meet information quality guidelines for Federal agencies or PBGC policy. This occurred because PRAD, the department with responsibility for PIMS and for preparing the actuarial projections, lacked quality control policies and processes to ensure the validity and accuracy of reported projections. Additionally, PBGC did not review the accuracy of the projections contained in the 2010 Exposure Report or retain documentation showing how the projections were derived. In response to our questions, PRAD attempted to recreate the reported calculations but was unable to do so. In the process of attempting the recreation of the reported data, PRAD developed various new spreadsheets. Our review of these recreated spreadsheets led us to identify additional obvious errors in the spreadsheets, such as the use of data from an incorrect year.

The errors in the FY 2010 Exposure Report were pervasive, including errors in each of the three projections relating to PBGC's multiemployer program and an overstatement of the degree to which the projected median single employer financial position had improved since the prior year.

Projection Errors about PBGC's Multiemployer Program

PBGC's FY 2010 Exposure Report describes three estimates relating to the future of the multiemployer program. Each projection is presented as a range, including a "low" figure at the 15th percentile, a mean figure, and a "high" figure at the 85th percentile. Since ME-PIMS models a large number of values for each estimate, the reported "low" figure is intended to represent the dollar value at which 15 percent of the simulations produced a lesser value and 85 percent of the simulations produced a higher value. The "high" figure is intended to represent the dollar value at which 85 percent of the simulations produced a lesser value and only 15 percent produced a higher value. The "mean" value is reported to be the average of all the various simulations. Each of the three projections for the multiemployer program presented in the FY 2010 Exposure Report contained incorrect and unsupported results, as noted below:

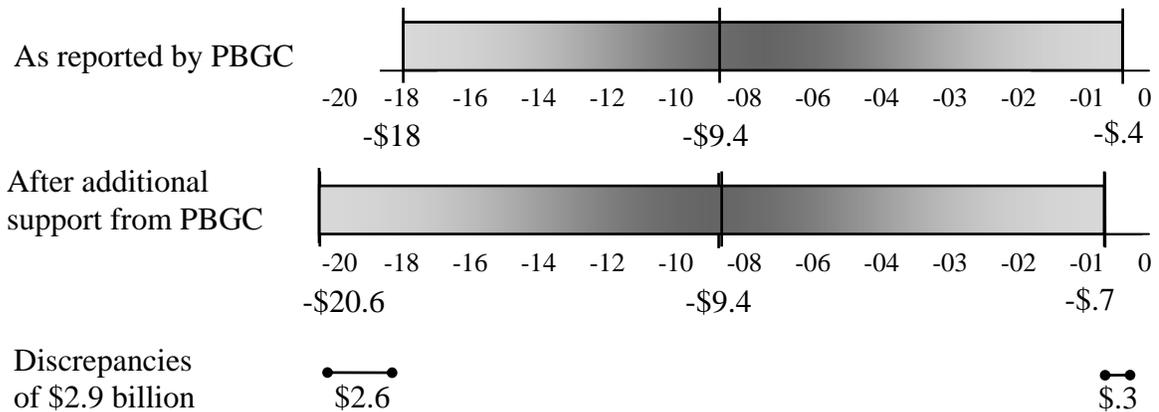
- Projected new net claims for the years 2011 – 2020. Based on revised data provided by PBGC in response to our questions, both the "high" and "low" projections of new multiemployer claims over the next ten years were overstated by more than \$1 billion. The total value of associated discrepancies is \$2.8 billion as shown in the chart below.

Projected New Net Claims 2011 – 2020 (numbers in billions)



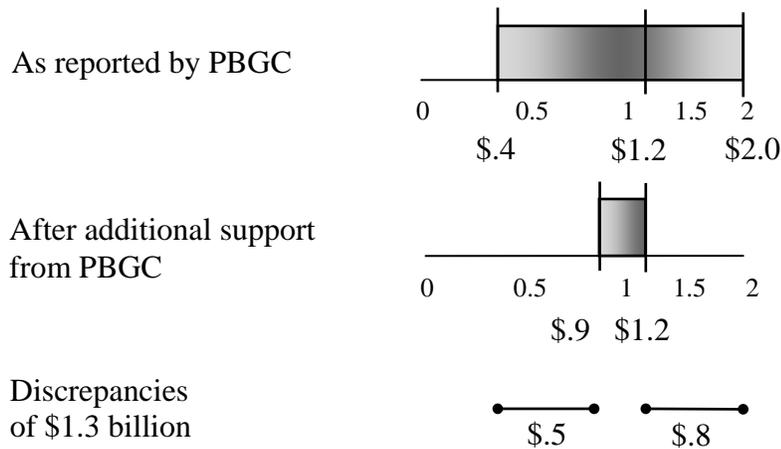
- Projected 2020 multiemployer financial position.** Based on revised data provided by PBGC in response to our questions, both the “high” and “low” projections were overstated, leading to an understatement of the projected deficit. That is, at the 15th percentile, the projected financial position for 2020 is about \$2.6 billion less than reported and at the 85th percentile, about \$.3 billion less than reported. The total value of the associated discrepancies is \$2.9 billion as shown in the chart below.

Projected 2020 ME Financial Position (numbers in billions)



- Projected financial assistance payments for the years 2011 – 2020. Instead of the reported range of \$.4 to \$2.0 billion, based on revised data provided in response to our questions, PBGC now asserts that the correct range is \$.9 to \$1.2 billion. The total value of the discrepancies is \$1.3 billion – an amount that is greater than the estimated mean – as shown in the chart below.

Projected Financial Assistance Payments 2011 – 2020 (numbers in billions)



Our review also disclosed errors in one of the graphs included in the multiemployer section of the FY 2010 Exposure Report. For the graph titled “PBGC’s Potential 2020 ME Financial Position,” the line showing the number of simulations out of 500 was drawn based on incorrect data (see page 12 of the Report).

In some instances, the errors in projections created additional issues in the report’s explanatory narrative. For example, based on the reported range of projected financial assistance payments over the next ten years – between \$0.4 and \$2.0 billion – PBGC’s FY 2010 Exposure report stated, “Financial assistance payments vary within this range by a factor of five...” (see page 11 of the Report). However, given the revised range that varies between \$0.9 and \$1.2 billion, a more correct analysis would have been that financial assistance payments vary within this range by a factor of 1.3.

Finally, we note that a PRAD official described these issues as “transcription errors.” However, since PRAD did not retain the original supporting documentation, we cannot confirm whether these errors resulted from transferring an incorrect figure from the original spreadsheets to the report or from some other source.

Projection Errors about PBGC's Single-Employer Program

Issues with PBGC's FY 2010 Exposure Report were not limited to the section addressing the multiemployer program. An effective quality control process would likely have identified an inconsistency in reporting for the single-employer program that caused PBGC to overstate the amount of improvement compared to the prior year with regard to the median financial position for 2020. That is, for FY 2009, PBGC reported the projected median financial position for 2019 to be \$25.0 billion. In some instances (e.g., the graph on page 9 of the report), this amount was accurately transcribed to the FY 2010 report. However, in the section of the FY 2010 report titled "Projected financial position, single-employer program – Comparison with 2009 outcomes, by financial position," PBGC incorrectly reported the prior year's projected median financial position for 2019 to be \$25.7 billion instead of \$25.0 billion (see page 8 of the Report). The accompanying analysis went on to state: "The median in the 2020 projection improved by \$4.4 billion over the 2019 projection..." A more correct analysis would have shown the improvement in projected financial position to be \$3.7 billion instead of the reported \$4.4 billion.

Internal Controls Needed

The PRAD Director acknowledged the errors noted above, explaining that his department did not have policies in place for quality control. Based on our discussion with the PRAD Director and our review of the limited documentation provided, we identified specific areas where internal controls should be established or enhanced.

- Accuracy and Completeness. Each projection, statistic, and statement of fact reported in the Annual Exposure Report should be subject to a review or other control technique to ensure accuracy and completeness. The lack of such a review is a serious shortcoming; each of the issues we identified could have been readily found and corrected if a qualified second party had reviewed the material to confirm its accuracy, completeness, and consistent presentation.
- Quality Standards. According to the PRAD Director, PRAD employees need more detailed standards specific to their duties because actuarial standards are broad. Our interviews with the PRAD Director and PRAD staff revealed a casual attitude toward ensuring the quality of actuarial projections. PRAD staff advised that there are no formal policies for review of actuarial work, including the work of their contractors. They explained that the primary method of review involves spot checking output, with the objective of looking for items that do not "look right."
- Identification and Retention of Federal Records. When requested, PBGC produced only very limited records to support the numbers in the FY 2010 Annual Exposure Report— that is, the documentation produced for the parameters or inputs into PIMS

could not be reliably traced to the FY 2010 Exposure Report, and there was no information supporting the outputs.² PBGC had no process for PRAD employees to identify supporting documentation for the Annual Exposure Report as "federal records" or to retain supporting documents, including the accepted deliverables prepared by the actuarial contractor, as required by federal law.

Need for a Quality Review Process

Our interviews demonstrated the low priority that PRAD management and staff placed on review of actuarial work (both federal and contractor) and acceptance of the contractor's deliverables. No one had accepted personal responsibility for ensuring the quality of reported actuarial projections prepared by the actuarial contractor. When questioned about ensuring the quality and accuracy of contractor work, the PRAD Director referred us to the PIMS Contracting Officer's Representative (COR). The COR, in turn, explained his belief that review of contractor work was the responsibility of the SE and ME financial analysts, individuals that he considered to be "technical monitors." Our interviews of these analysts demonstrated a similar lack of understanding for necessary contractor oversight and acceptance of work. In responses to questions about the concept of contract monitoring, one analyst stated, "I don't know how PIMS calculations and input from contractors are monitored." Another asserted that a review was based on "professional judgment, education, and experience."

In support of their contention that they are diligent in overseeing the contractor, PRAD provided various documents including emails between PRAD staff and its contractor, a statement of the contractor's general quality review process, and multi-page weekly status reports prepared by the contractor. While these documents show that PRAD staff met and communicated regularly with the contractor to discuss various PIMS issues, they do not demonstrate a federal employee's oversight and acceptance of the contractor's work produced. That is, the documentary evidence provided does not show that the work produced by the actuarial contractor had been reviewed by PBGC for acceptability, quality, or compliance with contract terms.

PRAD management and staff did not seem to have a good understanding of the need for review or an understanding of how quality review of a contractor's product should be documented. PRAD officials asserted that the actuarial contractor performed certain reviews and provided a document in support of the claim. However, our assessment of the document purporting to show the contractor's review disclosed it to be a listing of reports or other runs from PIMS; the document provided no evidence or verification that a PRAD employee reviewed the accuracy or quality of the work listed. As a further example, while one financial analyst stated that there were informal assessments of the contractor's work, the analyst did not provide any documentation of the informal

² To support the outputs, PRAD provided an excel spreadsheet , but it was void of formulas and calculations.

assessments and stated that he was not aware of any requirement to submit documentation to the COR showing review of contractor deliverables.

Similarly, PBGC produced no evidence to show that the work performed by PBGC actuarial analysts for this Exposure Report was reviewed. Because PBGC did not establish a quality control process, the 2010 Exposure Report was released with errors and inconsistencies in both the ME and SE sections. Every ME projection and a chart in the ME section included erroneous and unsupported information. While the dollar value of the variances might not be considered large by some, the fact that incorrect or unsupported information was reported is significant.

OMB and PBGC Quality Guidelines

In response to Congressional mandate, OMB developed Federal information quality guidelines to maximize the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies. OMB guidance³ and PBGC policy for information quality programs state that "information," when used in the phrase "influential scientific, financial, or statistical information" means that:

the agency can reasonably determine that dissemination of the information will have or does have a clear and substantial impact on important public policies or important private sector decisions.

PBGC restates this definition in its Information Quality Guidelines published on the internet, and provides further definition of "clear and substantial." PIMS is used to produce influential information that should be subjected to appropriate internal control processes or quality review practices to ensure the quality, objectivity, utility and integrity of that information. Thus, PRAD's quality control process should, at a minimum, be consistent with PBGC's published Information Quality Guidelines.

"Dotting" Not Sufficient as a Quality Control

Since the time of our initial inquiry, PBGC provided documentation showing that the Corporation has increased efforts to review actuarial work and to show that reports are now "dotted" for accuracy. However, according to the PRAD director, dotting is simply verification that a particular value is correctly copied and transferred from one place to another. The process of dotting does not involve verification of underlying calculations or supporting documentation.

³ On February 22, 2002, OMB issued final guidance for implementing Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (December 21, 2000), that mandated federal agencies to adopt data quality standards.

Peer Review As a Useful Quality Control Process

The American Academy of Actuaries (as well as the other U.S.-based actuarial organizations) has adopted a Code of Professional Conduct for the purpose of requiring actuaries to “adhere to the high standards of conduct, practice, and qualifications of the actuarial profession.” This Code has 14 Precepts, with “Annotations” for each Precept that provide “explanatory, educational, and advisory material on how the Precepts are to be interpreted.” That Code states, in part:

Professional Integrity

Precept 1. An Actuary shall act honestly, with integrity and competence, and in a manner to fulfill the profession's responsibility to the public and to uphold the reputation of the actuarial profession.

Annotation 1-1. An Actuary shall perform Actuarial Services with skill and care.

The Academy has recognized that peer review, though not required by the Code of Conduct, is a useful technique for an actuary to demonstrate compliance with the Code. In 2005, the Academy's Committee on Professional Responsibility issued a Discussion Paper entitled “PEER REVIEW Concepts on Professionalism,”⁴ stating:

Annotation 1-1 to Precept 1 of the Code provides, “[a]n Actuary shall perform Actuarial Services with skill and care.” By having a second qualified professional review a work product prior to its release to its intended users(s), a preparing actuary arguably may reduce the likelihood that significant errors or omissions in a final work product released to a user will be found, increasing the likelihood that the final work product will have been prepared with skill and care.

PBGC has many actuaries working in several different departments; so when considering whether to have peer review as part of PRAD's quality review process, there is an opportunity to have an “external” peer review performed by actuaries outside of PRAD, in addition to any internal review within PRAD.

It is important for PBGC to establish a quality review process for PRAD's actuarial work products and reports. Stakeholders are likely to refer to PBGC-reported information when making strategic decisions affecting pension policies and laws, and impacting millions of pensioners. PBGC's reputation as a leader in encouraging the continuation and maintenance of voluntary private pension plans for the benefit of their participants, carried out under ERISA, may be negatively impacted.

⁴ American Academy of Actuaries, Council on Professionalism, Committee on Professional Responsibility, Professionalism Series, 2005 • No. 1-A.

Need to Retain Accurate Records to Support PBGC Decisions

Federal agencies must keep records of their activities. A “record” is broadly defined to include:

all ... documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law ... and preserved or appropriate for preservation by that agency ... as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government....⁵

Records are to be complete and accurate to the extent required to document the agency's actions and complete and accurate in their preservation.⁶

In response to our initial requests, PRAD did not produce any documentation related to the PIMS modeling for the FY 2010 Exposure Report – not the data that was used in the simulations, the parameters that were established, or the outputs. After OIG provided the MAR, PBGC undertook an intensive search of back-up tapes for documents to support the erroneous numbers. Though many documents were located, none clearly supported the FY 2010 Exposure Report numbers cited in this MAR. Thus, we conclude PRAD failed to retain the documentation that supports the numbers reported in the FY 2010 Exposure Report, and no one can now validate the adequacy, accuracy, or completeness of that work. PRAD has since re-run the PIMS projections and now asserts that the revised projections are the correct numbers for the FY 2010 Exposure Report. PBGC states it has taken steps to ensure retention of the revised supporting documentation and, therefore, considers that the Corporation is in compliance with Federal records retention requirements. However, we note that the FY 2010 Exposure Report as currently published remains unsupported. Until that report is revised and re-published, PBGC is not in compliance with Federal record retention requirements.

PIMS supports many PBGC products and activities. In addition to the annual exposure report discussed here, PIMS runs are used to:

- Provide data to the Administration and Congress to evaluate the potential impact of legislative, regulatory or policy pension proposals.
- Produce special analyses requested by the Government Accountability Office and others to assess the financial condition of PBGC's programs.

⁵ 44 U.S.C. § 3301.

⁶ 36 C.F.R. § 1220.14.

- Conduct the ERISA 4022 required quinquennial (5 year) studies of the ME insurance program to determine the adequacy of multiemployer premium rates and benefit guarantees.

Thus, the data produced by PIMS is used in federal decision-making and in official government publications and documents and, as such, it should be accurate and complete, with supporting documentation (including any accepted deliverables prepared by the actuarial contractor) retained as a Federal government record. Issuance of PBGC actuarial reports and analyses containing inconsistent, incorrect, or unsupported actuarial estimates does not meet Federal requirements.

Review of Supplemental Material

This report is a revision of a MAR originally issued on May 7, 2012. OIG provided PBGC officials, including the PRAD Director, a draft of this report on April 12, after months of document requests and receipt of minimal information. Subsequent to issuing the draft, OIG officials engaged in further substantive discussions with PRAD and with PBGC leadership, including the PBGC Director. Some additional material was provided and the draft report was revised to incorporate that information. Subsequent to our issuance of the May 7 report, the PRAD Director asserted that he had substantial material that had not been previously provided. He believed this material showed errors in our report and would cause us to revise our conclusions.

OIG reviewed the supplemental material provided by the PRAD Director and amended the report to reflect the additional data where appropriate. However, our overall conclusions were unaffected by the additional documents, as the vast majority of the material provided did not provide relevant support for the FY 2010 Exposure Report or confirm review of PRAD actuarial work or contractor deliverables.

Some of the issues with the supplemental materials provided include:

- Several of the supplemental documents provided included the phrase “sign off” and the PRAD Director asserted that this demonstrated review of contractor work. However, our assessment showed that PRAD officials used the phrase “sign off” when authorizing the contractor to take a particular action. For example, an email from the actuarial contractor stated, in part, “In the interest of time, I’m attaching the SE-PIMS experience mortality spec ... so that you can **sign off** [emphasis added] for us starting similar enhancement to ME-PIMS.” Within the hour, the PRAD analyst responded “If this email constitutes “signing off” on the proposed ME enhancement, then yes, I’ll sign off on it.” Thus, it appears that “signing off” was considered an authorization to proceed, not a review of submitted work. Given that the documents using the phrase “sign-off” could not be directly linked to submitted contractor deliverables or to specific review results, we did not

conclude that the emails and listings showed evidence that contractor deliverables had been reviewed.

- Almost all of the documentation (other than emails) purporting to show contractor oversight was on contractor letterhead, and prepared by the actuarial contractor and not PBGC. Thus, we did not consider the contractor's status and progress reports as evidence of PBGC's review of deliverables.
- A document that appeared to be a spreadsheet was actually a series of numbers that had been cut and pasted from some other source. There were no indications of how the numbers were calculated or derived.
- In response to our request for documentation of parameters used, PRAD provided part of a 300-page "run report," however, this contained no documented connections to the outputs that appeared in the FY 2010 Exposure Report.
- On April 20, 2012, PRAD advised OIG that only limited information had been produced in an extensive search of electronic resources; PRAD noted that the ME analyst's "Sent" folder – a place where emails explaining how values were derived for the Report might be found -- was empty. Except for one file demonstrating that PRAD had used the wrong number of years in a calculation, no electronic files were located showing the source of the other incorrect information. Therefore, OIG concluded that PRAD would not likely find additional relevant information.

Necessary Actions

To ensure the quality of actuarial work products issued by PRAD, PBGC should:

- Conduct a thorough review of the 2010 Exposure Report to identify any other errors or inconsistencies.
- Correct all identified errors and inconsistencies and prepare a revised FY 2010 Annual Exposure Report. This report should be identified as revised and reflect the date of reissuance.
- Reissue the corrected FY 2010 Exposure Report in the same manner in which the original report was issued by sending it to parties who received it and posting the updated Report (identified as revised with a new issue date) on PBGC's external website.

- Develop, document and enforce policies and procedures to ensure the adequate and efficient review of contractor work performed with PIMS, including enumerating duties and assigning responsibilities for the accuracy and integrity of critical reports.
- Develop, document and enforce policies and procedures for a quality review of actuarial work reported by PBGC, whether in an issued report or in response to ad hoc inquiries. This process should include clearly defined duties and assigned responsibilities, as well as methods to validate and clearly identify all supporting documentation. Documentation should be retained of any issues noted as well as of the actions taken in response to the issues.
- Develop, document and enforce policies and procedures to retain supporting documentation of work done by PRAD actuaries and of all accepted actuarial contractor deliverables.
- Conduct a records management review of PRAD to determine what records must be maintained as Federal records.
- Consistent with information quality guidelines for Federal agencies and PBGC policy, develop and document a strategic review of the processes involved in creating actuarial reports from start to finish, so that critical control points, including input and output, can be established in order to increase quality control.

Within 60 days of receipt of this Management Advisory, please provide a written response detailing the actions taken to address the reported issues. If you have questions or would like to discuss this Management Advisory, please feel free to contact Rebecca Anne Batts, Inspector General, at (202) 326-4000, ext. 3437, or Deborah Stover-Springer, Deputy Inspector General, at (202) 326-4000, ext. 3877.



Rebecca Anne Batts
Inspector General



May 21, 2012

To: Rebecca Anne Batts
Inspector General

From: Laricke Blanchard *LB*
Deputy Director for Policy

Subject: **OIG Management Advisory Report on FY 2010 Exposure Report**

We thank OIG for bringing these issues to our attention. Although the PIMS projections for the FY 2010 Exposure Report were correct, PRAD staff were careless in transcribing, reviewing and proofing the estimates, which led to several errors in the actual report. Furthermore, since there were no procedures for checking projection estimates, those errors went undetected.

Last year, we made changes to ensure such errors do not recur. On the instruction of the PBGC Director, all estimates used for PBGC reports are now being reviewed outside PRAD. Other changes have been made as well. Following OMB's information quality guidelines, we are strengthening and documenting our quality assurance process, and will post a corrected report on our website, inform parties, and note the errors in the forthcoming FY 2011 Exposure Report.

Attachment

Management Advisory Report
Integrity of PRAD's Actuarial Calculations
ATTACHMENT

**PENSION BENEFIT GUARANTY
CORPORATION'S
RESPONSE TO
MANAGEMENT ADVISORY REPORT**



July 27, 2012

To: Rebecca Anne Batts
Inspector General

From: Laricke Blanchard *LB*
Deputy Director for Policy

**Subject: Corrective Actions Regarding OIG Management Advisory Report on
PBGC's Policy Research & Analysis Department**

Beginning in the fall of 2011 and culminating in your Management Advisory Report (MAR) of May 21 (No. 2012-10), your office identified a range of issues with the procedures (or lack of procedures) used by PBGC's Policy Research and Analysis Department (PRAD) in preparing our FY 2010 Exposure Report and other reports.

OIG found, among other matters, that PRAD staff did not routinely check their own work, did not retain work papers, that some work was not reviewed by anyone outside PRAD, and that there was insufficient documentation of procedures.

These findings were disturbing, both because PRAD's analytic work is used in PBGC reports and because it is widely-respected within the analytic and actuarial community. PBGC is an important source of information and analyses for individuals, for plans, and for the institutions concerned about retirement policy. PRAD's analyses and modeling systems are recognized throughout the actuarial community as among the best. We cannot allow its integrity to be undermined by carelessness and lack of appropriate procedures.

It was for that reason that PBGC took immediate corrective steps then and has undertaken additional steps since your May report. We are implementing each of your recommendations (the attachment provides details). We also have made additional changes in procedures and personnel and will continue to do so. Finally, although your report did not examine the PIMS models or PRAD's other analytic tools, we should note that these, too, have undergone review by outside experts, and we are undertaking additional reviews; we will report on these efforts separately.

As you recommended, PBGC is preparing a revised FY 2010 Exposure Report using improved procedures. It and future reports will be subject to additional quality control procedures prior to issuance.

PBGC is Strengthening Modeling & Reporting Procedures

PRAD devotes considerable time and resources to reviewing and revising its Pension Insurance Modeling Systems for single employer and multiemployer plans (SE-PIMS and ME-PIMS). PRAD is and has been very focused on maintaining the integrity of PIMS. PRAD receives numerous requests to model legislative proposals, many of which require changes to the PIMS computer code. PRAD routinely reviews and corrects the specifications drafted by the contractor and tests all of the code and parametric changes provided by the contractor. PRAD subjects those changes to unit testing, debugging, spreadsheet validations and code comparison routines.

Each fiscal year, PRAD issues a new version of SE-PIMS and ME-PIMS. As part of the model validation process, it undertakes an extensive cross-walk testing of the major differences between the versions to assure the reasonableness of the changes incorporated in the new version. The cross-walk documentation will be enhanced to enable review by an external actuary.

Nonetheless, our quality control procedures are clearly inadequate, and we are changing that. For example, in contrast to the care with which revisions to PIMS are undertaken, inputs to modeling and outputs from modeling have far fewer controls. Six months ago we made changes to ensure such errors do not recur, and we are making more. At Director Gotbaum's instruction, all estimates used for PBGC reports are now being reviewed outside PRAD.

You raised a question of whether just doing external checking (i.e., dotting) is a sufficient change. We agree that it is not. It was, however, necessary: had that one change been implemented, the errors you found in the 2010 Exposure Report would have been very likely caught before publication. As you and Director Gotbaum discussed, that change was neither the only one we've made nor the only one we're making. We also checked the actuarial and economic validity of the PIMS model with outside experts and senior professionals in the actuarial profession.

Other changes are planned as well. Following OMB's information quality guidelines, we are strengthening and documenting our quality assurance process. PRAD and the actuarial contractors are developing a quality control process that will consolidate PRAD's inputs and assumptions for each set of projections and produce the requested outputs and related report text directly, to reduce the possibility of human error. The contractor's processes will be repeated independently by PRAD, the results will be compared, and then the inputs, assumptions and outputs will be sent to an external actuary to independently verify the accuracy and completeness of the projections and output statistics. This process will include a formal and comprehensive documentation process.

PRAD Will Further Document its Procedures

The PIMS contractors have standard review and testing procedures that they complete before sending code changes to PRAD. These quality control reviews have been documented through email messages among PRAD staff and the contractors. PRAD is implementing a more formal and comprehensive documentation process, which includes review, signoffs, and proper storage and retrieval of a Quality Assurance Record that reflects best practices in actuarial consulting firms.

PRAD utilizes a contractor to create a very large electronic database of plan information derived from the Form 5500 that is the major input to PIMS. The contractor has been provided with very detailed procedures for the conduct and documentation of the review and validation of the data entered into this database. Some of these validation procedures (e.g., comparison with the Form 5500 data from the DOL's EFAST2 system) will now be repeated by PRAD personnel. PRAD has routinely reviewed the contractors' tests of the databases, and year-over-year changes in the data, for reasonableness and for outliers. We will improve the requirements, and the documentation of these tests.

We thank you and your colleagues for raising these issues. It is important that PBGC's analysis and reports be professional, accurate, and complete. We will build on your report to make sure that they are.

Attachment

Attachment

Necessary Action No. 1: Conduct a thorough review of the 2010 Exposure Report to identify any other errors or inconsistencies.

Planned Corrective Actions:

PRAD has conducted a thorough review of the 2010 Exposure Report to identify other errors or inconsistencies.

Estimated Completion Date: Completed.

Necessary Action No. 2: Correct all identified errors and inconsistencies and prepare a revised FY 2010 Annual Exposure Report. This report should be identified as revised and reflect the date of reissuance.

Planned Corrective Actions:

We agree and will do so.

Estimated Completion Date: 10.31.2012

Necessary Action No. 3: Reissue the corrected FY 2010 Exposure Report in the same manner in which the original report was issued by sending it to parties who received it and posting the updated Report (identified as revised with a new issue date) on PBGC's external website.

Planned Corrective Actions:

We agree. PBGC will post the updated Report on the PBGC public website, with specific notice that it is a revised Report, superseding a previous version. PBGC will include a new issue date on the website and in the Report. PBGC will transmit the new Report to all parties who received the original Report.

Estimated Completion Date: 10.31.2012

Necessary Action No. 4: Develop, document and enforce policies and procedures to ensure the adequate and efficient review of contractor work performed with PIMS, including enumerating duties and assigning responsibilities for the accuracy and

integrity of critical reports.

Planned Corrective Actions:

PRAD will develop, document, and enforce policies and procedures to ensure the adequate and efficient review of contractor work performed with PIMS, including:

- enumeration of duties and the associated responsible parties (listed by position and by the named person currently responsible) for
- accuracy, and where applicable, separately for
- integrity of critical reports.

Estimated Completion Date: 6.30.2013

Necessary Action No. 5: Develop, document and enforce policies and procedures for a quality review of actuarial work reported by PBGC, whether in an issued report or in response to ad hoc inquiries. This process should include clearly defined duties and assigned responsibilities, as well as methods to validate and clearly identify all supporting documentation. Documentation should be retained of any issues noted as well as of the actions taken in response to the issues.

Planned Corrective Actions:

PRAD has instituted several quality control procedures, and will formalize those and other quality control procedures. PRAD will develop, document, and enumerate full enforcement procedures for a quality review of actuarial work reported by PBGC. Assignments for duties and responsibilities will be listed by position, and by the name of the person currently in that position or responsible for each policy or procedure.

The policies and procedures will detail the specific review mechanisms that will ensure appropriate review of outgoing reports as well as documentation requirements.

Estimated Completion Date: 6.30.2013

Necessary Action No. 6: Develop, document and enforce policies and procedures to retain supporting documentation of work done by PRAD actuaries and of all accepted actuarial contractor deliverables.

Corrective Actions:

The PBGC Director has already directed that supporting work papers for all reports must be retained. PRAD currently monitors PIMS contractor's standard review and testing procedures that they complete before sending code changes to PRAD. These quality control reviews have been documented through email messages among PRAD staff and the contractors. PRAD will implement a more formal and comprehensive documentation process, including review, signoffs, and proper storage and retrieval of a Quality Assurance Record that reflects best practices in actuarial consulting firms.

PRAD will also develop and document additional policies and procedures to retain supporting documentation of work done by PRAD actuaries and of all accepted actuarial contractor deliverables. These additional policies and procedures will include enforcement mechanisms to assure that policies and procedures are followed.

Estimated Completion Date: 6.30.2013

Necessary Action No. 7: Conduct a records management review of PRAD to determine what records must be maintained as Federal records.

Planned Corrective Actions:

PRAD has already prepared a file plan which will support this effort. We are actively engaged in assembling a multi-departmental team to complete this review. The team will include representatives with records management, legal, and actuarial expertise.

Estimated Completion Date: 3.31.2013

Necessary Action No. 8: Consistent with information quality guidelines for Federal agencies and PBGC policy, develop and document a strategic review of the processes involved in creating actuarial reports from start to finish, so that critical control points, including input and output, can be established in order to increase quality control.

Planned Corrective Actions:

PRAD will perform a review of the processes involved in creating actuarial reports, and document those processes. The documentation will include procedures to be used in the creation of actuarial reports from start to finish, including the creation and storage of records showing:

- sources of inputs and the review of those sources and their use,

- outputs from computer simulations and their review,
- work products performing analyses for the reports,
- tracking of results published in reports showing the inputs and process leading to the result.

The documentation of the above will include standard procedures to be followed for periodic (annual, quarterly, etc.) and for ad hoc reports.

Estimated Completion Date: 6.30.2013

If you want to report or discuss confidentially any instance of misconduct, fraud, waste, abuse, or mismanagement, please contact the Office of Inspector General.

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1-800-303-9737

The deaf or hard of hearing, dial FRS (800) 877-8339 and give the Hotline number to the relay operator.

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