

## Managing the Capital Adequacy Process (CAP) Using SAS®

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### ABSTRACT

The Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) requires the thirty-plus domestically significant banks in the U.S. to conduct mid-year and annual stress testing to assess their capital adequacy under different scenarios. This exercise consists of various stress testing processes, which are rectified through the bank's process narratives, supervisory expectations, and internal controls related to the processes. Process flows choreograph the actual capital adequacy process (CAP) operationalization cycle. Compliance with supervisory expectations related to capital adequacy, which are mentioned in regulations SR 15-18[1] and SR 15-19[2], are carried out through a workflow-managed CAP. SAS offers a comprehensive solution, SAS® Qualitative Assessment Manager, that lets banks manage and keep track of these expectations, processes, related control tests, and subsequent findings. In addition, it supports the entire process of regulatory exams through initiation of relevant issues and subsequent resolution. The end-point of a stress-testing cycle is a set of attested document submissions to a regulatory authority or other audit-related stakeholders.

### INTRODUCTION

Stress testing in finance is a regularly practiced exercise by Bank Holding Companies (BHCs) to conduct balance sheet analysis under unfavorable economic scenarios in order to determine if they have sufficient capital to withstand the impact of adverse market conditions. The credit financial crisis of 2007-2009 made banking regulators realize that these stress-testing programs were over-optimistic. They produced much smaller loss numbers compared to a bank's capital buffer or the actual loss experience. As a result, the Dodd-Frank Act Stress Test (DFAST) and Comprehensive Capital Analysis & Review (CCAR) programs were introduced by the U.S. Federal Reserve Board to evaluate financial institutions' capital adequacy, internal capital adequacy assessment processes, and the robustness of the capital planning process.

When the Federal Reserve supervisors review the capital planning process, the expectations related to capital planning differ for BHCs of varied sizes, activities, systemic importance, and scope of operations, making the process even more complex. The Federal Reserve has formalized these expectations in the form of regulatory guidelines in form SR 15-18 and SR 15-19. Comparable guidelines, such as ICAAP/Pillar II and IFRS9 for managing stress testing and capital planning apply to Europe and other international banking centers. Banks have the responsibility to abide by these expectations because regulators can raise objections based on qualitative guidelines.

In this paper, we will describe an effective qualitative assessment framework to manage a BHC's capital adequacy process and how SAS Qualitative Assessment Manager helps achieve that.

### OVERVIEW OF CAPITAL ADEQUACY PROCESS

The guiding principles mentioned in Figure 1 below outline the elements on which the Federal Reserve evaluates the robustness of a BHC's capital adequacy process.

**Principle 1: Sound foundational risk management**

The BHC has a sound risk-measurement and risk-management infrastructure that supports the identification, measurement, assessment, and control of all material risks arising from its exposures and business activities.

**Principle 2: Effective loss-estimation methodologies**

The BHC has effective processes for translating risk measures into estimates of potential losses over a range of stressful scenarios and environments and for aggregating those estimated losses across the BHC.

**Principle 3: Solid resource-estimation methodologies**

The BHC has a clear definition of available capital resources and an effective process for estimating available capital resources (including any projected revenues) over the same range of stressful scenarios and environments used for estimating losses.

**Principle 4: Sufficient capital adequacy impact assessment**

The BHC has processes for bringing together estimates of losses and capital resources to assess the combined impact on capital adequacy in relation to the BHC's stated goals for the level and composition of capital.

**Principle 5: Comprehensive capital policy and capital planning**

The BHC has a comprehensive capital policy and robust capital planning practices for establishing capital goals, determining appropriate capital levels and composition of capital, making decisions about capital actions, and maintaining capital contingency plans.

**Principle 6: Robust internal controls**

The BHC has robust internal controls governing capital adequacy process components, including policies and procedures; change control; model validation and independent review; comprehensive documentation; and review by internal audit.

**Principle 7: Effective governance**

The BHC has effective board and senior management oversight of the CAP, including periodic review of the BHC's risk infrastructure and loss- and resource-estimation methodologies; evaluation of capital goals; assessment of the appropriateness of stressful scenarios considered; regular review of any limitations and uncertainties in all aspects of the CAP; and approval of capital decisions.

Source: Adopted from *Capital Planning at Large Bank Holding Companies: Supervisory Expectations and range of Current Practice* [3]

**Figure 1: Seven Principles of an Effective Capital Adequacy Process**

These principles are broadly defined and not specifically tailored to the Bank Holding Company. A robust CAP should include modeling practices and scenario assumptions that reflect BHC-specific factors. According to the Federal Reserve, trying to design a CAP to merely mirror the Federal Reserve's stress testing protocol is a weak practice. The detailed capital planning expectations for different tiers of BHC are mentioned in supervisory letters SR 15-18 and SR 15-19. Table 1 below explains the applicability guidelines of these two supervisory letters for each tier of BHC.

SR 15-18	SR 15-19
BHC is subject to the Federal Reserve's Large Institution Supervision Coordinating Committee (LISCC) framework.	BHC is otherwise not subject to the Federal Reserve's Large Institution Supervision Coordinating Committee (LISCC) framework.
BHC has total consolidated assets of \$250 billion or more <b>OR</b> consolidated total on-balance sheet foreign exposure of \$10 billion or more.	BHC has total consolidated assets of at least \$50 billion but less than \$250 billion <b>AND</b> has consolidated total on-balance sheet foreign exposure of less than \$10 billion.

**Table 1. Applicability of SR 15-18 and SR 15-19**

Core areas for capital planning expectations are governance, risk management, internal controls, capital policy, scenario design (for SR 15-18: Incorporating stressful conditions and events), and projection methodology (for SR 15-18: Estimating impact on capital positions). Although there have been slight

changes during almost every CCAR period regarding expectations from BHC, the core areas for expectations and CAP guiding principles remains the same.

In line with the guiding principles, best practice for BHC should be to focus on two major areas when it comes to having a well-managed regulatory qualitative assessment framework. These are: managing expectations and managing the stress testing processes. They are very much related, rather than being independent of each other. Hence, they need to be managed together.

## **MANAGING EXPECTATIONS THROUGH SELF ASSESSMENTS**

Considering the seven guiding principles, a BHC should create its own set of individual expectations based on the supervisory letters. Each BHC might have a different subset of expectations, the superset being the supervisory letter. In a proper qualitative assessment framework, these expectations need to be managed and regularly reviewed to be compliant with the guidelines.

When defining the expectation, you should clearly state which guiding principle it belongs to. One expectation might fall under more than one principle. The process for compliance with this expectation and any relevant evidence should be clearly mentioned. Each expectation should be assigned to the rightful owner or owners. For example, one of the expectations under the internal controls topic is that models should be reviewed periodically. The owner for this expectation should be the model risk governance or validation lead. The owner needs to assess the expectation periodically and assign a rating for compliance level. This rating should be reviewed by someone from the capital adequacy team. In case of a negative rating, the owner should provide a detailed explanation and describe the related initiatives they are taking to be compliant with the expectation.

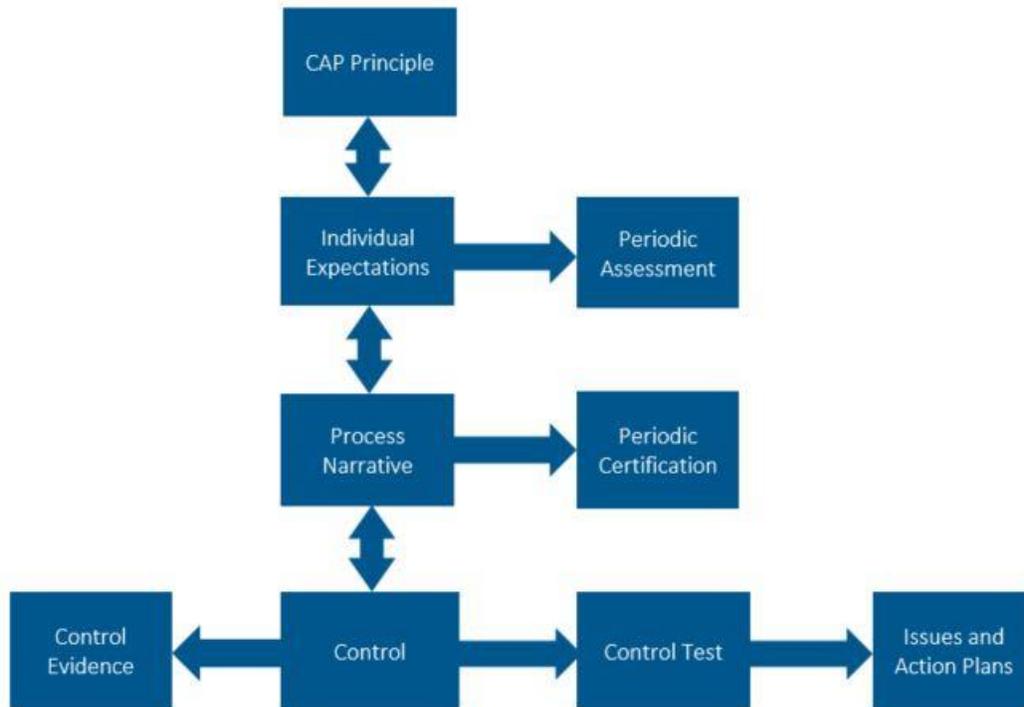
## **MANAGING STRESS-TESTING PROCESSES AND CONTROLS**

As part of the Dodd Frank Act for Stress Testing (DFAST), BHCs must conduct stress testing for capital planning. Stress tests are governed by stress testing processes, how many such processes varies depending on the size and structure of the bank. Managing these processes isn't an easy task, but it is required by regulators through the expectations mentioned in the supervisory letters. Moreover, these processes are dependent on a number of internal controls, which need to be inventoried and managed in order that they are in compliance with the guidelines, particularly principle 6.

Processes are defined using process narratives, which should go through a certification process periodically. Just like an expectation, a process should also have defined owner or owners who will be responsible for updating the narrative, which in turn should be reviewed by the capital adequacy team. The narrative might consist of a process explanation, assumptions, controls, inputs/outputs, and data flow. All this information about processes defines a bank's stress-testing methodology, and hence its accuracy is critical to the bank's capital adequacy plan.

Although controls are tied to processes, they should be inventoried separately. Controls are critical to any organization, especially from a regulatory point of view. They need to be tested regularly to check their effectiveness. Any test failures should be managed through issues and action plans to maintain the requisite level of accountability. Besides testing for effectiveness, control evidence needs to be provided periodically in relation to the appropriate process narrative. This evidence is critical from a regulatory perspective and hence needs to be reviewed independently by both process owner(s) and capital adequacy.

Figure 2 represents this relationship between different artifacts of a qualitative assessment framework.



**Figure 2: Relationship between Different Areas of a Qualitative Assessment Framework**

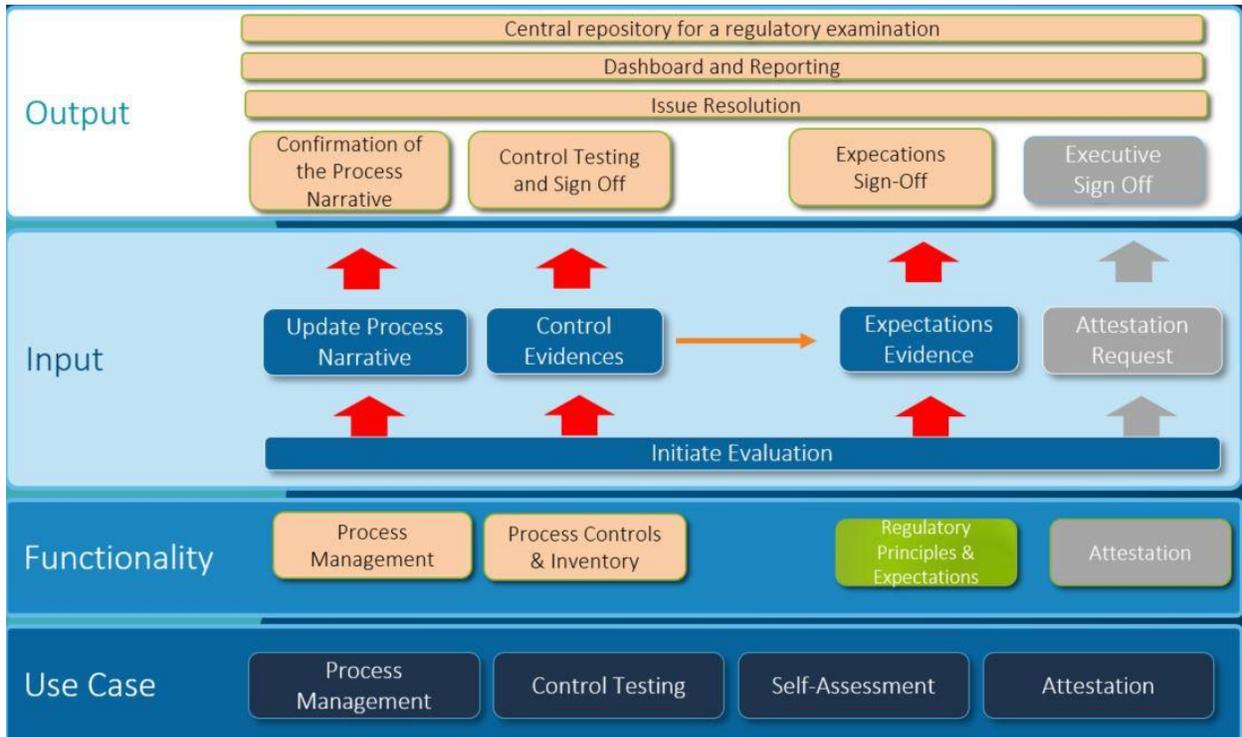
## SAS QUALITATIVE ASSESSMENT MANAGER

SAS Qualitative Assessment Manager is a software solution that facilitates compliance with qualitative assessment and capital adequacy guidance and regulations, including the Internal Capital Adequacy and Assessment (ICAAP) requirement of the Basel II Accord and the Comprehensive Capital Analysis and Review (CCAR) regulatory framework of the United States Federal Reserve. The solution streamlines the processes required to meet internal and governmental guidance and regulations based on the seven principles of capital adequacy assessment, compliance, and governance. It reduces the manual effort required to document, manage, assess, communicate, monitor change, and audit the stress-testing processes required for capital planning and review. The application can be used to perform the following tasks:

- Define and manage capital adequacy expectations
- Collect, enter, transfer, and store qualitative data
- Manage qualitative assessment activities in accordance with governmental and internal regulations
- Centralized library of all documents related to the stress-testing cycle, organized by principle, taxonomy, file structure, and context.
- Managing the stress-testing process narratives, including their access and version controls
- Support for the posting of all evidence and artifacts related to each element of the control testing process.
- Create and track issues and develop action plans related to capital adequacy
- Examine a history of changes for many data objects, such as losses or assessments

- Ad hoc in-system correspondence among stakeholders
- Built-in configurable workflow management for each type of assessment and certification
- Full support of CFO/Executive attestation process

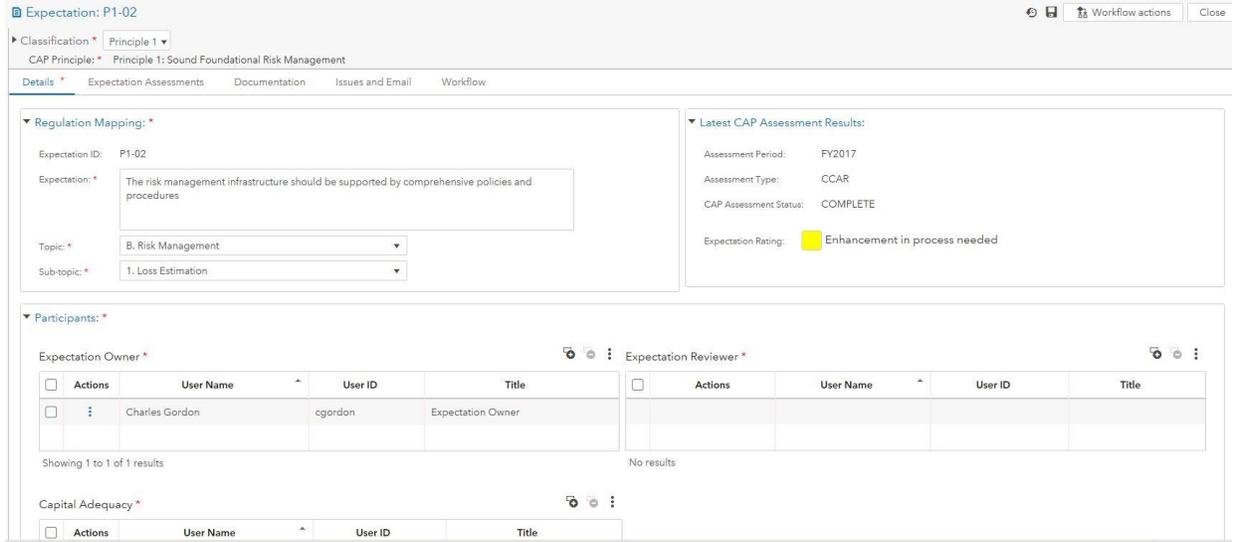
Figure 3 represents the SAS Qualitative Assessment Manager ecosystem with different use cases for each functionality with inputs and outputs.



**Figure 3: SAS Qualitative Assessment Manager Conceptual Framework**

Each use case represents a separate module of the application, with its own screen to capture object information; a separate workflow mimicking the ideal approval process; a version-controlled document repository; and with its own set of users/roles for well controlled access. For example, Process Management has its own screen where process narrative information is captured, its own workflow process for certification and approval, and a document repository to keep version controlled process narrative documents. The system also allows the narrative document to be broken down into several pieces to be assigned to separate/multiple process owners of review, and then to concatenate those pieces back together for a single higher management or capital adequacy approval. This in turn, enables you to have all your qualitative assessments done within the system in an auditable and timely fashion, which facilitates fact-based conversations with regulators in defense of your stress-testing process.

SAS Qualitative Assessment Manager is a user-friendly, web-based application that enables banks to manage and perform activities related to capital adequacy planning. Display 1 shows the expectation details including the results from its recent assessment, stakeholders, documentation, and any related issues in different sections and tabs. Although issues are being managed separately through another workflow and associated display screen, they are also available as a holistic view of expectation to user. This is achieved through a concept called 360° linking, which is explained in the next section.



**Display 1: Home Page of a Sample Expectation in SAS Qualitative Assessment Manager**

### 360° LINKING

While you might start with defining your expectations in SAS Qualitative Assessment Manager, you will eventually need to document mid-year and CCAR assessments, related stress testing processes, related evidences, control documents, stakeholders and any outstanding issues. SAS Qualitative Assessment Manager has the capability of linking them all together and showing this holistic view of the expectation screen itself via 360° linking. Suppose an expectation didn't get the desired rating during assessment in this CCAR cycle. Using 360° linking, it's much easier to track what could have caused this. This capability can forewarn you in case one of your control isn't doing well, and you can see the impact on the related expectation that you might fail to comply in the next cycle if you don't fix that control.

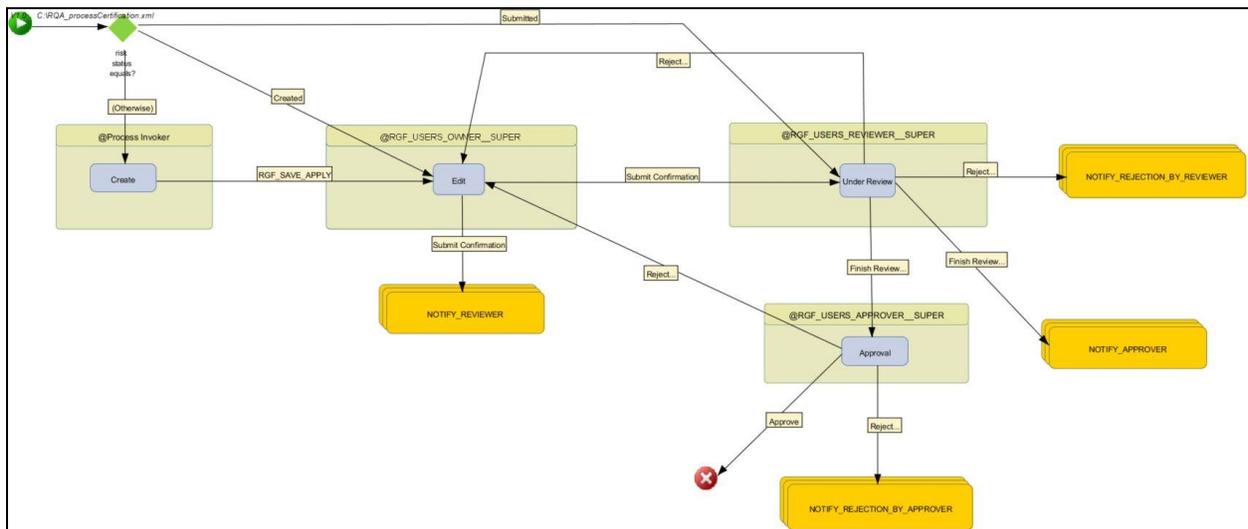
Figure 4 shows how each expectation is linked to different objects in SAS Qualitative Assessment Manager. 360° linking is available for each object, so you get a complete 360° view of each object to see its relationships with and impacts on other objects. Moreover, it lets you click on the link itself, and drill down to the details of the linked object if needed.



**Figure 4: Expectation Object as an Example of 360° Linking**

## WORKFLOW MANAGEMENT

Many processes in SAS Qualitative Assessment Manager are conducted in a series of stages using built-in templates based on SAS workflow technology. It includes automated tasks that are computed by the application and user tasks, such as reviews and validations, with alerts/notifications at each stage transition to the appropriate stakeholders. To facilitate accountability, each user task requires a sign-off before you can proceed to subsequent stages. This creates a traceable information stream for auditing and reporting purposes. Although built-in workflows are defined based on best practices, they can be customized easily based on bank's processes using a point-and-click tool called SAS® Workflow Studio.



**Display 2: Process Certification Workflow in SAS Qualitative Assessment Manager**

Display 2 shows how the certification process works in SAS Qualitative Assessment Manager. The orange boxes represent the email notifications being sent directly to a user's Microsoft Outlook account (or any other email client they are using) with the URL for the process certification in question for easy access. A user doesn't have to log in to the system every day to check their task as they might be busy

with other CCAR-related activities at the same time. Notification with a quick access to the object lets them finish the task in an efficient manner.

## CONCATENATION OF DOCUMENTS

To see a holistic view of a stress-testing process, you need a single auditable document to include all the different parts that define a process narrative. This is required sometimes for review at executive level outside of SAS Qualitative Assessment Manager. At the same time, different users may be the owners of different parts of the process. Best practice is for them to review only that part of the narrative that they are responsible for, rather than having to go through the entire process narrative to search for their part to review it. SAS Qualitative Assessment Manager has the ability to break up a large document into different parts and then concatenate the individual pieces to provide a unified document view.

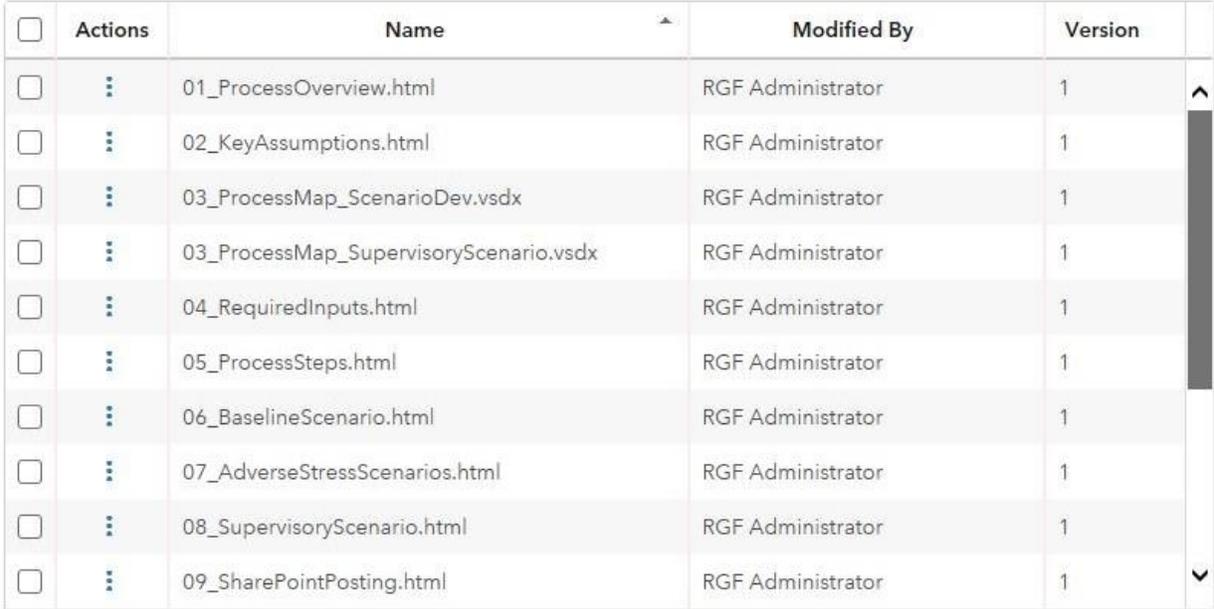
Display 3 shows the process narrative screen in SAS Qualitative Assessment Manager where the complete process narrative has been broken into separate documents. After reviewing and updating these documents individually, clicking on the link **Download Process details as a single document** will let the user download the concatenated process narrative document.

Process Narrative Title: \* Scenario Development

Level: \* Level 1

Process Details:

Search 



<input type="checkbox"/>	Actions	Name	Modified By	Version
<input type="checkbox"/>	⋮	01_ProcessOverview.html	RGF Administrator	1
<input type="checkbox"/>	⋮	02_KeyAssumptions.html	RGF Administrator	1
<input type="checkbox"/>	⋮	03_ProcessMap_ScenarioDev.vsd	RGF Administrator	1
<input type="checkbox"/>	⋮	03_ProcessMap_SupervisoryScenario.vsd	RGF Administrator	1
<input type="checkbox"/>	⋮	04_RequiredInputs.html	RGF Administrator	1
<input type="checkbox"/>	⋮	05_ProcessSteps.html	RGF Administrator	1
<input type="checkbox"/>	⋮	06_BaselineScenario.html	RGF Administrator	1
<input type="checkbox"/>	⋮	07_AdverseStressScenarios.html	RGF Administrator	1
<input type="checkbox"/>	⋮	08_SupervisoryScenario.html	RGF Administrator	1
<input type="checkbox"/>	⋮	09_SharePointPosting.html	RGF Administrator	1

Showing 1 to 15 of 15 results

[Download Process details as a single document](#)

**Display 3: Process Details Page with a Link at the Bottom to Concatenate All Documents**

## CONCLUSION

After the 2008 financial crisis, stress testing has probably been the biggest exercise banks worldwide have had to do internally and for compliance with national regulatory guidelines. A huge amount of time and resources go into this every year. Any objections from the Federal Reserve could mean huge fines for banks and big reputation risks because the results are made public immediately. Regulators aren't

looking only at quantitative assessment anymore. They are equally, if not more, concerned about the qualitative aspects of it including the policies and procedures related to stress-testing processes. Since its introduction in November 2011, the CCAR exercise and the qualitative expectations around it have only become more stringent with each passing year—the latest being the requirement of CFO attestation. Now CFOs, or an equivalent executive authority, must sign off on processes and reporting results that affect the bank’s financial statements. For larger banks, attestation of stress-testing results is a discrete process. Self-assessment is not really optional anymore, as it might be too late to avoid headline risk if a bank discovers any critical non-compliance later.

SAS Qualitative Assessment Manager facilitates well-run regulatory exams that comply with stress-testing and capital adequacy requirements. It enables banks to certify their stress-testing processes, test the effectiveness of process-related controls, provide evidence, and conduct self-assessments of the methodology used for stress testing whether you are following the US Federal Reserve’s or European Banking Authority’s capital adequacy (ICAAP) guidelines. SAS Qualitative Assessment Manager provides a central point of control for the management of regulatory exams from the beginning of the process through to the resolution of any issues. It includes a centralized library of all documents with versioning related to the stress-testing cycle and likely to be requested by internal audit or regulatory examiners. Any issues raised by the examiners are captured and entered into the issue mitigation process, where they are tracked and reported up through resolution. The end-point of the stress testing cycle is a set of attested document submissions to a regulatory authority or other audit-related stakeholders.

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## CONTACT INFORMATION

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