

Industry White Paper

AMA Validation Practices

AMAG Range-of-Practice Observations

June 2014 Edition

The AMA Group

The Risk Management Association
Operational Risk Advisors LLC

Industry Perspective

AMA Validation Practices

An AMAG Range of Practice white paper

This paper on Validation Practices is one in a series by the AMA Group (AMAG)¹ on the implementation of Advanced Measurement Approaches (AMA) in the United States. It is intended to aid in a continued dialogue between the industry and the regulatory community on this aspect of AMA implementation.

AMA practices and regulations include both the validation and verification of operational risk systems and framework. AMAG recognizes such language in the U.S. Rule, Interagency Guidance, and from the Basel Committee². The Group's interpretation and practical application of the regulatory text follows.

Although we will reference both Validation and Verification, this paper is intended to address only the scope, responsibilities, activities and current industry practices associated with Validation, and serve as an interpretation and discussion of implementation, not an expansion of that guidance, per se.

Validation Objective

AMA Validation is an oversight process intended to demonstrate that risk management systems and outcomes are comprehensive, accurate, and being executed consistent with written quality standards, regulatory requirements, and the organization's risk profile.

Scope of Validation

The term 'Validation' is interpreted broadly in the context of AMA. It is applied to Operational Risk Management System (ORMS) methodologies, policies, processes and governance, and addresses data elements, the measurement system, and outcomes. More specifically, it includes:

- Assessment of the Operational Risk Management Framework (ORMF), as well as Conceptual Soundness and fundamental underpinnings of the advanced measurement system (review of design, consistent with regulatory requirements);
- Validation of Operational Risk *elements* such as Internal Loss Data (ILD), External Loss Data (ELD), Business Environment & Internal Control Factors (BEICF) and Scenario Analysis, as well as *activities*, such as Risk, Control Assessment (RCA) and Event Capture, in terms of compliance to policies/standards, procedures;
- Assessment of execution at corporate and business levels; and
- Both ongoing monitoring and an outcomes analysis.

¹ The Advanced Measurement Approaches Group (AMAG) was formed by the Risk Management Association (RMA) in 2005 to share industry views on aspects of Advanced Measurement Approaches (AMA) implementation with the U.S. financial services federal regulatory agencies. Attachment B to this Paper consists of additional information about AMAG, including a list of member firms. They are listed for identification purposes only. Support for the AMAG is provided by RMA and Operational Risk Advisors LLC (ORA). This Paper does not necessarily represent the views of RMA, RMA's institutional membership at large, ORA, or the views of the individual institutions whose staff have participated in the AMAG.

² See pp. 4-5 for regulatory references

In contrast, verification is generally interpreted to encompass a focus on the ORMF, is typically conducted by internal and/or external audit, and represents complete independence and separation of such activities from the ORMF itself. As such, validation should be subject to independent verification and enhancement.

Validation should re-visit the conceptual soundness of the model framework, including assurance that the model remains fit for its purpose (e.g., confirmation that it continues to represent operational risk exposures appropriately), as opposed to model validation of the analytics. Validation of model analytics and other more quantitative aspects of AMA are generally considered part of a separate and discrete function (i.e., “model validation”), the results of which flow into consolidated Validation reporting.

Lines of Defense in Practice

The three-lines-of-defense model is often used to ensure sound governance, and that the bank is operating within its established risk appetite. The model focuses on active interaction and communication between the first and second line, with independent oversight by the third line.

- First Line of Defense (Ownership, Execution, and Accountability): Ownership, strategy, execution and accountability for identifying, assessing, controlling, mitigating, training and communicating risks associated with business processes and decisions. Responsible for quality assurance, monitoring and reporting of risk profile.
- Second Line of Defense (Governance, Oversight, and Validation): Provides independent oversight and challenge of the risk management/taking activities of the first line of defense. Includes governance, risk appetite, guidance, establishing policy and tolerances, training and monitoring. Responsible for validation of first line execution to policy and that the activities are within the established risk appetite. Effective validation should challenge and, as a result, enhance the activities of the first line of defense, especially once exiting parallel run.
- Third Line of Defense (Assurance): Provides Independent assurance that risks are properly governed, identified, assessed and managed by the first and second lines of defense.

Validation Characteristics

- Validation is explicit and defined both in terms of what is being validated and when.
- The process typically consists of an aspect of Monitoring and/or Testing, whether separate or in combination, as defined below.
 - Monitoring -- In the context of ‘Validation’, monitoring activities are understood to be performed by the second line of defense, and involve **review** of the work of others to determine if they meet certain requirements, and if the results support the conclusions reached. Monitoring is performed on a regular and ongoing, but typically pre-defined, basis (e.g., quarterly on a specific sample).
 - Testing -- In the context of ‘Validation’, testing activities are comprised of determining if controls are working and if the same conclusions can be reached by second line individuals performing the **test**. Testing of specific samples is performed regularly on a pre-defined basis (e.g., annually).
- Validation includes a formal process to report and address results; provision is made for escalation.
- The validation program or activities are documented, in some cases by policies and procedures, and there is documented evidence of the validation results.

- Validation is performed continuously, not just on one time basis; it includes gap analyses.
- Another form of validation is ‘outcomes analysis’ or back-testing, where risk and control assessments are evaluated against actual loss data to determine the validity of the assessments and its process.

Organizational Structure and the Validation Process

- Validation is typically performed by designated resources of the corporate operational risk management group in combination with other second line corporate areas.
- It may be a self-contained process and/or existing control processes may be leveraged, where appropriate.
- Objectivity is key. The performance of validation work should balance the need for objective oversight with close working knowledge of both development and execution of the advanced systems.
 - ✓ In the context of Validation performed by the 2nd line of defense, where used, the term ‘independence’ refers to the objectivity of the reviewer rather than the organizational independence from the functions being reviewed.
 - ✓ This form of independence is supported by the use of defined, repeatable review and/or testing processes, transparent approaches to assessment, and identifiable evidence of review and results.
- The objectivity of the validation exercise is attested by audit review, which assumes the responsibility of the third line of defense.

Outcomes and Reporting

- Validation results are rated in some cases, but always shared with business line and risk management leadership, as well as with governance committees.
- Results are formally tracked, escalated and closed.
- Outcomes are used for potential improvement to the control environment and execution of the ORMF. The term ‘outcomes analysis’, while used broadly in the validation processes, is most often associated with back-testing and model validation.

Added Value

- Ideally, the Operational Risk (OR) validation process identifies areas of non-compliance on a regular and timely basis that may have potential material impact to model input and output. Timely validation results allow for necessary changes to be effected irrespective of audit cycles.
- The OR validation process is often separate and distinct from Internal Audit as it is conducted by individuals who have both an in-depth knowledge of the framework, and maintain an ongoing dialogue with the execution teams. This enables the OR validation process to have unique insights into how the framework is applied in each business.
- The OR validation process is distinct from first line monitoring or control activities inasmuch as it benefits from greater independence.
- Validation work is aligned to and interacts with other types of validation efforts (e.g., model validation, first line point-of-capture checks).
- The validation process may complement and/or reinforce monitoring or control activities performed by first line or other control groups.
- Results can be applied and leveraged by Audit.
- The Challenge role is an additional added value.

Validation and Challenge

The word ‘Challenge’ has different uses with respect to the AMA Validation process and Corporate Operational Risk Management (CORM) function. They are:

- Validation Challenge -- The inherent actions and focus of the ‘Validation’ process, as in the 2nd Line validators’ review and challenge of the work performed by the first and second line execution teams.
 - ✓ The ‘Validation’ process includes ‘Monitoring’ and ‘Testing’ the effectiveness of the activities undertaken by the Corporate Op Risk function.
- CORM Execution Team Challenge Activities -- Other second-line Subject Matter Experts (SMEs) perform validation and challenge activities as well.
 - ✓ While not the specific subject of Validation regulations, effective second line Corporate Operational Risk execution functions engage in challenges to the business lines on a periodic and ongoing basis when and where necessary.
 - ✓ A healthy risk management culture includes challenge as part of its regular activities in order to avoid “check box” compliance, which can become stale and ineffectual over time. After all, this is the very nature of risk management activities. The need for flexibility and creativity typically make them less specified as to scope and routine, however.
- An effective challenge process increases the reliability of subjective data, which is inherent in some aspects of operational risk management programs.
- Activities are evidenced by issues raised, risks accepted, and meeting minutes, where and as applicable.

In the final assessment, validation and challenge activities, when executed appropriately, work to identify and mitigate potential emerging risks and issues.

Frequency

- Validation of the “conceptual soundness and fundamental underpinnings of the advanced systems framework” is provided continually, especially as a firm’s risk profile evolves or otherwise changes.
- Validation testing occurs no less than annually. Frequency will be driven by risk-based assessments, the rhythm of the function being validated, or may be event-driven.
- Challenge and Monitoring activities are ongoing.

Regulatory Guidance – Key Concepts and References

- Validation activities on an ongoing basis, including⁽³⁾:
 - Conceptual soundness
 - Ongoing monitoring
 - Outcomes analysis
- ... independent of advanced systems’ development, implementation and operation”⁽⁴⁾
- Ongoing monitoring of framework⁽⁴⁾

- Validation of model inputs ⁽⁴⁾
- Internal audit function independent of business line management ⁽⁴⁾
- "... staff in the ORMF (Operational Risk Management Framework) may perform validation work, provided that this work is review by an independent party" ⁽⁴⁾
- "Independent validation and verification are components of the third line of defense" ⁽⁵⁾
- Verification: Independence "to ensure an effective challenge process" ⁽⁶⁾
- Verification of the ORMF "is done on a periodic basis and is typically conducted by the bank's internal and/or external audit ..." ⁽⁵⁾
- "Independent Validation and Verification are components of the third line of defence ... used to manage operational risk, and serve as a challenge function ..." ⁽⁵⁾
- "Validation ensures that the ORMS used by the bank is sufficiently robust and provides assurance of the integrity of input, assumption, process and outputs." ⁽⁵⁾
- "The validation function should generally be carried out internally by qualified validation resources. However, supervisor recognizes that this may pose a challenge for some banks." ⁽⁵⁾
- The bank's verification and validation functions should provide independent assessments and opinions, while avoiding improper influence from those units being reviewed. ⁽⁵⁾
- The validation of the operational risk measurement system by external auditors and/or supervisory authorities must include the following: verifying that the internal validation processes are operating in a satisfactory manner....⁽⁷⁾

Summary

Validation is an oversight process intended to demonstrate that risk management systems and outcomes are comprehensive, accurate, and being executed consistent with written quality standards, regulatory requirements, and the organization's risk profile. The process includes validation of the ORMF, operational risk elements and assessment of execution at the corporate and business level.

The financial services industry has made significant progress toward the development of validation programs in recent years. For the many banks using the three-lines-of-defense model, 'Validation' efforts are characterized as a second line activity, vs. 'Verification', which is deemed to be a third line activity. In other words, 'Validation' is generally performed by designated resources of the Corporate Operational Risk Management group, or in combination with other second line corporate areas. The process is separate and/or may leverage other existing control activities. Validation results are reported to business and risk management leadership. Challenge is a key concept and a value added by the process. Other aspects of added value are that the validation process often complements monitoring or control activities performed by the first or third lines, its results can be applied and leveraged by internal audit, and it brings unique expertise (i.e., it is typically conducted by individuals who have in-depth knowledge of the AMA framework).

References:

- ⁽³⁾ U.S. Interagency Guidance, June 2011 and Final U.S. Rule, December 2007
- ⁽⁴⁾ U.S. Interagency Guidance, June 2011
- ⁽⁵⁾ BCBS, 2011, paragraphs 14, 45, 50, 58 and 60.
- ⁽⁶⁾ U.S. FRB Guidance, May 2, 2013
- ⁽⁷⁾ BCBS International Convergence of Capita Measurement and Capital Standards, June 2004.

AMA Validation Practices

Addendum

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Attachment A

U.S. Interagency Release

Guidance on the Advanced Measurement Approaches for Operational Risk

June 3, 2011

From pp. 10 – 12 ---

“Independent Review

“Validation

“The advanced approaches rule requires that a bank validate, on an ongoing basis, its advanced systems. For operational risk, advanced systems refer to a bank’s operational-risk management processes, operational-risk data and assessment systems, and operational-risk quantification systems. Validation of a bank’s AMA framework must include: (i) an evaluation of the conceptual soundness of the advanced systems (including developmental evidence supporting the advanced systems), (ii) an ongoing monitoring process that includes verification of processes and benchmarking, and (iii) an outcomes analysis process that includes back-testing. Validation is a process encompassing a variety of activities that may be performed by different individuals and/or groups throughout the organization over time.

“Banks should develop formal policies that implement validation of the AMA framework. The scope of validation and the methodologies employed should be consistent with the materiality and complexity of the risks being managed. A bank’s validation process must be independent of the advanced systems’ development, implementation, and operation, or be subject to an independent review of its adequacy and effectiveness. As a general matter, a bank should ensure that individuals who perform the validation activities are not biased in their assessments due to their involvement in the development, implementation, or operation of the processes or products undergoing validation.

“Validation of Governance and Data Elements

“The validation of conceptual soundness consists of an evaluation of the developmental evidence supporting the risk measurement and management framework, including the underlying systems, processes, and tools. Validation should consider whether the conceptual framework, governance, measurement and monitoring systems, management reporting, and controls are appropriate for the firm’s size, complexity, and business activities.

“A bank must have a process for ongoing monitoring to assess whether all aspects of the AMA framework have been implemented effectively, remain appropriate, and are performing as intended. Ongoing monitoring activities should include ensuring that: (i) the capture of internal and external data is accurate and complete, (ii) scenario and BEICF data are well supported and structured to limit bias, (iii) risk monitoring and management is effective, and (iv) appropriate remediation is undertaken if deficiencies exist. Validation also must incorporate outcomes analysis. Outcomes analysis must include comparisons of data elements, such as BEICFs, with actual loss experience or scenario analysis results with internal and external data.

“Validation of Quantification Systems

“Validation should ensure that the bank’s operational-risk quantification systems generate credible estimates of the bank’s operational-risk exposure that reflect the operational-risk profile of the bank. Validation of the conceptual soundness should include validation of model inputs (including the selection and any transformations of data elements), outputs, assumptions, and the methodology. Ongoing validation of the AMA quantification system must evaluate the conceptual soundness of the system and be conducted to ensure that the approach and its underlying theory and logic remain sound and appropriate for the bank’s range of business activities and the variety of operational loss events to which it is exposed. This includes periodic evaluation of the appropriateness of the assumptions, parameters, inputs, outputs, and methodology, as well as comparisons of the AMA model and its results to other models.

“Outcomes analysis also must be conducted to compare model results with actual outcomes and losses.

“Internal Audit

“The advanced approaches rule requires a bank to have an internal audit function independent of business-line management that at least annually assesses the effectiveness of the controls supporting the bank’s advanced systems and reports its findings to the bank’s board of directors (or a committee thereof). Such controls include a bank’s validation processes. As a practical matter, there may be overlap between a bank’s validation and audit activities. As mentioned above, the advanced approaches rule requires that a bank’s validation process must be independent of the advanced systems’ development, implementation, and operation or that the validation process be subjected to an independent review of its adequacy and effectiveness.

“Consistent with the rule, staff in the ORMF may perform validation work, provided that this work is reviewed by an independent party. This validation work may be supported by additional validation efforts within a bank’s lines of business. For example, some banks validate internal loss data for a given business unit using an independent party within that same business unit, supplemented with a review by the ORMF.

“Some banks use the internal audit function to validate non-quantitative aspects of their advanced systems. This could present a conflict of interest--or at least the appearance thereof--in that a bank’s internal audit function is expected to assess the controls, including validation, related to the advanced systems. Where internal audit staff is reviewing work that it or other audit staff performed, there is the potential that the objectivity of the review will be compromised. The agencies expect that those who conduct the validation work will not be responsible for reviewing the controls associated with the validation work they completed. In instances where internal audit staff reviews validation work that was performed by other, distinct internal audit staff, the bank should be prepared to demonstrate that such an arrangement does not compromise the independence of the review. Any such arrangement would be subject to heightened supervisory scrutiny.”

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Final US (Interagency) Rule:

Risk-Based Capital Standards – Basel II

December 7, 2007

Section 22 (j) (3), (4) and (5)

“(j) Control, oversight, and validation mechanisms.

“(3) A [bank] must have an effective system of controls and oversight that: (i) Ensures ongoing compliance with the qualification requirements in this section; (ii) Maintains the integrity, reliability, and accuracy of the [bank]’s advanced systems; and (iii) Includes adequate governance and project management processes.

“(4) The [bank] must validate, on an ongoing basis, its advanced systems. The [bank]’s validation process must be independent of the advanced systems’ development, implementation, and operation, or the validation process must be subjected to an independent review of its adequacy and effectiveness. Validation must include: (i) An evaluation of the conceptual soundness of (including developmental evidence supporting) the advanced systems; (ii) An ongoing monitoring process that includes verification of processes and benchmarking; and (iii) An outcomes analysis process that includes back-testing.

“(5) The [bank] must have an internal audit function independent of business-line management that at least annually assesses the effectiveness of the controls supporting the [bank]’s advanced systems and reports its findings to the [bank]’s board of directors (or a committee thereof).”

Section 32

“(d) Internal Models Methodology

“(3) (viii) A [bank] must subject its internal model to an initial validation and annual model review process. The model review should consider whether the inputs and risk factors, as well as the model outputs, are appropriate.”

Basel Committee on Banking Supervision

Operational risk – Supervisory Guidelines for the Advanced Measurement Approaches

June 2011

AMAG Comment: Discussion of and the distinction between Validation and Verification

From page 4 --

“Verification and validation

“14. Independent validation and verification are components of the third line of defence in the governance structure used to manage operational risk, and serve as a challenge function to the other two lines of defence. The effectiveness of both the Corporate Operational Risk Management Function (CORF) and operational risk measurement system (ORMS) should be reviewed by appropriately qualified independent internal or external auditors, qualified external and/or other independent parties. The purpose of these activities is to ensure that a bank’s operational risk management framework (ORMF) is functioning as intended and that it remains appropriate for the bank’s risk profile. The existence of such an independent challenge process is central to the establishment and implementation of an effective overall ORMF. Verification and validation activities should encompass all of the components of the bank’s ORMF and ORMS. The depth and extent of the validation and verification efforts should be consistent with the materiality and complexity of the risk being managed.

“15. Validation ensures that the ORMS used by the bank is sufficiently robust and provides assurance of the integrity of inputs, assumptions, process and outputs. Specifically, the independent validation process should provide enhanced assurance that the risk measurement methodology results in a credible estimate of operational risk capital that reflects the operational risk profile of the bank. The work of internal validation is not limited to quantitative aspects; it covers validation of data inputs, methodology and use of outputs of operational risk models.

“16. Verification of the ORMF is performed on a periodic basis and is typically conducted by the bank’s internal and/or external audit, but may involve other suitably qualified independent parties from external sources. Verification activities test the effectiveness of the overall ORMF, consistent with policies approved by the board of directors, and also test ORMS validation processes to ensure they are independent and are implemented in a manner consistent with established bank policies.”

On pp. 11-17 ---

“Governance: Verification and validation

“43. The Basel Committee has actively promoted the adoption and implementation of sound corporate governance practices by banks. The effective management of operational risk has always been a fundamental element of banks’ risk management programmes. However, the Basel II Framework introduced a new dimension in the form of separate capital requirements for operational risk, and expectations for the management of operational risk as a distinctive risk discipline.

“44. The governance structure commonly adopted by banks for their operational risk discipline relies on three lines of defence: business line management, an independent corporate operational risk management function and independent review. The implementation of these three lines of defence varies depending on a bank’s risk management approach and the flexibility provided by national supervisors.

“45. Independent validation and verification are components of the third line of defence in the governance structure used to manage operational risk, and serve as a challenge function to the other two lines of defence. This section provides additional supervisory guidelines associated with the verification and validation of an AMA framework. While this issue is highly relevant to an AMA bank, information about verification and validation activities is beneficial to banks using the Basic Indicator Approach and The Standardised Approaches as they enhance their operational risk management processes.

“Background

“46. The Basel II Framework requires banks to develop an *operational risk management framework*. The ORMF consists of a bank’s:

- a) risk organisational and governance structure;
- b) policies, procedures and processes;
- c) systems used by a bank in identifying, measuring, monitoring, controlling and mitigating operational risk; and
- d) operational risk measurement system.

“47. A bank’s ORMS consists of the systems and data used to measure operational risk in order to estimate the operational risk capital charge. The ORMS must be closely integrated into the day-to-day risk management processes of the bank.

“48. Figure 1 below illustrates the relationship between an ORMF and an ORMS.

“49. Validation and verification activities comprise the bank’s challenge processes that provide independent assessments of ORMF and ORMS effectiveness, and should incorporate both qualitative and quantitative approaches. The effectiveness of the ORMF and ORMS should be reviewed by independent internal or external auditors and/or other independent parties. The purpose of these activities is to ensure that a bank’s ORMF is functioning as intended and that it remains appropriate for the bank’s risk profile. An independent challenge process is central to the establishment of an effective overall ORMF. Verification and validation activities should encompass all components of the bank’s ORMF.

“The depth and extent of validation and verification efforts should be consistent with the materiality and complexity of the risk being managed.

“Figure 1: Relationship between an ORMF and an ORMS (Graphic omitted)

“50. Paragraph 666 (f) of the Basel II Framework broadly addresses the subtle differences between sound verification and validation activities. Verification activities, such as credible and effective challenge functions, ensure that the ORMF, including the ORMS, is well-designed, effectively implemented, operating in a satisfactory manner, consistent with bank policies and procedures, and meets regulatory requirements. Validation activities tend to be more explicit and quantitative, consisting of activities that ensure processes and data flows associated with the ORMS are credible, transparent, well-documented and verifiable (paragraph 669 (f)).

“(a) **Verification** of the ORMF is done on a periodic basis and is typically conducted by the bank’s internal and/or external audit, but may involve other suitably qualified independent parties from external sources. Verification activities test the effectiveness of the overall ORMF, consistent with policies approved by the board of directors, and also test ORMS validation processes to ensure they are independent and implemented in a manner consistent with established bank policies.

“(b) **Validation** ensures that the ORMS used by the bank is sufficiently robust and provides assurance of the integrity of inputs, assumptions, processes and outputs. Specifically, the independent validation process should provide enhanced assurance that the risk measurement methodology results in an operational risk capital charge that credibly reflects the operational risk profile of the bank. In addition to the quantitative aspects of internal validation, the validation of data inputs, methodology and outputs of operational risk models is important to the overall process.

“General observations

“51. Verification and validation are fundamental components of the AMA. Their activities are both qualitative and quantitative in nature, and consist of inspection, observation, inquiry and confirmation (testing), computation and analytical exercises. Effective verification and validation activities serve as credible and effective challenge functions to ensure the reliability of the overall ORMF and identify where the framework can be improved. The requirement to estimate the operational risk capital charge in AMA models highlights the importance of an effective validation process. The validation process of the ORMS should provide enhanced assurance that the measurement methodology results in an operational risk capital charge that credibly reflects the operational risk profile of the bank. Furthermore, the AMA model should provide the bank’s board of directors and senior management with necessary information to understand and effectively manage operational risk exposures as well as the overall ORMF.

“52. For these reasons, the bank should establish validation and verification processes to ensure its model and ORMF operate as intended. These activities should enhance the degree of confidence of stakeholders in the bank’s AMA framework.

“53. Sound validation and verification activities present banks with important challenges:

- a) A bank must develop and maintain rigorous procedures for independent validation and verification of the ORMS and ORMF. Individuals performing the assessments should be competent and appropriately trained. They should be independent, meaning

they cannot influence the development, implementation and operation of the AMA framework. In addition, they may not be part of the corporate operational risk management function. Banks face challenges finding skilled independent staff that meet these criteria to perform validation and verification activities.

- b) Conventional validation schemes and procedures may be inadequate for the validation of AMA models, thereby requiring a bank to develop new procedures. This challenge may arise from the limited scope of the definition of validation, fragmented or overlapping responsibilities for development and deployment of AMA models and lack of actual independence.
- c) The scarcity of operational loss data and the ongoing development of AMA models continues to be a challenge for banks

“Supervisory guidelines

“54. A bank should establish clear and measurable objectives for its verification and validation activities. Verification and validation activities should consider, on an ongoing basis, whether the ORMF and ORMS are appropriate. Verification and validation activities should also provide an effective challenge that questions existing processes and information, while conducting specific testing of procedures and processes, consistent with the unique aspects of the bank’s ORMF, ORMS and risk profile. There is no single method that is universally accepted by supervisors.

“55. Verification of the ORMF includes testing whether all material aspects of the ORMF have been implemented effectively, remain appropriate, and are performing as intended. Activities* should ensure that:

- a) Policies, processes, procedures and systems that comprise the bank’s ORMF, including the ORMS, are conceptually sound, transparent and documented;
- b) Business unit activities, the independent corporate operational risk management function and operational risk management governance committees and structures are effective and appropriate;
- c) ORMF inputs and outputs are accurate, complete, credible, relevant, authorised and accessible;
- d) Risk monitoring and management of the accuracy and soundness of all significant processes and systems are effective;
- e) Appropriate remediation is undertaken if deficiencies are identified;
- f) Outcome analysis is incorporated into bank processes, as appropriate, and is effective (outcome analysis includes comparisons of data elements such as a comparison of BEICFs with actual loss experience, or a comparison of scenario results with internal loss data and external data);
- g) Validation processes are satisfactory. The verification function should ensure that validation of AMA models is completed in accordance with the bank’s model validation policy;
- h) Tests of operational risk management controls determine whether they are designed to prevent or detect and correct material deviations from or non-compliance with the policies, procedures and processes and operate effectively throughout the period being reviewed;
- i) Every significant activity and division, subsidiary or other component of the bank is included; and
- j) There is a periodic independent review of the AMA framework.

“56. The validation activity is designed to provide a reasoned and well-informed opinion of whether AMA models work as predicted, and whether their results (capital requirement estimates and other information produced by the ORMS) are suitable for their various internal and supervisory purposes. Validation activities should:

- a) Have a broad scope, evaluating all relevant items of the ORMS, such as:
 - Distributional assumptions;
 - Correlation assumptions;
 - Documentation;
 - The four elements of the AMA
 - Qualitative aspects (including the internal controls, use test, reporting, role of senior management and organisational aspects);
 - Technological environment relating to the computational processes; and □
 - Procedures for the approval and use of new and modified estimation models or methodologies (such procedures should seek explicit opinion from the validation function in the approval process);
- b) Evaluate the bank’s processes for escalating issues identified during validation reviews to ensure that:
 - Escalation processes are sufficiently comprehensive;
 - All significant ORMS concerns are appropriately considered and acted upon by senior management; and
 - All significant ORMS concerns are escalated to appropriate governance committees;
- c) Evaluate the conceptual soundness – including benchmarking and outcome analysis – of the ORMS and of the modelling output;
- d) Reflect policies and procedures to ensure that model validation efforts are consistent with board and senior management expectations.

- e) Assess whether policies and procedures are sufficiently comprehensive to address critical elements of the validation process. These include independent review; clearly defined responsibilities for model development and validation; model documentation; validation procedures and frequency; and audit oversight; and
- f) Confirm that the relationship between the model's inputs and outputs are stable and that the techniques underlying the model are transparent and intuitive.

“Organisational aspects

“57. The organisational structure of the verification process will vary depending on the size, complexity and operational risk profile of the bank. Verification activities may be carried out by qualified external parties and/or internal or external audit, if independent of the process or system being reviewed.

“58. The validation function should generally be carried out internally by qualified validation resources. However, supervisors recognise that this may present a challenge for some banks.

“59. While the outsourcing of verification and validation work is acceptable, the board and senior management are accountable for ensuring that outsourced functions are completed in a manner consistent with the bank's overall verification and validation plan.

“Essential elements

“60. **Independence:** The bank's verification and validation functions should provide independent assessments and opinions, while avoiding improper influence from those units being reviewed. Personnel conducting verification and validation work should not be involved in the development, implementation or operation of the ORMF or ORMS processes or systems being reviewed, or be subordinate to the units under review. Bank staff performing the verification and validation should be impartial and prepared to challenge management's views and conclusions regarding any aspect of the AMA framework.

“61. **Capacity:** Verification and validation functions should be adequately staffed and have reasonable access of resources to perform their duties. The board and senior management are responsible for ensuring that these functions are adequately staffed.

“62. **Professional Competence and Due Care:** Bank staff performing verification and validation work should be technically competent, appropriately trained and possess the appropriate skills.

“63. **Critical Analysis:** Verification and validation functions should critically analyse all relevant information by questioning the work of the units involved in the design of the ORMF and ORMS.

“Work plan

“64. A bank should have a broad strategic plan that governs the verification and validation of its ORMF and ORMS. The plan should be approved by the appropriate audit or operational risk committee and should incorporate all relevant business units. The plans should ensure that the bank's ORMF and ORMS are independently reviewed. In addition, the bank should develop more detailed annual plans which state the purpose and tasks to be carried out during upcoming years.

“65. The nature, timing and extent of work performed each year should provide a sufficient indication as to whether the bank's ORMF and ORMS: (i) function appropriately, (ii) are consistent with bank policies and (iii) are free of material weaknesses. The frequency with which policies, processes and systems within the bank's AMA framework is reviewed should be based on risk and significance.

“66. Independent review plans, including procedures that will be used to test the ORMS and ORMF, should provide for the following expectations:

- a) Independent review with respect to development, implementation and operation;
- b) Explicit documentation requirements for major processes and systems;
- c) Unlimited access to information;
- d) The nature, timing and extent of planned assessment procedures;
- e) Follow up on outstanding items from previous reviews;
- f) Frequency of the independent review; and
- g) Audit involvement or oversight over independent review work performed by third parties.

“Verification and validation work plans should cover, at a minimum, the areas outlined above.

“Reporting

“67. Results from verification and validation work should be documented and distributed to appropriate business line management, internal audit, the corporate operational risk management function and appropriate risk committees. Bank staff ultimately responsible for the validated units should have access to, and an understanding of, these results.

“68. Reporting should include underlying processes to resolve deficiencies and weaknesses, ensuring that corrective actions are implemented in a timely manner. Internal audit should evaluate management’s response to significant findings.

“69. **Board Reporting:** Results of verification and validation reviews (including senior management’s attestation) should be summarised and reported annually (or periodically, as appropriate) to the bank’s board of directors, or a committee thereof, for approval. Attestation by senior management entails review and approval of the effectiveness of the bank’s ORMF and states that the ORMF, including the ORMS, is working appropriately.

“70. **Monitoring/Periodic Reporting:** The verification and validation reporting should:

- a) Summarise the verification and validation work done, indicate any limitations in the scope of work performed and detail the deviations from the plan;
- b) Contain the assessment of the verification or validation teams on the essential elements of the area or model being reviewed (validation reports should assess the suitability of the model for internal use);
- c) Identify weaknesses and their potential consequences, including deviation from or non-compliance with objective criteria, policy, procedures and Basel II Framework requirements;
- d) Establish a corrective action plan and specific timeline for remediation as appropriate for significant deficiencies and weaknesses;
- e) Establish a procedure to resolve disagreements between the verification and validation units and among the areas and units being reviewed; and
- f) Be distributed, at the minimum, to the senior management, the board of directors and the individuals in charge of the relevant organisational units.”

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* Supervisory expectations for the internal audit activities are more broadly identified in the Basel papers *A Framework for Internal Control Systems in Banking Organisations* (BCBS, September 1998) and *Internal audit in banks and the supervisor’s relationship with auditors* (BCBS, August 2001). The enumeration here identifies supervisory expectations specifically for the AMA context.

Basel Committee on Banking Supervision

Principles for the Sound Management of Operational Risk

June 2011

On page 4 --

“15. A functionally independent corporate operational risk function (CORF)⁷ is typically the second line of defence, generally complementing the business line’s operational risk management activities. The degree of independence of the CORF will differ among banks. For small banks, independence may be achieved through separation of duties and independent review of processes and functions. In larger banks, the CORF will have a reporting structure independent of the risk generating business lines and will be responsible for the design, maintenance and ongoing development of the operational risk framework within the bank. This function may include the operational risk measurement and reporting processes, risk committees and responsibility for board reporting. A key function of the CORF is to challenge the business lines’ inputs to, and outputs from, the bank’s risk management, risk measurement and reporting systems. The CORF should have a sufficient number of personnel skilled in the management of operational risk to effectively address its many responsibilities.

“16. The third line of defence is an independent review and challenge of the bank’s operational risk management controls, processes and systems. Those performing these reviews must be competent and appropriately trained and not involved in the development, implementation and operation of the Framework. This review may be done by audit or by staff independent of the process or system under review, but may also involve suitably qualified external parties.”

On page 10 –

“32. Senior management is responsible for establishing and maintaining robust challenge mechanisms and effective issue-resolution processes. These should include systems to report, track and, when necessary, escalate issues to ensure resolution. Banks should be able to demonstrate that the three lines of defence approach is operating satisfactorily and to explain how the board and senior management ensure that this approach is implemented and operating in an appropriate and acceptable manner.”

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Basel Committee on Banking Supervision

International Convergence of Capital Measurement and Capital Standards

A Revised Framework
June 2004

AMAG Comment: Makes the original distinction between Validation and Verification

“(ii) Qualitative standards

“666. A bank must meet the following qualitative standards before it is permitted to use an AMA for operational risk capital:

“(f) The validation of the operational risk measurement system by external auditors and/or supervisory authorities must include the following:

- “Verifying that the internal validation processes are operating in a satisfactory manner; and
- “Making sure that data flows and processes associated with the risk measurement system are transparent and accessible. In particular, it is necessary that auditors and supervisory authorities are in a position to have easy access, whenever they judge it necessary and under appropriate procedures, to the system’s specifications and parameters.”

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Board of Governors of the Federal Reserve System

Guidance for Independent Verification of a Banking Organization’s Advanced Approaches Systems

May 2, 2013

“Under section 22(j)(3) of the rule, banking organizations must have an effective system of controls and oversight that ensures ongoing compliance with the qualification requirements in section 22 of the rule....”

“The purpose of independent verification is to promote accuracy in applying the mechanics of the rule to ensure data and reporting integrity.”

“Banking organizations should have a rigorous internal control framework to ensure that all internal systems supporting rule compliance are properly designed, documented, and implemented.”

“The internal control framework should include periodic reviews aimed at ensuring the accurate and consistent application over time of systems supporting rule compliance. Moreover, for systems having a significant impact on the accuracy of risk-weighted assets or involving more complex or subjective elements, the internal control framework should include effective independent verification. Effective independent verification by qualified individuals is especially critical in the areas of new products or product modifications, data capture, data aggregation, risk measurement, regulatory capital assignment and reporting, and information technology. To be effective, independent verification should be carried out by qualified individuals who understand the rule and relevant products and portfolios, have the requisite technical knowledge to evaluate the systems, and have sufficient incentives and stature within the banking organization to ensure an effective challenge process.”

Attachment B

About the AMA Group

The Advanced Measurement Approaches Group (AMAG) was formed in 2005 by the Risk Management Association (RMA) at the suggestion of the U.S. Interagency Working Group on Operational Risk (formerly the AMA-BQT and the Inter-Agency Working Group on Operational Risk). The RMA is a member-driven professional association whose purpose is to advance the use of sound risk management principles in the financial services industry.

The purpose of the AMAG is to share industry views on aspects of Advanced Measurement Approaches (AMA) implementation with the U.S. financial services federal regulatory agencies. The Group consists of operational risk management professionals working at financial service organizations throughout the United States. The AMAG is open to any financial institution regulated in the United States that is either mandated, opting in, or considering opting in to AMA. A senior officer responsible for operational risk management serves as the primary representative of each member institution on the AMAG. Of the US financial service institutions that are currently viewed as mandatory or opt-in AMA institutions; twenty three (23) were members of the AMAG at the time of this writing.

The members of AMAG are listed below.

Bank of America
Bank of the West
BMO Financial
BNY Mellon
Capital One Bank
Citizens Bank
Comerica
Deutsche Bank
GE Capital
Goldman Sachs
HSBC
JP Morgan Chase
Keycorp
Morgan Stanley
Northern Trust
PNC Financial
Santander Bank
State Street Corporation
SunTrust
TD Bank Group
Union Bank
US Bank
Wells Fargo

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