


**Current status of
NUMO's Quality Management**

28 January 2009

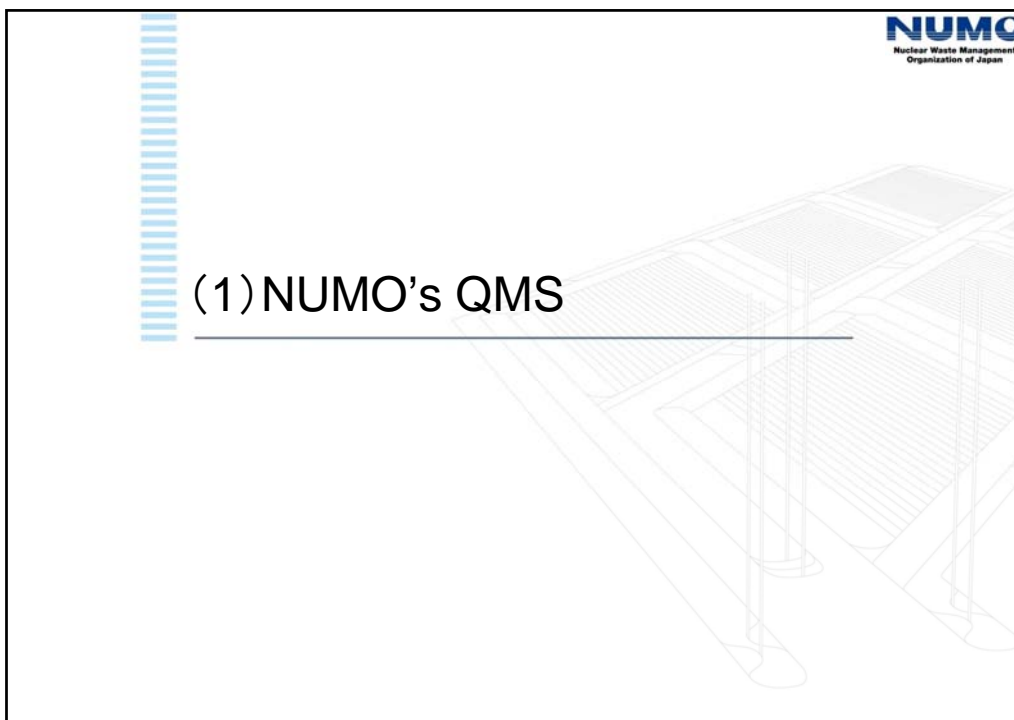
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- **Quality Assurance (QA) of Literature Surveys (LS)**
 - Outline of QA during LS
 - Basic QA plan for LS
- **Utilization of tools for QA**
 - Geo-Data Management System (DMS)
 - Requirement Management System(RMS)
- **Next step of QA**

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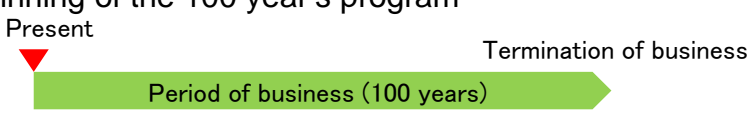


The slide is titled 'Importance of QMS for NUMO as an Implementer' and features a bulleted list of key points. The NUMO logo is in the bottom left corner. The footer contains the text 'International Symposium - QA International Workshop 2009 (IAFA) January 28, 2009 P.3'.

- Importance of QMS for NUMO as an Implementer
 - Confidence toward NUMO
 - Win confidence from stakeholder
 - Safety and quality
 - General issues : food, medical, public transport
 - Utilities' falsification of data, QA of USYMP
 - Compliance with regulations
 - Confidence towards NUMO's Safety Case(SC)
 - QA of SC components

Characteristics of geological disposal and current status

- Required quality for geological disposal program
 - Product: repository
 - Impossible to assure the quality instantly
 - => Can be validated tens of thousands of years later
 - Stepwise project development
 - => Change of required quality in line with stepwise progress of the project
- NUMO's current position
 - Beginning of the 100 year's program




The diagram shows a horizontal timeline. On the left, a red downward-pointing triangle is labeled 'Present'. A green arrow points to the right, starting from the 'Present' point and ending at a point labeled 'Termination of business'. Inside the green arrow, the text 'Period of business (100 years)' is written.

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Outline of current QMS (1)


- Goal:
 - In order to win confidence toward NUMO, variety of information such as for various decision making provided by NUMO, can be produced based on the unified perspective and consistent quality level
- Objectives
 - Show NUMO's ability to consistently produce mission documents that meet requirement and expectation of stakeholders and regulators
 - Continually improve QMS and enhance confidence among stakeholders

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 Outline of the present QMS (2)


- Base: ISO9001:2000
- Scope: Technical tasks focused on development of technical documents in the stage of PIA selection
 - => Establish the QA system, related to field investigation, repository design and performance assessment in the next stage.
- System: effective function for small organization
 - => distinguish QA activities between general tasks, and assign a QA person in each group

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 Assurance of objectivity

- Advice and review by external experts
 - Technical Advisory Committee (ITAC/DTAC)
 - Disclosure of R&D results
 - Presentation of R&D outputs to the academia, professional societies, scientific journal, etc.
 - Technical report (NUMO-TR)
 - NUMO 2010 technical report
- R&D forum
- Collaboration
 - Collaboration agreement with related organizations
 - Workshop for common issues
 - International collaborative research

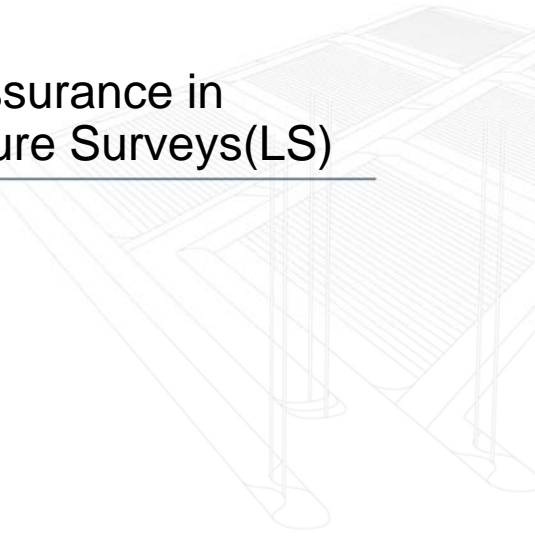


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Knowledge transfer and staff training

- Transferring technical competence
 - Human resource exchange
 - Research using research facilities
 - Participation to international collaboration project
 - Participation to seminar(BE summer seminar, ITC, ISO, etc.)
- Training scheme
 - Develop a program of NUMO staff training (attachment to relating organizations)
- Infrastructure for technology transfer
 - Requirement Management System(RMS) supporting technical works; design etc.
 - LS manual, PI planning manual, site management manual, etc.
 - Education: using educational tool for geological disposal (e-Learning)

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(2) Quality Assurance in Literature Surveys(LS)


Goal of Literature surveys

- Selection of PIAs
 - The area for a PIA is defined
 - Suitability as PIAs will be checked using Evaluation Factors for Qualification (EFQ)
 - Areas confirmed as being suitable will then be subject to a comprehensive assessment of their characteristics using Favorable Factors (FF), and to a comparative assessment if necessary.
- any other
 - Repository Concepts of consideration
 - PI Planning
 - develop R&D programme for subsequent stages

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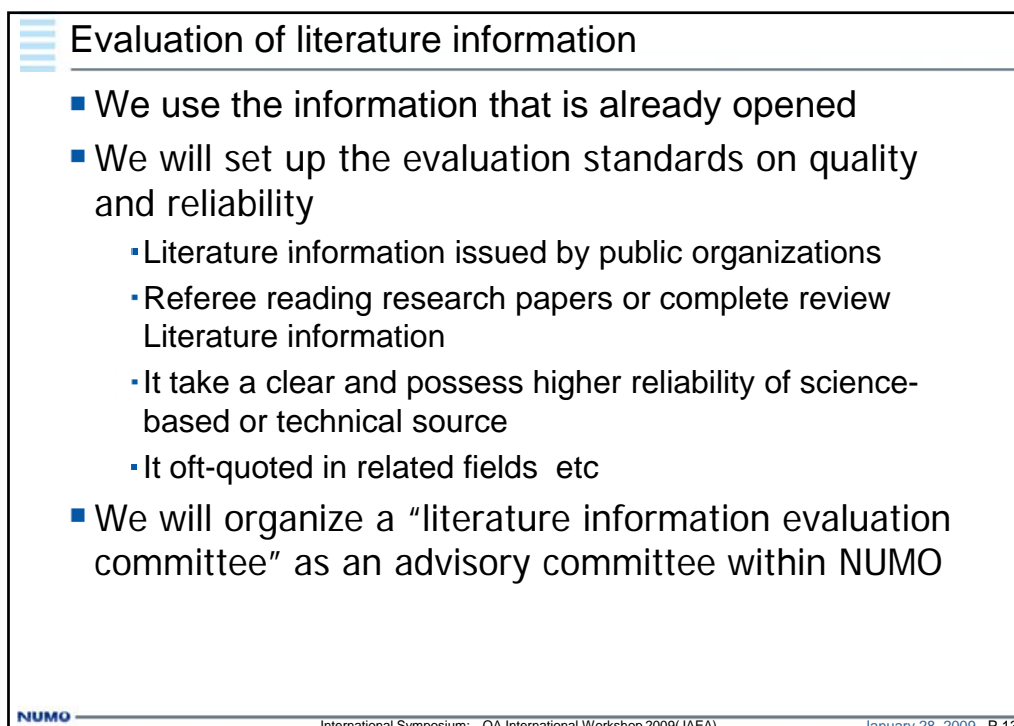
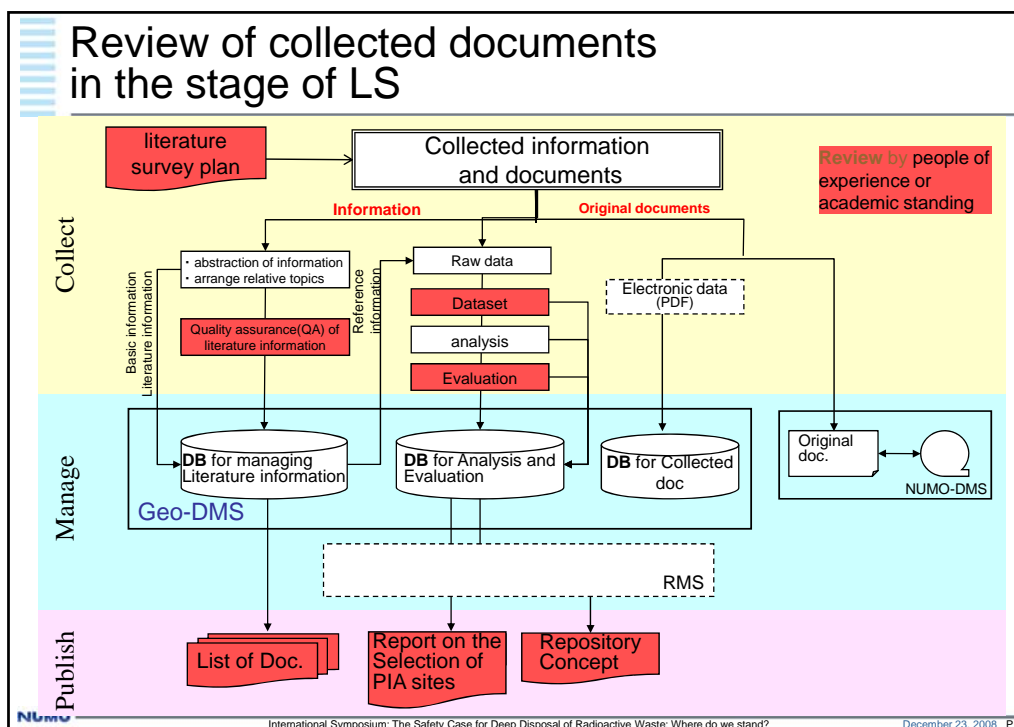
Feature of Literature surveys / Selection of PIAs


- Cyclopaedically and systematically-collected information and documents
- Vary widely information and documents
- Adding and update as needed by analysis and worked information



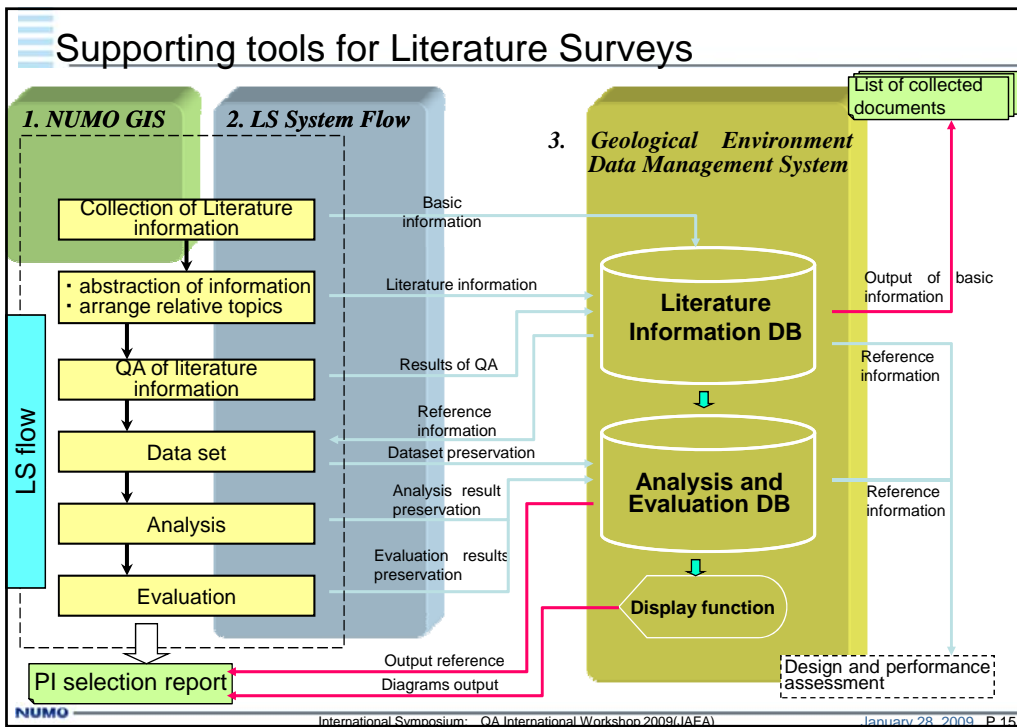
- Progress management and information control
- Make an arrangement of QA
- Ensure the transparency and traceability
- Achieve accountability

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(3) Utilization of tools for QA



Geological Environment Data Management System

Search and browse (on the Web)

Input data system

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Why is Requirement Managements needed?

Requirement Management

A formal method for documenting fundamental needs and constraints ("requirements") involved in a program in a structured manner to facilitate their consistent use as a basis for decision-making

Procedure for the establishment of the reliability of the disposal program based on QMS

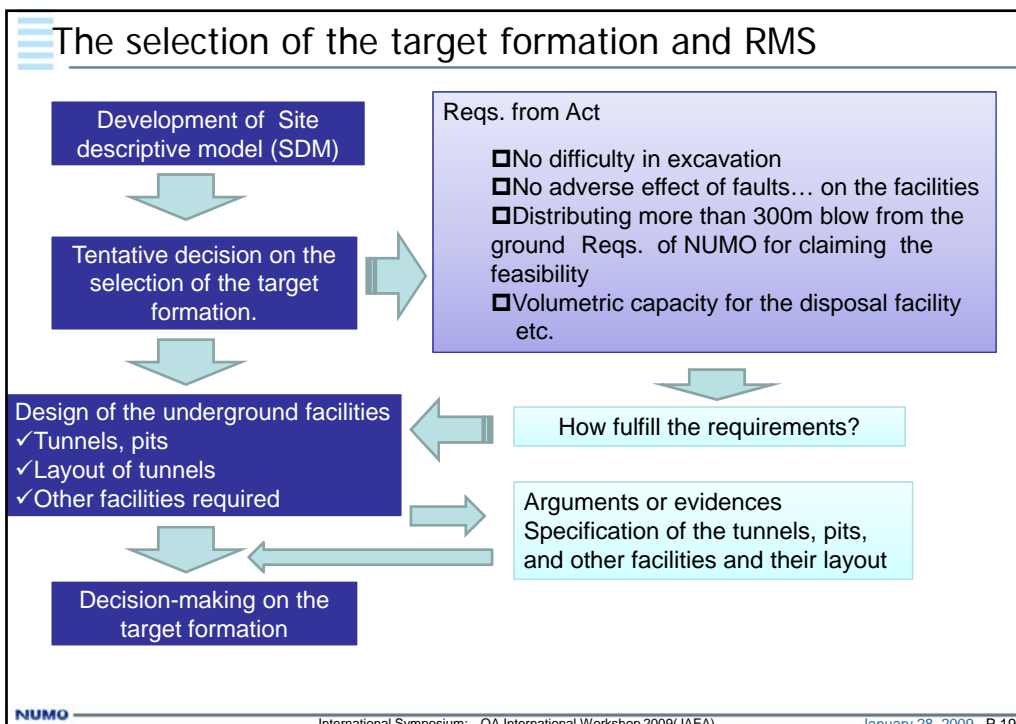
- **After clarifying the requirements for the safe and feasible disposal system, the adequacy of the established repository concept must be claimed.**
- **Establishing the reliability by providing the quantitative and objective arguments with suitable measure and standards for the decision-making.**
- **To maintain traceability, consistency and accountability of the decision-making processes of NUMO**

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Support of QM by RMS

- By supporting the decision-making process, specification of the requirements, RMS assured the quality of the implementation work.
- RMS supports collection of the arguments and evidences fulfilling the requirements properly.
- RMS maintains the quality of the established repository concept for each candidate site.
- RMS provides the approval system along the QMS infrastructure of NUMO.
- The change management is supported by RMS.

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The Function of the RMS Tool

Record-keeping
The RMS tool records the requirements, constraints, premises, arguments and related information in a well organized structure

Support of decision-making
No critical requirements are overlooked

Change management
If any changes in requirements and decisions occur, the RMS tool identifies the related requirements and decisions and alerts the responsible persons

Schedule management
RMS identifies what decisions will be made in future stages and when/how/by whom the requirements should be fulfilled

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(4) Next step of QA


Expansion of NUMO's QMS

- Quality maintenance of accumulated knowledge
- Preparation of QA system in the field survey
- Data management / assurance of data base
- Preparation of QA system for design & assessment using bulky and variety of data
- Management of decision-making processes & results / securement of traceability
- "Cultural" development within NUMO for QA activity
- Examination of nongovernmental QA standards in stages of construction and operation

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Main Subjects of Future Examination

- Huge volumes and variety of survey data
- How to assess the credibility of survey data from outsourcing companies
- Management and maintenance of investigative or measured data
- Update of analysis and evaluation results as data change



- **Examination of QA system in PI** (2009FY~mid of 2010FY)
 - domestic and international information on QA
 - decision of QA subjects and their priority classification
- **Improvement of current QMS** (2009FY~2010FY)
 - integration of design or performance assessment activities into QA system / document management

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Expectations for Related Organisations

- Communication of R&D results and information of QA activities in relation research organizations
- Communication of R&D results and information of QA activities in NUMO's outsourcing companies

⇒ NUMO's QMS

Thank you for kind attention !