

Establishing and Maintaining Governance of the Consignment of Radioactive Materials

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ABSTRACT

As an industry, we collectively consign radioactive materials across land and sea as well as by air. We are allowed to continue in our endeavours fundamentally because the world trusts us to deliver our undertakings safely and compliantly. In order to maintain this trust, there is an expectation that our operations are underpinned with a system of governance that is appropriate to the significance of the materials that we choose to transport.

Sellafield Limited (SL) consigns radioactive material as part of its regular, daily business. Each year over 1,000 RAM packages are consigned from the Sellafield Site and around 10 of these represent significant overseas exports. In recent years there have been a number of challenges to these consignment activities, not least the restructuring of the UK nuclear industry which saw the Nuclear Decommissioning Authority (NDA) secure a Parent Body Organisation for Sellafield, a site which represents about two thirds of the NDA's nuclear liabilities. In late 2008 NDA signed a Parent Body Agreement for SL with Nuclear Management Partners (NMP) a joint venture between URS, Amec and Areva. Working in partnership, NDA and NMP set about delivering significant improvements in operational efficiency, project management and cost control at Sellafield and, from day one, the new management team had a clear view of the need to enhance consigning capability. Having developed a new approach to the process for consigning radioactive materials, SL augmented the revised arrangements with a governance organisation and assurance activities that have been actively engaged to safely and compliantly deliver a number of international shipments. The SL radioactive material transport governance structure is overseen by the Office of the Consigning Authority (OCA), a management team with the delegated authority of the Company Executive to permission the consignment of radioactive materials. The OCA deploy verification, validation, assessment and audit processes to ensure that safety and compliance is preserved throughout the delivery of consignment, from packing on the Sellafield Site to unpacking by the Consignee.

This paper describes the background to the enhanced governance arrangements, the new organisation/process and how this was delivered with assistance and steer from our partners and regulators.

INTRODUCTION

In November 2008 Nuclear Management Partners became the Parent Body Organisation for Sellafield Limited as a result of a successful bid in the Nuclear

Decommissioning Authorities competition for Sellafield Sites (Sellafield, Risley and Capenhurst). From the outset, the newly-formed Sellafield Limited Executive began a programme of re-building a capability in order to more fully and robustly meet its obligations as a major world player in the field of radioactive material (RAM) consignment. The need for this enhancement of existing capability was informed by a series of learning opportunities, including the substantial intellect now available from the parent body organisations and learning attained as a result of a comprehensive internal investigation process applied to RAM transport events.

The Executive were fully committed to making the requisite change and immediately signposted their intent by forming a new Operating Unit within the Sellafield Limited organisation delivering transport logistics, including consignment. This simple step clearly demonstrated top-level cognisance of the importance of RAM transport to our business. Upon formation of the Operating Unit, the newly appointed Head of Operations was delegated full Executive authority to design and populate a new consignment organisation and build new process arrangements for the safe and compliant consignment of radioactive materials.

In embedding the identified organisational changes and empowering the new team, the vision of the Executive was to move from a position of potential business risk to one of “gold standard” consignment activity. The process of reinvigorating Sellafield’s capability to consign radioactive materials was launched and underpinned by three key deliverables:

- Strong & Visible Governance
- Disciplined Delivery of Consignment Operations
- Robust Assurance of Delivery

GOVERNANCE

In recognising the need for governance an early development of consignment process was to establish clear roles, responsibilities, accountabilities and authorities. Accountability for the delivery of safe and compliant consignment was delegated from the Executive to the Office of the Consigning Authority (OCA). The OCA are a Senior Management Team and hold the accountability for, and governance of, the Consignment Process. The Office of the Consigning Authority was established by Charter which enables OCA to act on behalf of the Sellafield Limited Executive in matters of RAM Consignment, for all RAM movements across the Sellafield site, of which there are over 1,000 each year.

The OCA exists to assure the Executive that a deliverable plan (of routine and foreseeable fault conditions) is in place for RAM consignments which fully preserves safety and ensures compliance for the entire end-to-end duration of a consignment. To further establish clear governance, the Head of Operations for Consignment was given accountability for management system process ownership of the consignment of radioactive materials enabling the team to establish and maintain control of consignment activities.

ORGANISATION

During the first half of 2009, the Senior Management began the process of organisational build to develop an Operating Unit aligned to a future business schedule which was known to include the onset of the vitrified residue returns programme to Japan & Europe, the supply of mixed oxide fuel assemblies to Europe & Japan and an ongoing programme of shipments of Uranium Trioxide to Russia, to name but a few.

An already established capability of flask maintenance, road transport operations, rail operations and flask quality needed little change and the previous arrangements for consignment consisted of a small team including a Site Movement Liaison Officer and three Dangerous Goods Safety Advisors (DGSA). This was swiftly supplemented by a Consignment team led by a new role of Head of Consignment Operations. The mission to build a robust and competent team began in earnest with the subsequent appointment of three Consignment Managers. Following these appointments, reorganisation followed to provide a clearer focus on delivery. Each of the three DGSA's were aligned to a Consignment Manager. At this time, a change process was also invoked to launch the new team.

Sellafield Limited used its robust change management process as a means to drive the necessary changes and a significant aspect of unfreezing the old arrangements involved the progression from previous role descriptors including Site Movement Liaison Officer to the new management positions, which were titled simply as Consignment Manager, whilst the DGSA's became Consigning Officers. The three delivery legs were then allocated specific work package projects which were aligned to directorates within the company, each covering both Overseas and UK movements of RAM. As this work was progressing three further appointments were made; a Programme Coordinator was recruited to produce a consignment schedule of work, a considerable task given the size of the organisation, a Validation Manager was recruited to provide assurance activities such as audit, inspection and validation of participants activities and a Consignment Support position was also created to assist with logistical aspects of consignment such as escorting visitors, arranging access etc. The team was now at full complement and the organisational changes complete.

The change phase of the development process gathered pace quickly and the new team affirmed itself as the consigning capability for the site by appropriate intervention into operations. Refreezing was then effected by capturing the new organisation in updated management system arrangements. The new management system captured the delivery mechanism of the re-organised team in so much as each consignment project would now be overseen by a Consignment Manager, each one having a Consigning Officer carrying Suitably Qualified & Experienced Person (SQEP) status to provide technical expertise. Support to the delivery, would be provided by Programme and Validation activities. To complete the Consignment team build, a training programme was developed to enhance the team's intellect, particularly in respect of RAM transport, plant operations and project management. Consideration was given to adequate succession planning when deciding upon this new structure.

Concurrent with making these organisational changes and undergoing training, the Consignment team began exploring the roles and responsibilities of other Sellafield Limited participants in transport projects, particularly packers, loaders and carriers. Once all the participants were identified, role and post specifications were put in place to clearly prescribe their accountabilities.

PROCESS DEVELOPMENT

Having completed the organisational re-build, the next focus was on the development of a robust and disciplined consignment delivery process. Process development was informed by the enhanced understanding of the full extent of consignor duty-holding attained as a result of event investigation. Particular cognisance was given to International Atomic Energy Agency Guidance (IAEA, 2009) which states:

“The Consignor is required to comply with the Transport Regulations both at the point of dispatch and during the subsequent transport of the package. The Consignor may delegate some of the actions needed to achieve this compliance but is required to retain overall responsibility for these actions and their completion. The declaration on the transport documents signed by the Consignor attests to this responsibility.”

Sellafield Limited understands this to mean that the Consignor has overall responsibility for assuring the robustness of planning, packing, loading, dispatching, carrying and this responsibility continues up to that point where the consignee accepts the package. The understanding attained from this guidance allowed us to adopt the mindset that the Consignor holds end to end responsibility for the safety and compliance of any RAM consignment.

With this enhanced understanding, process development was kicked off and the starting point for this was the development of a Site Consignment Programme, coordinated by the Programme Manager and owned by Head of Consignment Operations. From the Programme, individual transport consignment projects are fed into the delivery teams. Once the nature of the work programme was understood, a new delivery process, tailored to the needs of the Programme, could be developed.

To enhance discipline in the delivery of consignment activities, a new consignment process was then developed for deployment in each project (Figure 1). The 5P Consignment process was designed to regularize the way in which Sellafield Limited approaches the export of radioactive materials. Significant features of the 5P Process are its linearity and its gates. The process is linear by design in order to provide a means of ensuring that conflicting activities do not run unchecked in parallel work streams. The gates allow an assurance intervention opportunity by both the Office of the Consigning Authority and the UK Competent Authority.

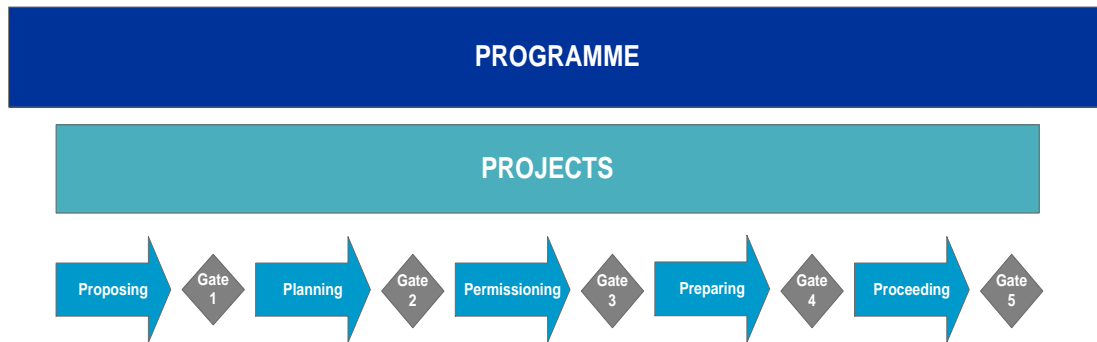


Figure 1. Programme/Project Approach to 5P Consignment

The 5P Process is a systematic series of phases through which the Consignment Manager's sequentially progress during the development of a consignment project. The specific phases are:

- **Proposing** (Developing a transport idea into a reality and placing it onto the Consignment Programme)
- **Planning** (Formulating an end to end transport and emergency plan which is informed by regulation, best industry practice, risk assessments, learning from experience and the expertise of our people and partnering organisations.)
- **Permissioning** (Attaining of the requisite enabling permissioning documents for the consignment to maintain compliance throughout the shipment)
- **Preparing** (Packing the payload, loading the package, obtaining validations and making notifications)
- **Proceeding** (Undertaking final assurance checks for conformance of people, payload, package, labels/placards, documentation, vehicles and emergency plan prior to authorising consignment)

Progress through the 5P Process is recorded in a Consignment Safety Report (CSR), a document which is, by design, a holistic risk assessment for the consignment. This becomes the demonstration document that is presented by the Consignment Manager for endorsement at each of the 5P Gates. As a gate is encountered, a formal Gate Meeting is convened as a means of sanctioning progression into the next phase.

The Consignment Manager attends the meeting to present the Consignment Safety Report as demonstrable, traceable evidence of having satisfied all demands of the respective P Phase. Progress to the ensuing P phase is subject to endorsement by the Gate Meeting panel. The panel is chaired by a member of the Office of the Consigning Authority (or nominated deputy) and includes the Validation Manager. Other attendees may attend on the invitation of the chairman or at the request of the Consignment Manager (to support the submission of enabling evidence). At the meeting the OCA challenge the Consignment Manager to present evidence of having met all Consignor duties. Much of the evidence presented is further tested by another new development, the Consignment Command & Control Arrangements (CC&CA), a comprehensive checklist.

The CC&CA's are configured to determine whether safety and compliance features are robustly embedded within a consignment project and were developed by analysing all aspects of the Consignor duty-holding embodied in transport law. When all aspects

of the CC&CA are satisfactorily evidenced, sanction to proceed is issued by the Office of the Consigning Authority.

DEPLOYMENT

Following development of the team and process, the new arrangements were deployed on a number of pilot projects including the returns of vitrified residue to Japan and Netherlands, delivery of UO₃ to Russia, delivery of fresh MOX fuel assemblies to Europe and consignment of irradiated fuel pins to Sweden. The pilot schemes proved the effectiveness of the revised processes as the results from the projects, whilst addressing some minor concerns, proved to be very positive.

Learning opportunities from the pilot projects, attained as a result of distributing a questionnaire to participants either directly or indirectly affected by the process, allowed the Company to further streamline and enhance its process. This also provided an opportunity to apply some proportionality to the process, thus preventing it from becoming overly bureaucratic. The results from the questionnaire provided an improvement to the deployment of the Consignment Safety Report, which is now seen as a key feature of the gated process.

Throughout this period of implementation, collaboration with the UK Competent Authority has added checks and balances to the development process whilst Sellafield Limited's partners, International Nuclear Services (INS), have continued to provide expert advice and support.

CONTINUOUS IMPROVEMENT

Sellafield Limited, in implementing this new process, has mitigated business risks associated with consignment of significant overseas exports of RAM, and continues to aspire to be regarded as the 'Gold Standard' of consignment. In its endeavours to achieve the desired standard, Sellafield Limited has delivered a Consignment Improvement Plan which has enhanced its capability and extended coverage to encompass all consignment activities across the Sellafield Site. This plan delivered significant improvements in the following areas:-

1. The development of the Management System for RAM Transport has delivered a comprehensive suite consisting of a Policy, Charter, Manual and Practice, underpinned by Supporting Practices and local instructions. The document hierarchy was developed with guidance drawn from IAEA (IAEA, 2008) so as to develop a comprehensive, process-based programme with an interrelated and detailed multi-tiered structure.
2. Participant roles, responsibilities and training have been further enhanced, extending the work evolved in the Consignment team and applying similar principles to Packers, Loaders and those despatching from the donor operational plants.
3. A Sellafield Limited Transport Governance Committee has been convened, accountable to the OCA, to provide governance capability, future management

system revision and a learning/networking platform for all accountable Sellafield Limited participants and processes.

4. Consignment activities across the organisation has been centralised to enhance controls for RAM movements. Where appropriate to do so, satellite consignors have been assessed for suitability to transfer into the direct line management of the Consignment organisation.
5. An audit schedule and independent assessments of all participant activities and interfaces have been put in place. The Validation Manager is now delivering a programme of audit, assessment and inspection to supplement process with the appropriate level of assurance and scrutiny.
6. A Risk Management process has been implemented as a tool to enable the Consignment Team to assess and manage the risks involved when other SL participants consign nuclear material. These ‘satellite’ consignors are within the Sellafield Limited organisation but are aligned to Operating Units outwith the Consignment Team. A scoring system using criteria specified in IAEA’s TS-R-1 has been devised to determine which category of risk the consigning department falls into, which in turn determines how often Consignment Team audits are to be scheduled.
7. A database of consigning plants has been developed in order to maintain oversight and control of consignment activities.
8. Benchmarking against other major consignors has been undertaken to help identify best practice.
9. Active Sellafield Limited participation in professional bodies and associations (PATRAM, RAMTUC, WNTI) allows Sellafield Limited to exert influence in the development of RAM transport statute and practice.

SUMMARY

Since 2009, Sellafield Limited has worked closely with its partners, International Nuclear Services, and with its regulators, the Office for Nuclear Regulation, to enhance its consigning capability in both organisation and process. The current team have developed a process introducing new tools for safe and compliant consignment; the Office of the Consigning Authority, the 5P Process, the Consignment Safety Report and the Consignment Command & Control Arrangements. These new arrangements are now an embedded feature of Sellafield Limited consignment activity whilst the team continue to evolve and improve in their pursuit of “gold standard” consignment delivery.

ACKNOWLEDGEMENTS

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Sellafield Limited would also like to acknowledge the checks and balances offered to our consignment development by our Regulator, the Office for Nuclear Regulation.

REFERENCES

International Atomic Energy Agency (2009) Compliance Assurance for the Safe Transport of Radioactive Material: Safety Guide No. TS-G-1.5

International Atomic Energy Agency (2008) The Management System for the Safe Transport of Radioactive Material: Safety Guide No. TS-G-1.4

International Atomic Energy Agency (2009) Regulations for the Safe Transport of Radioactive Material: Safety Standards Series No. TS-R-1