



5 steps to delivering safe, secure and reliable rail solutions for the nuclear industry

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Introduction

Direct Rail Services (DRS) has been operating since October 1995, following the decision by parent company, British Nuclear Fuels (BNFL), to create a strategic rail transport service.

The decision came after the privatisation of the rail network in the UK, when the former British Rail was superseded by a range of private organisations responsible for separate areas of the industry. Individual companies became responsible for aspects such as the operation and maintenance of the network infrastructure and for passenger and freight train services.

Rather than enter into contractual arrangements with third party contractors, DRS was formed - securing both the access & reliability of transport routes and availability of the rail network, providing greater guarantees about the levels of service delivery. The strategy of bringing this area of transport in house was concurrent with that of international transport, utilising its own fleet of ships for overseas fuel movements.

Freight operations began in October 1995, with the first services operating between Sellafield and the low level radioactive waste facility at Drigg.

Background

Between 1995 and the present day. DRS has built its business portfolio to include the following services:

- Transport of spent nuclear fuel from the UK's Magnox Generation power stations at Sizewell, Bradwell, Dungeness, Oldbury, Hinkley Point and Wylfa.
- Transport of spent fuel from the British Energy power stations at Hunterston, Torness, Hartlepool, Heysham and Hinkley Point.
- International fuel moves from BNFL's Ramsden Dock to Sellafield.
- Transport of chemicals, used in reprocessing, onto the Sellafield site.

Whilst DRS has constantly re-stated its commitment to rail transport of used nuclear fuels as its core business, the company has sought to expand its customer base and range of services. DRS has launched a pioneering high speed, long distance service – in partnership with a number of logistics operators – delivering a rail solution for fast moving consumer goods to retail end users. Currently these services run from Grangemouth to Daventry International Terminal, Coatbridge to Daventry International Terminal and from Aberdeen to Grangemouth.

The Magnox Generation power stations (listed above) have a target to complete de-fuelling by 2012. To facilitate the achievement of this target, DRS provides an 'enhanced service' making a greater number of services available to the power station and providing the flexibility needed to get the used fuel off site. The implementation of the 'enhanced service' has also reduced the impact of a missed service on both the power station and the reprocessing facility.

Used nuclear fuel has been transported by rail since 1962 and during that time more than 7 Million miles have been travelled in the UK without an accident involving a release of radioactivity. This distance is equivalent to travelling 270 times round the world.

DRS has established an asset base capable of delivering this range of business. A fleet of fully refurbished locomotives, fitted with state of the art technology, has been built up. In house maintenance facilities and expertise has enabled DRS to maintain this level of service delivery.

The acquisition of 10 new class 66 general freight locomotives has meant that the company has been able to practically devote a portion of the fleet to the non-nuclear business. This has given a wider resource over to the nuclear side of the business – in turn increasing reliability and locomotive availability.

Details

DRS has built the business on a solid base – developing specialist knowledge and key competencies in a number of areas. These specialist competencies and the way they interact with each other have been essential in delivering the high level of performance demanded by our customers within the nuclear industry.

I. In Service Performance

Performance monitoring: DRS has established a regime of performance monitoring, in every area of the company's operations. The system implemented for monitoring this information has evolved over a number of years, into a focussed suite of key performance indicators, regularly reviewed by the company's senior managers. By installing such a system, any trends can be easily identified before a significant impact is made upon operations and the level of service delivery. Objectives are set annually, in accordance with the business plan and external drivers – including customer requirements and legislation. Historically, these have included: services delivered, arrivals on time, locomotive availability, safety performance and customer satisfaction. A policy of transparency and openness is key, with the figures being shared in a number of fora with the customer – who in many instances may have a degree of influence over these performance indicators.

'Double heading': Clearly the close monitoring of core performance trends will not deliver performance alone, however, a strong element of contingency has been written into DRS' policies and safety case from the company's inception. For example, 'double heading' of locomotives has practically removed the likelihood of a failure. All DRS traction has been specifically engineered for multiple working, meaning that any two locomotives can work together, providing additional power and the insurance that any nuclear service will be able to be pulled using the remaining engine. This is sensible also from a security perspective, wherein the used fuel will not be left in a vulnerable position on the rail network.

In house maintenance: The specialist nature of the company's locomotive fleet has driven the need for an in-house maintenance facility – capable of heavy maintenance - and a highly qualified and competent team of engineering personnel. For example, each 'fitter' has proven competency to perform work on every locomotive used – meaning that every individual set to work on a locomotive will always have proven competency for both the job and the type of locomotive. It has been essential for DRS to undertake its own examination process. Specific maintenance plans have been developed for each class of locomotive (which is a quality controlled document), including: all scheduled repair work 'out of course' maintenance and repair work.

Repeated and continued investment into training is essential for the effective operation of such an in-house maintenance facility. An example of this can be seen in the instance of DRS including new locomotives into the fleet (the class 66 general freight locomotive, manufactured by General Motors) – when DRS imported training from the manufacturer, to guarantee the highest levels of competency for anyone likely to work on the locomotive. Any training is augmented by a personal development programme, to encourage specialist knowledge.

In addition to the regular examination programmes, long term and strategic maintenance is planned – including overhauls and refurbishments – to continue reliability and extend the operational life of the asset.

Driver/fitter competency: DRS employs the policy of utilising 'driver/fitter competencies' to maximise the efficient use of the workforce. The concept behind 'driver/fitter competency' is to use a fully trained fitter who is also fully competent for driving duties on the DRS controlled infrastructure. This dual-skilled individual would be best used for moving locomotives around on the maintenance facility and positioning prepared locomotives ready for use. The function removes the requirement to use a qualified driver, thus removing them from the pool of available drivers to perform main line (and commercially profitable) operations.

Access management: Many of the factors influencing service delivery are external and outside DRS' control; however, a long term strategic 'access manager' has been appointed with the primary role of minimising the impact on performance. Network Rail, the government controlled organisation responsible for the management of the rail infrastructure, allocate the 'paths' used by DRS services. Whilst it is understood that there is a requirement to protect the paths used by these specialist cargoes, the need may arise to undertake repair or upgrade work on the network. The work undertaken by the access manager ensures that any likely disruption is highlighted long enough in advance to put contingency plans in place. These arrangements may take the form of a simple re-timing exercise, following a discussion with both clients – the power station and the reprocessing facility. In extreme cases, where a long term renewal programme removes the availability of a key route for a long period, a diversionary route will be used.

Training school: Currently in the UK, there is a recognised shortage of adequately trained and experienced train drivers with the relevant freight experience. DRS has taken the step of investing in a training school to guarantee the required number of train crew are being brought into the organisation to match the areas of growth in business. In addition to bringing new recruits into the organisation, putting them through an extensive programme to achieve the in-depth competencies and qualifications to crew a train on the main line, existing members of staff can come through the training school – providing the option of an alternative career path for already established employees. The aim of the training school is to take recruits through an intensive training programme and produce a competent member of train crew that can be instantly included in pool of useable train crew - on graduation. This method is preferable to the inefficient practice of training on the job – where the tendency is to become familiar with fewer routes and develop knowledge at a slower rate.

II. Security

Clearly, the security arrangements for the movement of this type of radioactive material are paramount and interwoven into every aspect of the company's operational procedures. The primary security features are contained within the design and construction of the flask used to transport the used nuclear fuel - heavily shielded, purpose built flasks - constructed from forged steel over 30cm thick weighing more than 50 tonnes – for transporting around 2.5 tonnes of used fuel. The rail transport of this type of package is, however, still heavily regulated by the relevant authorities that govern both the rail and nuclear industries.

The regulations reflect the international accepted standards contained within the International Atomic Energy Agency's (IAEA) own regulations for the safe transport of radioactive material.

The Office for Civil Nuclear Security (OCNS) – part of the Department of Trade and Industry (DTI) - continuously audits and approves the security arrangements for procedures undertaken by DRS and is in constant communication regarding threat levels affecting the industry. Other agencies that regulate DRS' security provisions include: British Transport Police, TRANSEC, Railway Group Standards and BNFL's internal security guidelines.

DRS has established a good professional relationship with the OCNS and has taken every step - wherever possible – to exceed any security recommendations. In August 2003, DRS became the first company approved as a 'Class A' carrier – the highest level of security accreditation that can be awarded for the transportation of nuclear material. The company's security procedures have met the requirements of the Nuclear Industries Security Regulations – enabling the movement of category 1,2 & 3 nuclear material.

TRANSEC – The transport security division of the Department for Transport, Local Government and the Regions. TRANSEC's remit covers the safety of stations, passenger traffic and non-nuclear freight. Recently, this organisation has audited DRS security provision and carried out search and evacuation exercises on the Kingmoor site (DRS' head office)

The built in security systems that allow the UK's rail network to operate are ideally suited to these types of cargoes. The signalling system dictates the direction of the trains and their position on the network in relation to other traffic.

The network is policed by the British Transport Police (BTP), who provide a policing service to all operators. The BTP's remit includes preventing trespass or unauthorized access/ to the network. BTP works in partnership with the railway businesses, rail staff and the public to combat route crime through a strategy of enabling, education, engineering and enforcement. Specifically BTP has continued to provide guidance regarding DRS contingency plans – specifically for the operational bases and marshalling facilities.

All DRS staff undergo the same extensive security clearance processes as employees working on a licensed nuclear site. The clearance process is BC (Basic Check) plus NIS Criminal Records Check, this level of clearance extends to all contractors working for DRS. All DRS sites operate a 'security pass' system, wherein anyone on a DRS operated site must display their security pass at all times.

In support of these procedures, DRS has installed a number of physical security measures, including: Centrally operated CCTV surveillance systems on all DRS sites, manned compounds and Global Positioning Systems (GPS) fitted to locomotives and rolling stock.

III. Public Acceptance

All risks are minimised as far as is possible, throughout every aspect of the transport of used nuclear fuel – reflected by the company's long history of safety, security and performance. An area which, however, remains very much open to external influences is public opinion and acceptance. Despite the sensitive nature of these cargoes, DRS has succeeded in maintaining a very low public profile. Clearly, in the age of the 24hour media, there will be coverage concerning the organisation and its core business – but DRS operates various systems and communication policies in order to guarantee the distribution of accurate, consistent and reliable messages are delivered.

Emergency communications procedures: Despite extensive planning, safety and security measures put in place, unexpected things can go wrong and incidents do occur. The speed and efficiency of the response can have a significant impact on the long-term perception of DRS and its operations.

DRS has developed, implemented and tested a communications plan to ensure that an approved process is triggered and that accurate information is disseminated to the relevant audiences.

The following procedures have been developed for use in all situations:

- Providing a structure for the flow of information
- Identifying key individuals/stakeholders, providing their contact details
- Highlighting their roles & responsibilities and a contact within DRS
- Providing an initial media response
- Managing the flow of information throughout the media
- After the event

DRS emergency procedures are tested on a regular basis through numerous RADSAFE training exercises. A significant proportion of these exercises involve rehearsing the liaison between the communications functions of the organisations involved. This would often include: BTP, BNFL corporate communications, Network Rail, the regional constabulary, the consigning power station, the responding power station (providing radiological support via the RADSAFE scheme) responding emergency services (fire brigade ambulance, local health authorities) and the local authority.

DRS is also able to rely upon the support of the BNFL/British Nuclear Group's central emergency response procedure and facility 'Outlook'. The facility enables the fast response and on-call availability of corporate resources including media and legal support.

Media management: Readiness in the event of an emergency is not adequate, without an overall proactive media and stakeholder strategy. With the support and advice from the corporate centre, DRS has succeeded in maintaining strong links with various media organisations and developing a reputation for efficiency and accuracy in responding to enquiries. A media enquiry monitoring system has been approved under the company's quality management system, to receive, process, respond (using approved messages) and monitor the published or broadcast material. This aspect of the company's operations has been identified as key to performance and included in the overall annual company objectives.

Stakeholder liaison: From experience, DRS has learned that the best way to maintain a good level of public acceptance is to have a good stakeholder relationship. Due to the fact that the company's operations cover a significant part of the UK, and are in many ways the most visible part of the UK's fuel cycle, it has been essential to be open and transparent about everything that is not commercially or security sensitive. DRS regularly attend liaison committees to answer the concerns of stakeholders and the re-enforce the company's positive messages.

Strategic planning: Communication plays as much a part in strategic planning as any facet of the operation, for example, in the event of a diversion. DRS has taken the unprecedented approach of ensuring that every agency involved with such a project has been involved from a very early stage and that consistent messages have been long established. Detailed research is produced, contingency plans established and rehearsed and key stakeholders informed.

iv Regulatory Interface

DRS has established an effective system of regulatory interfacing in order to operate effectively within the rail freight environment and ensure full compliance with current legislation. In light of recent announcements, issued by the

Department for Transport concerning the future organisation of the UK rail network, DRS is extremely well placed to continue delivering the current level of performance whilst maintaining industry leading safety standards.

Rationalisation of the organisation structure has seen the duties of Her Majesty's Rail Inspectorate (HMRI) - currently part of the Health and Safety Executive, in charge of securing the proper control of risks to the health and safety of employees, passengers and others who might be affected by the operation of Britain's railways – be transferred to within the remit of the Office of the Rail Regulator (ORR).

DRS' Safety Case is audited annually and formally reviewed every three years. The document is accepted by HMRI and audited by a number of accredited companies which act as licensed agents for the inspectorate.

The (define?) ORR is an independent statutory body appointed by Government under the Railways Act 1993. Operated as a small, non-ministerial government department, the ORR is organised to take forward a work programme in accordance with the aim and objectives set out in its business plan. The aim of the organisation is, through independent, fair and effective regulation, to achieve the continuous improvement of a safe, well-maintained and efficient railway which meets the needs of its users and to facilitate investment in capacity to satisfy the demands of growth in passenger and freight traffic at the time it is needed. It is important to point out that both the HMRI and the ORR will very much remain independent from central government control and from the wider rail industry.

The organisation responsible for the strategic development of the country's rail network – up until the 'Future of the Railways White Paper' announced the re-organisation – has been the Strategic Rail Authority (SRA). The SRA's Freight Strategy, published in May 2001, set out to provide a framework within which the industry can deliver a modal shift of freight from road to rail, and to provide the basis for economically sustainable growth in the long term¹. DRS relationships with the SRA are many and varied, from an interface set up to manage the grant funding available to companies attracting freight flows to the railways, through to lobby groups focussed upon ensuring the requirements of the rail freight industry are understood.

As listed within the details of the security section, It is essential that DRS maintains a strong link with the Office for Civil Nuclear Security and ensures compliance. The OCNS is the security regulator for the UK's civil nuclear industry. It is responsible for setting security standards for the industry and enforcing compliance and, through the Standing Committee on Police Establishments (SCOPE), reviews police numbers and tasking at licensed nuclear sites policed by the UKAEA Constabulary².

On an operational level, DRS is in constant communication with network rail at all levels. This ranges from the drivers in contact with the signallers through to the executive team and access managers negotiating long term infrastructure repair work and future possessions. The recent announcements will see Network Rail assuming a broader role as a network operator, assuming a greater responsibility for network performance.

In summary, the nature of DRS business – subject to the constraints of both the rail and nuclear industries – has meant that DRS has had to form many interfaces to ensure consistent performance and sustain growth of the business whilst adhering to all relevant standards.

v. Safety Quality and Environment

Integral to providing safe, secure and reliable rail transport solutions of this kind, are the company's Safety, Quality and Environment policies.

DRS established its management systems to integrate the safety, quality & environmental management systems into an effective business management tool. The integration of these individual systems allows DRS to benefit from the synergistic effects of the similarities in good practice in all these areas.

Safety Management itself needs to encompass the three distinct areas of railway safety, nuclear safety, & conventional health and safety. The safety management system at DRS is based on the HSE guidance HSG65 including all the required six elements of good practice for successful safety management (policy / organisation / planning / monitoring / Audit / review), using the six elements in a cycle aiming for continuous improvement. Close liaison with the rail industry, as well as our parent company, allows a safety learning experience from a much larger

¹ Information from the Strategic Rail Authority (SRA) website www.sra.gov.uk/who

² Department of Trade and Industry (DTI) www.dti.gov.uk/energy/nuclear/safety/security

base to be included than normally available to a company the size of DRS, this knowledge base is used extensively to continually improve safety management.

DRS has a 'better than average' safety performance within the rail industry - as was demonstrated by the company's performance in the "rail industry safety culture survey 2004" carried out annually by the Railway Safety Standards Board. The company also includes exceptional safety performance within its annual objectives. Within these objectives is included, a target to achieve the rail industry Signals Passed at Danger (SPAD) target (0.4 incidents /million train miles) by 2009 six years early.

DRS has good relationships with the regulators whose remit covers safety, quality and environment – as discussed in section iv.

The quality management element of the company's integrated business management system is vital to ensure that DRS delivers its commitments to its customers and continually improves performance. Recognising the importance of quality assurance, DRS established a quality management system that conforms to the ISO 9000 series standards, gaining registration initially to ISO 9002 in 1999 and the ISO 9001:2000 standard in 2002. The intensive audit programme carried out both internally and externally ensures that DRS conforms to the processes that implement the railway safety case. We have developed systems to control documents electronically to simplify control and ensure that the current documents are available throughout the company.

Recognising the importance of environmental management DRS developed its environmental management system, gaining certification to the ISO 14001 standard in 2004. Whilst DRS fully recognises and supports the government targets to move freight from road to rail for its significant environmental benefits, DRS has identified its own significant environmental impacts and set out targets to make improvements in these areas through its own environmental management programmes.

In conclusion

DRS has established a strong reputation for reliability, quality, service, safety and security – with delivery against these targets depending very much on the 'five steps' outlined within this document. The 'steps' are ingrained within every area of DRS' operations and form many of the key elements which make up the business strategy. It is with this in mind that DRS has been able to continue to perform in what has been an unsettled period for the UK's railways, where passenger and other freight services have suffered significant falls in performance.

- During the past financial year DRS has delivered 896 loaded irradiated nuclear fuel flasks to Sellafield for reprocessing - from the UK's nuclear power stations – containing around 2,240 tonnes of used fuel.
- 660 stations were serviced in delivering this figure – over 99.9% of requested services were delivered, 90% of which were delivered within 30 minutes of the requested time.
- 214 low level waste and plutonium contaminated material services were delivered to the Drigg repository.
- 59 services were delivered between Sellafield and the international terminal at Barrow in Furness.
- A total of 346,774 miles were travelled whilst undertaking services related to DRS nuclear business.