

# Electrical Isolations – Assurance Capability

Reliable isolations are essential for safe work on electrified railways. However, existing isolation processes can be slow and resource-intensive, and therefore plans to improve them are progressing. Changes to the isolation process and maintaining compliance with the Electricity at Work Regulations 1989 will require consideration of multiple facets of the railway including lineside equipment, SCADA, and working practices (e.g. the Green Book).

Frazer-Nash is well placed to support development of the isolation process, with extensive experience providing a range of engineering support to the rail industry. Specifically, this leaflet provides relevant examples of our recent experience which supports our assurance offering.

## TRACK FEEDER SWITCH TRIAL

Introduction of Track Feeder Switches (TFS) to a 3<sup>rd</sup> rail electrification scheme has the potential to improve safety of the isolation process by reducing the amount of near-line work required to apply short-circuit devices. Frazer-Nash provided safety support to a project trialling the introduction of TFSs, allowing them to meet their requirements under the Common Safety Method for Risk Evaluation and Assessment (CSM-REA) and demonstrate that the system was suitably safe for operation. In addition to the typical CSM-related deliverables:

- ▶ System Definition,
- ▶ Hazard Identification Workshops,
- ▶ Hazard Record,
- ▶ Safety Justification Report / Hazard Assessments;

Frazer-Nash carried out additional safety activities in support of the project, including:

- ▶ Facilitation of Failure Modes and Effects Criticality Analysis (FMECA).
- ▶ Human Factors Assessment, to identify features of the system whose design can be optimised to encourage its correct use/handling during all forms of operations.
- ▶ EaWR review, to assess the system against the requirements of the EaWR and suggest improvements.
- ▶ Production of training material for both operators and maintainers on the use of the TFS.

This project demonstrates our ability to deliver effective safety support to projects altering isolation processes, reducing project risks and supporting timely project delivery; the Safety Justification Report was distributed by Network Rail as an example of best practice.

## NATIONAL SCADA RENEWALS PROGRAMME

Frazer-Nash's assurance support to NSRP has included development of typical CSM deliverables as identified above, in addition to specific reviews such as SIL Derivation, taking account of both the technical change and current working procedures.

Future changes to the isolation process will necessarily require changes to the way the SCADA system is utilised, and how other elements of the process interface with it. Frazer-Nash's experience in this area aids in identifying the assurance requirements relating to the SCADA system, and providing effective support to the project making changes, allowing it to gain the necessary approvals.

## WEST COAST MAIN LINE POWER SUPPLY UPGRADE – INTERIM ATF ISOLATION PROCEDURE

In order to address hazards which occurred as a result of ATF sections overlapping multiple contact wire sections, a local isolation procedure was required. Frazer-Nash supported the project in performing option selection and hazard identification activities, and producing a Safety Justification in support of the resulting Lol.

## SAFER DC ISOLATIONS

Negative Short Circuit Devices (NSCD) have the potential to reduce the safety risks associated with taking isolations in 3<sup>rd</sup> rail electrified areas. Frazer-Nash provided support including review and gap analysis of procedures, an EAWR compliance review, and a safety case report. Utilising significant prior experience working with Network Rail on other electrification-related projects Frazer-Nash was able to provide efficient and effective support, allowing this important project to progress.



## WHO WE ARE

Frazer-Nash Consultancy (RISQS approved) provides systems and technology to a multitude of engineering sectors. We are independent of any technology, product or project. Our consultants have both deep technical expertise and broad market knowledge, enabling us to provide insight into risk at the technology, project and enterprise level. We recognise the commercial sensitivity of our clients' information and work to confidentiality agreements set by our clients.

For more information about Frazer-Nash please visit our website.

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