

Overview

This standard describes how to inspect and test land-based equipment to confirm compliance before or after a repair and during the course of diagnostic investigation.

This standard covers formulation, justification and recommendations of logical actions to be taken following inspection, test and analysis of information and data which may fall into:

- Repair or replace (warranty or retail repair)
- Service or maintain
- Beyond economic repair (scrap or downgrade)
- Unsuitable for application (replace or modify)
- Unsafe for continued use (impound or disable)
- Meets manufacturers' conformity
- Operator fault
- Accidental damage
- Overload
- Not fit for purpose

Inspect and test land-based machinery and equipment covers the collection of all relevant information through information gathering, diagnostic testing or operational testing and test data to allow determination of compliance and diagnosis of faults and failures experienced in land-based vehicles and machinery.

Analyse and interpret findings covers analysis and interpretation of collected information by consideration of data, comparison, simulation, influences on test data/operation or appliances, as well as testing data to allow an informed diagnosis.

Formulate and recommend actions covers recommending actions, e.g. beyond economical repair; repair, replace, service exchange, recondition; handover, installation; insurance, warranty, third party specialists, liability (Q cabs), insufficient test (repeat), inspect (e.g. brakes), acceptance of costs and legislative requirements.

LANLEO30 - SQA Unit Code F9GT 04

Inspect and test land-based equipment

Performance criteria

Inspect and test land-based machinery and equipment

You must be able to:

- P1 establish and understand the objectives of the inspection or test which may fall into one or more categories, e.g. compliance, verification of repair, accident or incident occurrence, diagnosis, pre-delivery inspection
- P2 observe and record relevant information to aid a clear understanding of land-based machinery and equipment, condition, application and performance
- P3 gather service history and technical reference data to assist inspection
- P4 identify and apply the appropriate tests or procedures, e.g. implement tests to determine the cause of engine problem such as compression, engine output, fuel consumption, fuel pressure
- P5 select equipment appropriate for the task ensuring that it is serviceable, calibrated and that all certification is in date
- P6 carry out any necessary preparation work and simulation of conditions of failure
- P7 carry out tests within agreed timescales
- P8 inspect failed parts and record the findings

Analyse and interpret findings

You must be able to:

- P9 check that the data gathered is realistic and thorough and takes account of the test conditions
- P10 consider and eliminate any influence of external factors affecting the performance of vehicles, machinery or equipment
- P11 recognise the causes of failures
- P12 analyse the data using approved methods and procedures, e.g. dynamometer tests, oil sampling
- P13 compare the analysis against the product specification and identify any faults or variations from specification
- P14 determine the implications of the findings

Formulate and recommend actions

You must be able to:

- P15 identify and recommend options for action, e.g. repair, replace, service, unsuitable for application, beyond economic repair, unsafe for continued use, fit for purpose, operator training required
- P16 ensure actions adopted meet relevant standards and customers' requirements, e.g. timescale, costs and viability
- P17 select and justify recommendations
- P18 present observations and recommendations clearly
- P19 prepare documentation recording recommended actions to be taken and the timescales

LANLEO30 - SQA Unit Code F9GT 04

Inspect and test land-based equipment

Knowledge and understanding

You need to know and understand:

Inspect and test land-based machinery and equipment

- K1 the purpose and expectations relating to a request for an inspection or test
- K2 the actions required for the different types of inspection and tests, e.g. performance verification, conformity to purchase specification, repair verification, accident or incident investigation, diagnosis, estimation and quotation of repair services
- K3 how to collect and validate relevant information, e.g. verbal interrogation, personal operation, fault registers, observation, simulation, comparison
- K4 methods of investigating intermittent faults
- K5 the appropriate methods, diagnostic and specialist equipment used to establish the conformity of a land-based machine or equipment
- K6 how to differentiate between a machinery characteristic and a malfunction
- K7 how to recognise, collect and record relevant data using the appropriate format
- K8 how to prioritise and sequence testing procedures considering circumstance, e.g. safety, economics, position and location of machine or equipment to be tested, state of equipment being tested (e.g. not fit for testing)

Analyse and interpret findings

You need to know and understand:

- K9 how to compare, analyse and interpret data gained from testing and inspection
- K10 the relevant analysis methods and techniques of fault finding, e.g. by logical elimination, simulation, comparison, isolation of components, defining specification and performance against manufacturers' data
- K11 the causes and symptoms of failures
- K12 the suitability and the limitations of the machinery or equipment being inspected to perform the given task

Formulate and recommend actions

You need to know and understand:

- K13 the range of actions that could be considered which may include replace, repair, modify, update, substitution, impound, beyond economic repair, service, pass/fail, unsafe
- K14 the relevant legislation, regulations, industry standards and manufacturers' guidelines that cover land-based equipment
- K15 the causes and affect of failures
- K16 the implications relating to the proposed solution, in particular warranty, cost, future repair and impact on the customers' operations
- K17 how to present observations and recommendations to the customer,

LANLEO30 - SQA Unit Code F9GT 04

Inspect and test land-based equipment

organisation and manufacturer

K18 how to identify operator training requirements to avoid reoccurrence of failures

K19 how to classify a repair, e.g. warranty, insurance claim, forced breakage, lack of maintenance, unauthorised intervention, sabotage, overload, operator abuse, inappropriate application

LANLEO30 - SQA Unit Code F9GT 04

Inspect and test land-based equipment

Developed by Lantra

Version number 2

Date approved October 2011

Indicative review date April 2016

Validity Current

Status Original

Originating organisation Lantra

Original URN O29NLEO30

Relevant occupations Engineering technician

Suite Land-based Engineering Operations

Key words PDI, diagnose, analyse, land-based engineering
