

1.10.25. NON-DESTRUCTIVE TESTING AND TECHNICAL DIAGNOSTICS – BASIS OF AIRCRAFT ENGINEERING RELIABILITY

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One of the basic technologies ensuring high reliability of aircraft produced by JSC “Sukhoi company” are non-destructive testing (NDT) and technical diagnostics (TD) based on physical and informational technologies. Which are acoustic (ultrasound), magnetic and electromagnetic, penetrant, X-ray and many other testing methods and aids. NDT Methods are used for defects detection of material discontinuity type, material structure and physicochemical properties assessment, geometrical parameters testing.

Management and specialists of the company pay permanent attention to development of NDT methods and aids, application of modern approaches in quality improvement issues and development of aircraft production and operation technology.

Rational determination of NDT stages in testing aircraft subproducts, parts, units and systems, optimization of requirements for technological operations performance quality, high level of NDT services personnel training have created the basis for modern aircraft NDT technology.

NDT analysis of parts condition and operability of all units of an aircraft makes it possible to evaluate the capability of fail-free operation at further stages or timely detection of prefracture or intensive wear parts.

NDT and TD in operation allow solving an entire complex of tasks:

- Determine parts operability;
- Timely detection of fatigue cracks, notches (and other strain concentrators) or intensive wear and damage of parts;
- Define causes of fatigue cracks or surface wear and hence to implement increase of aircraft machinery fail-free operation measures.

In the report, examples of new NDT and TD methods implementation developed by the company specialists with the participation of Russian enterprises and companies are given.