

Aerospace NDT in South Africa

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ASSEGAI

*A Strategy for a Sustainable
Economical and Growing
Aerospace Industry*

- ❑ Alec Erwin (Minister of Trade and Industry) announced in late 2002 that South Africa should strive towards having an aerospace industry equivalent to the local automotive industry (MIDP), by the year 2014
- ❑ Hence, there is a desire to generate a sustainable, economical and growing indigenous aerospace industry that can play a relevant role both locally and internationally
- ❑ Built upon the existing industry



The Aerospace Industry

The aerospace industry is that industry which covers the R&D, design, manufacture, support, maintenance, conversion and upgrade of both rotary and fixed wing aircraft, as well as their relevant subsystems and components



Players



□ Local

- Denel Aerospace, Kentron, Eloptro, Aerosud, AMD, ATE, TMFS, AMS, SAAF, SAT, SAFAIR



Without effective use of NDT

- Cost of maintenance - high
- Cost of flying - high
- Safety of flying - low

Education and Training



Education, formal training and certification, in any NDT sector, is probably the greatest single factor affecting the quality of inspection.

Personnel need to understand the technology principles of the various NDT methods in use, as well as their proper application. This understanding is essential to good NDT performance because:

- NDT results are strongly dependent on the NDT process used.
- Most NDT methods do not inherently create their own records.
- NDT results can be seldom cross-checked without conducting another test.

Education and Training (cont.)



VUT



UCT



WITS

Diploma and post graduate (MSc, PhD) and research.



ANDTC



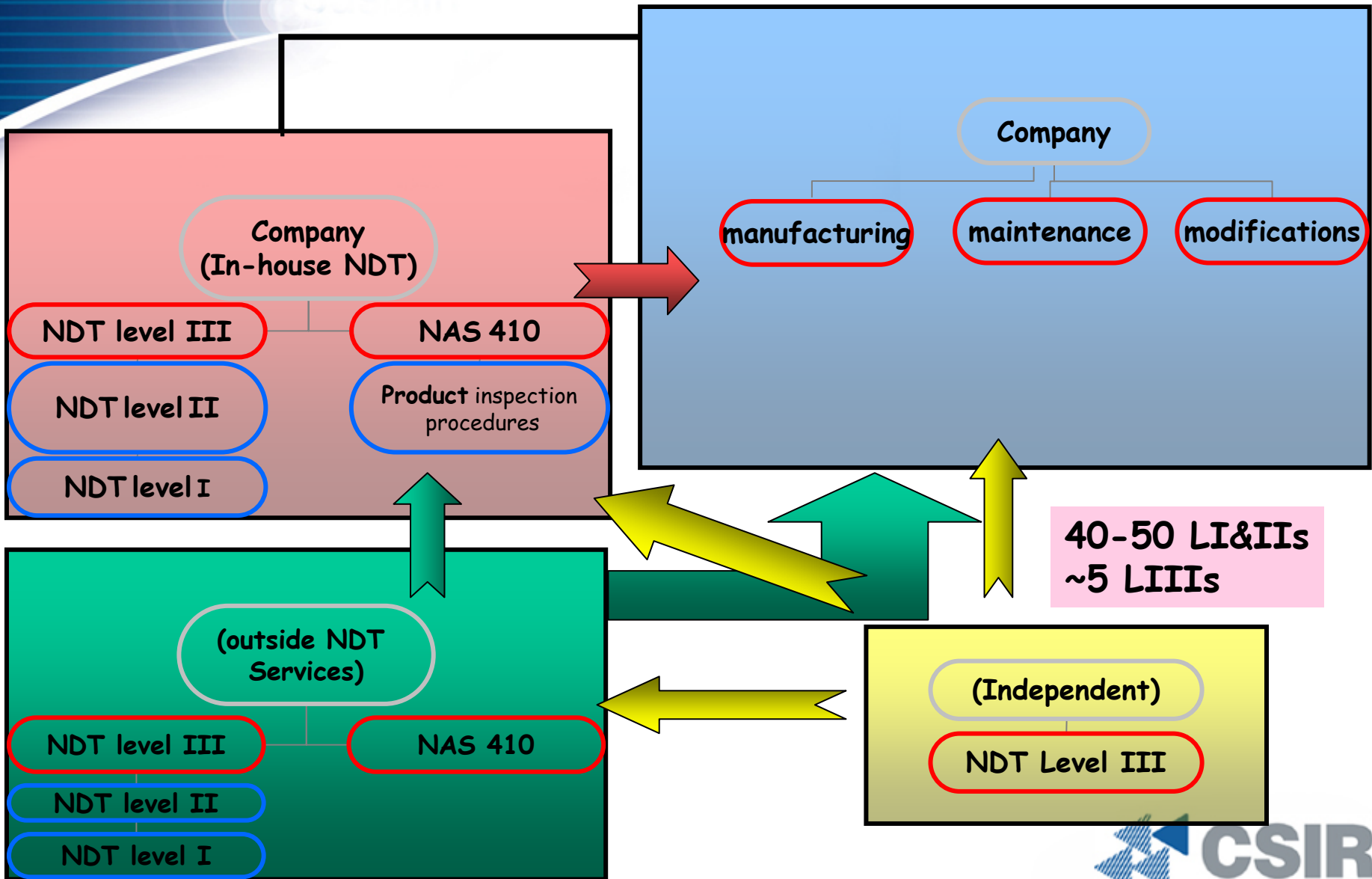
SAIW



SANDE

Practitioner training and examinations in the main methods of NDT, MT, PT, UT, RT, ET for L I - III Based on ASNT, PCN, SAQCC(NDT) curriculum

NDT Supply Structures



CORROSION

Corrosion problems of ageing aircraft hover around access difficulties to major structural parts for NDT inspections.

Together with limited ability to conduct inspections, in terms of both equipment and more particularly, skilled manpower, this limits the inspections to those carried out when the aircraft is flown to a first-world facility for anything more than routine line maintenance.

With many aircraft, this may be only every few years, leaving long periods in which corrosion damage and other problems can accumulate to proportions where they can threaten the integrity of the airframe and may result in the aircraft being scrapped before the end of its life.

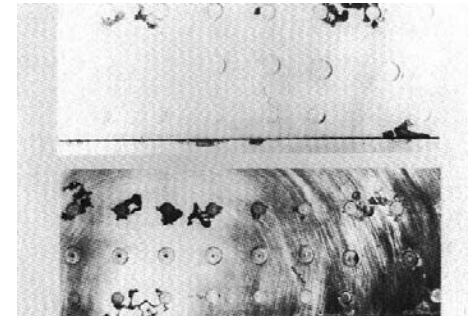


CORROSION (cont.)

Country	GNP	Aircraft Corrosion	% GNP
USA	\$300 billion	\$13 billion	4%
UK	?	?	4%
RSA	R79.4 billion,	+R3.4 billion	4%

* ~1998 figs on exchange rate R7=\$1

Estimated that corrosion contributes up to 80% of the cost of operation of ageing aircraft and that 45% of all component failures can be attributed, either directly or indirectly, to the presence of corrosion



Regulators



CAA ensures compliance during maintenance of aircraft to OEMs specifications on inspections



Registration and licensing of NDT practitioners through audits and accreditation of training and examination centers.

- SANAS audit and accredit ECSA as the national registration and licensing authority for NDT Practitioners.



- SANAS audit and accredit NDT laboratories and user facilities at world-class levels.

- SANAS, DTI, ECSA and SAINT, negotiate international recognition and acceptance of the Licensing/Registering of NDT practitioners



Research and Development



WITS



UCT



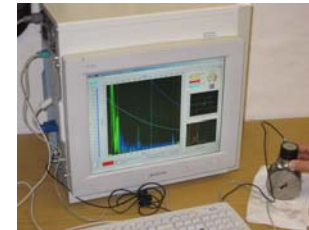
Portable ESPI & Shearography prototypes



CSIR



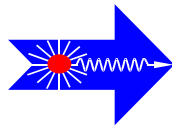
Eskom TSI



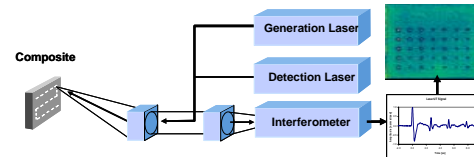
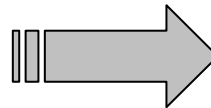
Complex plane Split Spectrum Processing (CSSP) system- SPUTS



ANDTC



SDI



Typical laser set of SDI technology systems

Conclusion

- ❑ A successful aerospace industry is dependent on the quality of its non-destructive testing support structure.
- ❑ Growth of the aerospace industry in South Africa, as envisioned by ASSEGAI, cannot be successfully achieved without analysing and addressing the concerns of the current non-destructive testing discipline.
 - ❑ Demand that quality control and maintenance tools such as NDT are developed in due time fulfilling adequate performances:
 - ❑ Skills development and awareness of the importance of NDT to industry
 - ❑ Focused research efforts for development of tools to enhance NDT effectiveness.

Thank you for your time!