# GKN AEROSPACE COWES MATERIALS & PROCESSES
## SPECIAL PROCESS AUDIT REPORT

## AUDIT DETAILS

| | |
|---|---|
| **COMPANY** | ELEMENT MATERIALS TECHNOLOGY - CLEVELAND |
| **ADDRESS** | 5405 E SCHAAF RD,<br>CLEVELAND,<br>OH44134-1337 |
| **TIPQA SUPPLIER CODE** | ST0058 |
| **GKN PRIMARY CONTACT** | SHANE RIGBY |
| **TYPE OF AUDIT** | DESKTOP / ~~SITE~~ |
| **AUDIT DATE** | MARCH 2024 |
| **ATTENDEE LIST** | |
| **AUDITOR(S)** | SHANE RIGBY |
| **AUDITEE CONTACT** | ANDREW KEARNS |

## PURPOSE AND OBJECTIVES OF AUDIT
This audit was conducted as part of GKN Cowes' 2024 External Special Process Audit Schedule. The objectives of this audit are to verify Element Materials Technology - Cleveland's capability to undertake the process listed below and ensure conformance to the relevant specification.

## SCOPE AND CRITERIA

| SPECIFICATION | PROCESS | CONTRACT | COMMENTS |
|---|---|---|---|
| ASTM E112 | Standard Test Methods for Determining Average Grain Size | HTF | |
| ASTM E18 | Standard Test Methods for Rockwell Hardness of Metallic Materials | HTF | |
| ASTM E8/E8M | Standard Test Methods for Tension Testing of Metallic Materials | HTF | |

## AUDIT FINDINGS

| ACTION NUMBER | CRITERIA | DESCRIPTION | CA/IA |
|---|---|---|---|
| - | - | - | - |

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## CONCLUSIONS

Element Materials Technology - Cleveland have historically been used as a sub-tier processor to Wyman-Gordon Forgings.

Andrew Kearns, Quality Manager at Element, was contacted and confirmed that Element are still process parts for Wyman-Gordon Forgings (however, not currently as a sub-tier for GKN Aerospace), this shows that Element are still currently processing parts and therefore along with the below recognised accreditations are permitted for continuation of their approvals.

This audit has been carried out and approval will be granted based on the Element Materials Technology – Cleveland's A2LA and Nadcap approvals.

## APPROVALS

Following this audit, the aforementioned supplier is hereby approved to conduct the following processes, subject to the timely closure of corrective actions:

| SPECIFICATION | PROCESS | RESTRICTIONS |
|---|---|---|
| ASTM E112 | Standard Test Methods for Determining Average Grain Size | |
| ASTM E18 | Standard Test Methods for Rockwell Hardness of Metallic Materials | |
| ASTM E8 | Standard Test Methods for Tension Testing of Metallic Materials | |

## DISCLAIMER

Please note that any conclusions made as to the compliance of Element Materials Technology – Cleveland to the aforementioned audit scope is based on the conditions at the time of audit, and this audit only evaluates the sample observed.

## AUDIT REPORT APPROVAL

| ROLE | PRINT NAME | SIGNATURE | DATE |
|---|---|---|---|
| Author | SHANE RIGBY | Shane Rigby Rigby, Shane Digitally signed by Rigby, Shane Date: 2024.03.22 09:49:25 Z | |
| GKN Primary Contact | SHANE RIGBY | Shane Rigby Rigby, Shane Digitally signed by Rigby, Shane Date: 2024.03.22 09:50:11 Z | |
| Approval – Processes | MATTHEW WOODFORD | Woodford, Matt Digitally signed by Woodford, Matt Date: 2024.03.22 10:50:18 Z | |

## CIRCULATION

TipQA
External Special Process folder
Andrew Kearns, Quality Manager, Element Materials Technology – Cleveland

## AUDIT OBSERVATIONS

COMMON AUDIT REQUIREMENTS

| QUESTION | ANSWER | | REMARKS |
|---|---|---|---|
| Does the supplier hold current NADCAP, ISO17025 or other relevant third party approvals?<br>If so record approvals. | **YES** | ~~NO~~ | Supplier is approved to Nadcap Materials Testing Laboratories (Expiry 30 November), and ISO 17025 approved (Expiry 30 September 2024) |
| Does the supplier hold current AS9100 approval, or equivalent?<br>If so record approvals. | YES | ~~NO~~ | See attached |
| Does the supplier have an internal special process schedule? | **YES** | ~~NO~~ | This requirement must be met to satisfy Nadcap approvals as above |
| Does the supplier have an effective corrective action process in place?<br>Review at least one closed corrective action. | ~~YES~~ | ~~NO~~ | Corrective action review was not undertaken during this audit. |
| Does the supplier hold current issues of all applicable processing specifications, including any deviations and WAIS documents? | **YES** | ~~NO~~ | Supplier approvals are to ASTM specifications only.<br>Check of current issues would have been undertaken for Nadcap/A2LA approvals. |

SPECIFIC AUDIT REQUIREMENTS

Nadcap
Administered by PRI

*This certificate is granted and awarded by the authority of the Nadcap Management Council to:*

*Element Cleveland*

*5405 E Schaaf Rd*
*Cleveland, OH 44131-1337*
*United States*

*This certificate demonstrates conformance and recognition of accreditation for specific services, as listed in www.eAuditNet.com on the Qualified Manufacturer's List (QML), to the revision in effect at the time of the audit for:*

*Materials Testing Laboratories*

Certificate Number: 4344209911
Expiration Date: 30 November 2024
Accreditation Length: 24 Months

Jay Solomond
Executive Vice President & Chief Operating Officer

Performance Review Institute (PRI) | 161 Thorn Hill Road | Warrendale, PA 15086-7527

# Accredited Laboratory

A2LA has accredited

## ELEMENT CLEVELAND

*Cleveland, OH*

for technical competence in the field of

## Mechanical Testing

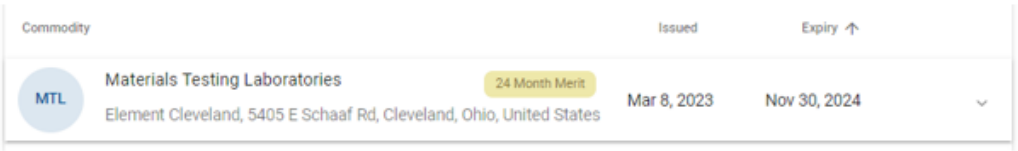
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of R223 – Specific Requirements – GE Aviation S-400 Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 24th day of August 2022.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0100.01
Valid to September 30, 2024

*For the types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.*

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| Commodity | | | Issued | Expiry |
|---|---|---|---|---|
| MTL | Materials Testing Laboratories<br>Element Cleveland, 5405 E Schaaf Rd, Cleveland, Ohio, United States | 24 Month Merit | Mar 8, 2023 | Nov 30, 2024 |

AC7000 - AUDIT CRITERIA FOR NADCAP ACCREDITATION
AC7101/1 Rev G - Nadcap Audit Criteria for Materials Testing Laboratories – General Requirements for All Laboratories (to be used on audits BEFORE 10-Dec-2023)
AC7101/2 Rev E - Nadcap Audit Criteria for Materials Testing Laboratories – Chemical Analysis (to be used on audits on/after 30 August 2020)

- Specify the Alloy Base for Accreditation
  - Ti Base
  - Ni Base
  - Mg base
  - Fe Base
  - Cu Base
  - Co Base
  - Al Base
- (W) Atomic Absorption
  - (W2) Graphite Furnace (GFAA)
- (S) X–Ray Fluorescence (XRF)
- (G) Elemental Analysis (Combustion or Fusion)
  - (G5) Sulfur
  - (G4) Oxygen
  - (G3) Nitrogen
  - (G2) Hydrogen
  - (G1) Carbon
- (F) Atomic or Optical Emission Spectroscopy (AES or OES)
  - (F3) Atomic Emission Spectroscopy – Spark/Arc (S/A–OES)
  - (F2) Atomic Emission Spectroscopy – Inductively Coupled Plasma (ICP–OES/AES)

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AC7101/3 Rev D - Nadcap Audit Criteria for Materials Testing Laboratories – Mechanical Testing (to be used on audits on/after 4 December 2016)

- (XN) Bend Testing
- (XA) Creep
- (P) Fracture Toughness
- (N) Impact
- (C) Stress Rupture
- (B) Elevated Temperature Tensile
- (A) Room Temperature Tensile

AC7101/4 Rev F - Nadcap Audit Criteria for Materials Testing Laboratories – Metallography and Microindentation Hardness (to be used on/after 14 August, 2016)

- (XL) Macro Examination
- (L9) Near Surface Examinations – Alpha Case: Cast Titanium
- (L8) Near Surface Examinations – Alpha Case: Wrought Titanium
- (L7) Near Surface Examinations – IGA, IGO
- (L6) Near Surface Examinations – Nitriding
- (L5X) Near Surface Examinations – Microindentation (Surface) (Chord Method ARP1820)
- (L5) Near Surface Examinations – Microindentation (Surface–Case Depth)
- (L3) Near Surface Examinations – Oxidation/Corrosion
- (L2) Near Surface Examinations – Alloy Depletion
- (L12) Inclusion Rating

- (L11) Grain Size
- (L10) Near Surface Examinations – Carburization / Decarburization
- (L1) Microindentation (Interior)
- (L0) Metallographic Evaluation

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AC7101/5 Rev D - Nadcap Audit Criteria for Materials Testing Laboratories – Hardness Testing (Macro) (to be used on audits BEFORE 07-May-2023)

- (M2) Rockwell Hardness
- (M1) Brinell Hardness

AC7101/6 Rev D - Nadcap Audit Criteria for Materials Testing Laboratories – Corrosion (to be used on/after 1 July 2018)

- (Q1) Detecting susceptibility to intergranular attack in austenitic stainless steel
  - (Q1–4A) Copper–Copper Sulfate– 16% Sulfuric Acid Test "Strauss test" (bend test)
  - (Q1–1) Oxalic Acid Etch Test

AC7101/7 Rev D - Nadcap Audit Criteria for Materials Testing Laboratories – Mechanical Testing Specimen Preparation (to be used on audits on/after 15 May 2016)

- (Z3) Cast Specimens
- (Z) Standard Specimen Machining

AC7101/9 Rev C - Nadcap Audit Criteria for Materials Testing Laboratories – Specimen Heat Treating (to be used on/after15 January 2017)
AC7110/13 Rev B - Nadcap Audit Criteria for Evaluation of Welds (to be used on audits BEFORE 05-May-2024)

- NOTE: IF YOU ARE SELECTING THE AC7110/13 CHECKLIST YOU MUST ALSO SELECT AC7101/4 – Nadcap Audit Criteria for Materials Testing Laboratories – Metallography and Microhardness. You must also select AC7110/13S
  - Supplement C – Metallurgical Evaluation of Electron Beam / Laser Welds (identify if this process is used)
  - Supplement B – Metallurgical Evaluation of Fusion Welds (identify if this process is used)
  - Supplement A – Metallurgical Evaluation of Welder / Welding Operator Qualifications (identify if this process is used)

AC7110/13S Rev D - Nadcap Supplemental Audit Criteria for Evaluation of Welds to be used on audits ON OR AFTER 11 January 2015)

- U2 Pratt & Whitney
- U10 GE Aviation

Lab Type - Lab Type

- Independent