1. **Governing Specifications**

Examples:

* MIL-DTL-23227 (Tube And Pipe, Nickel Chromium-Iron Alloy (UNS N06600)),
* MIL-DTL-24128 (Low Carbon Chromium Steel Bars And Forgings (UNS S40300)),
* MIL-S-23194 (Steel Forgings, Carbon And Low Alloy (Comp A, Comp C, Comp F))
1. **Technical Concerns**

Erroneous chemical analysis results could result in shipment of deficient material for Program use. (The deficiencies in the material might not manifest themselves until the material is already in use and could shorten the intended service life of equipment used in critical service applications.)

1. **Known Process Problems**
2. **Checklist Items**

**Part A: Contract Compliance Items.** An explanation should be provided for any “no” response and follow-up questions should be asked as appropriate. Also, the “REMARKS” column should be used to explain the supplier’s method of compliance or other pertinent observations. **All applicable contract specific items should be filled in prior to the visit to customize the checklist for each visit.**

**Part B: Additional Supplier Capability and Data Gathering Items.**  Additional “how” or data-gathering type questions should be asked as appropriate to gain better understanding of the supplier’s operation, and the answers documented.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Supplier:** |  | **Date:** |  | **QAR:** |  |

**PART A**

**CONTRACT COMPLIANCE ITEMS**

| **Line** | **Checklist Item** | **Yes** | **No** | **N/A** | **Remarks / Method of Compliance** |
| --- | --- | --- | --- | --- | --- |
| **A.1** | Describe parts/ material to be inspected (physical description):  |  |  |  |  |
| **A.2** | What is the application of the parts/material?(Note: Test lab may be just analyzing ladle and/or ingot samples that were provided by a upper tier vendor) |  |  |  |  |
| **A.3** | What are the contract requirements? (Fill in as applicable) |  |  |  |  |
|  | * Contract No.?
 |  |  |  |  |
|  | * AOR/super AOR?
 |  |  |  |  |
|  | * Clarifications
 |  |  |  |  |
|  | * Sampling Requirements (Addressed separately below.)
 |  |  |  |  |
|  | * Chemical Analysis Methods Requirements (Addressed separately below.)
 |  |  |  |  |
|  | * Reporting Of Chemical Analysis Results
 |  |  |  |  |
|  | * Other contract requirements?
 |  |  |  |  |
| **A.4** | **Compliance With Sampling Requirements** (If applicable) |  |  |  |  |
|  | * Only applicable if testing is performed by alloy vendor.
* Otherwise, test lab has no control over sampling
 |  |  |  |  |
|  | For example:* MIL-DTL-23227 – Is sampling performed in accordance with 4.3.1?
* MIL-DTL-24128 – Is sampling performed in accordance with 4.3.1?
 |  |  |  |  |
| **A.4** | **Compliance With Sampling Requirements (cont.)** |  |  |  |  |
|  | MIL-S-23194:* Is sampling for ladle analysis in accordance with 4.3.1.1?
* Is sampling for product analysis in accordance with 4.3.1.2?
 |  |  |  |  |
|  | Other? – Identify specification and sampling requirements. |  |  |  |  |
| **A.5** | **Compliance With Requirements For Methods of Chemical Analysis** |  |  |  |  |
|  | * Identify method(s) of chemical analysis used for compliance with applicable specifications
 |  |  |  |  |
|  | For Example:**MIL-DTL-23227** (4.4.1.1)Test Methods Used:* ASTM test method? If yes, identify specific test method.
 |  |  |  |  |
|  | * Other test method with accuracy demonstrated by comparing its results with a standard sample of similar material traceable to the National Institute of Standards and Technology (NIST) or equivalent (4.4.1.1)? If yes, identify specific methods.
 |  |  |  |  |
|  | * Do the carbon analysis results reported have an accuracy of ± 0.002 percent (4.4.1.1)?
 |  |  |  |  |
|  | **MIL-DTL-24128** (4.4.1.1)Test Methods Used:* ASTM test method? If yes, identify specific test method.
 |  |  |  |  |
| **A.5** | **Compliance With Requirements For Methods of Chemical Analysis (cont.)** |  |  |  |  |
|  | * Other test method with accuracy demonstrated by comparing its results with a standard sample of similar material traceable to the National Institute of Standards and Technology (NIST) or equivalent (4.4.1.1)? If yes, identify specific methods.
 |  |  |  |  |
|  | **MIL-S-23194** (4.4.1.1)Test Methods Used:* ASTM test method? If yes, identify specific test method.
 |  |  |  |  |
|  | * Other test method with accuracy demonstrated by comparing its results with a standard sample of similar material traceable to the National Institute of Standards and Technology (NIST) or equivalent (4.4.1.1)? If yes, identify specific test methods.
 |  |  |  |  |
|  | Note:Paragraph 4.4.1.1 states that analysis shall be performed in accordance with ASTM A 751. However, ASTM A 751 identifies numerous procedures that may be used, and does not claim to be all-inclusive, vice specifying which specific method to use. |  |  |  |  |
|  | Other specification? If yes, identify specification and chemical analysis requirements. |  |  |  |  |
| **A.6** | Calibration of Test Equipment/ Procedure |  |  |  |  |
|  | * Are calibration standards traceable to National Institute of Standards and Technology (NIST) or equivalent standards of similar composition?
 |  |  |  |  |
|  | For examples of specific requirements, see:* MIL-DTL-23227, paragraph 4.4.1.1.
* MIL-DTL-24128, paragraph 4.4.1.1.
* MIL-S-23194, paragraph 4.4.1.
 |  |  |  |  |
|  | * What is the frequency of calibration?
 |  |  |  |  |
|  | * Are test equipment / procedure calibrated with standards that bracket the concentration reported for each chemical species identified?
 |  |  |  |  |
|  | * If not, how does lab ensure that a reported result is accurate / reliable?
 |  |  |  |  |
| **A.6** | Calibration of Test Equipment/ Procedure (cont.) |  |  |  |  |
|  | * Is there any additional information that test lab would like to provide regarding actions taken to ensure that equipment/procedures are adequately calibrated
 |  |  |  |  |
| **A.7** | Compliance with Applicable Chemical Analysis Procedure  |  |  |  |  |
|  | * Are written procedures followed for every analysis?
 |  |  |  |  |
|  | Deviations from Procedure Compliance* Are all deviations from 100% verbatim compliance with written procedure documented and retained with reports of analysis results?
 |  |  |  |  |
|  | * What level of laboratory personnel has the authority to authorize a deviation from 100% verbatim compliance with written procedures?
 |  |  |  |  |
| **A.8** | **Analysis Overchecks** |  |  |  |  |
|  | * Does vendor have analysis overchecks performed by an outside laboratory?
 |  |  |  |  |
|  | If yes,* Identify which procedures are overchecked.
 |  |  |  |  |
|  | * Is overcheck performed because of contractural requirements?
 |  |  |  |  |
|  | * Is overcheck performed on a voluntary/ good practice basis?
 |  |  |  |  |
|  | * What is the frequency of overcheck analysis?
 |  |  |  |  |
|  | If no,* Why not?
* Not required?
* Not necessary?
 |  |  |  |  |
|  | * Is there any additional information that the test lab would like to provide regarding concept of overcheck analysis?
 |  |  |  |  |
| **A.9** | Qualification of Test Personnel |  |  |  |  |
|  | * What is the level of expertise / experience of laboratory personnel performing the analytical procedures used?
 |  |  |  |  |
|  | * What actions are taken to ensure that laboratory personnel are qualified to perform the analyses that they perform?
 |  |  |  |  |
| **A.9** | Qualification of Test Personnel (cont.) |  |  |  |  |
|  | For example:* Educational background.
* Training in use of specific test equipment/ procedure.
* Periodic internal audits
* Etc.
 |  |  |  |  |
| **A.10** | **Test Results – Reporting, Reliability, Record Retention**  |  |  |  |  |
|  | * Are all raw data and reported test results documented and retrievable?
 |  |  |  |  |
|  | * How long are raw data and reported test results retained?
 |  |  |  |  |
|  | * Are reported test results traceable to the original raw data?
 |  |  |  |  |
|  | * What actions are taken to ensure that test reports are free of transcription errors?
 |  |  |  |  |
|  | * If units/raw data are converted what actions are taken to ensure that the correct conversion factors are used?
 |  |  |  |  |
|  | * Is there any additional information the test lab would like to provide regarding actions taken to ensure the accuracy/reliability of their reported test results?
 |  |  |  |  |
| **A.11** | **Laboratory Experience** |  |  |  |  |
|  | * Approximately, how long/how frequently has the test lab performed each of the analytical procedures used for alloy composition verification?
 |  |  |  |  |
|  | * What is the level of expertise/experience of personnel performing the analysis procedures used?
 |  |  |  |  |
| **A.12** | **Quality Considerations** |  |  |  |  |
|  | * What is the level of experience/expertise of personnel that have overall responsibility for quality/reliability of test results reported?
 |  |  |  |  |
|  | * Are the personnel that are responsible for overall quality/ reliability of reported test results different than the personnel that perform the chemical analysis?
 |  |  |  |  |
| **A.12** | **Quality Considerations (cont.)** |  |  |  |  |
|  | * Does test lab perform periodic internal audits/overchecks of their test equipment and procedures to ensure the continued accuracy/reliability of their reported test results?
 |  |  |  |  |
|  | If so, is lab willing to provide a written outline of what is addressed by an internal audit? |  |  |  |  |
|  | * Does test lab have periodic audits/accreditation updates of their test equipment and procedures performed by any external organization(s)?
 |  |  |  |  |
|  | If so, is lab willing to provide a written outline of what is addressed by an external audit/accreditation process? |  |  |  |  |
|  | * Is there any additional information that the test lab would like to provide regarding actions they take to ensure the overall accuracy/ reliability of their reported test results?
 |  |  |  |  |

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| **PART B****ADDITIONAL SUPPLIER CAPABILITY AND DATA GATHERING ITEMS** |
| **Line** | **Item** | **Remarks** |
| **B.1** | Overview/ Test Laboratory Capabilities |  |
|  | * Provide a written summary of the services/ types of analysis offered by this test lab.
 |  |