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## **Quality Certificate**

No.: QC1800146a-dia 2.5mm

| -  |      | •    | . •   |
|----|------|------|-------|
|    | 1000 | crin | tion: |
| 1. | DUS  | OLID | tion: |

| Commodity         | Material      | Standard    | Condition |
|-------------------|---------------|-------------|-----------|
| Ti-6Al-4V ELI Bar | Ti-6Al-4V ELI | ASTM F136   | Annealed  |
| Heat No.          | Lot No.       | Size        | Weight    |
| 23840             | 180856        | Ø2.5*2500mm | 29.60Kgs  |
| 23840             | 180856        | Ø4.0*2000mm | 20.00 Kgs |
| 23840             | 180856        | Ø5.0*2000mm | 11.00 Kgs |

### 2. Chemical Composition (Wt%):

| Element      | Ti  | A1  | V    | Fe    | С     | N     | О     | Н     | Oth   | ners  |
|--------------|-----|-----|------|-------|-------|-------|-------|-------|-------|-------|
|              |     |     |      |       |       |       |       |       | Each  | Total |
| Requirements | Bal | 5.5 | 3.5  | 0.25  | 0.08  | 0.05  | 0.13  | 0.012 | 0.10  | 0.40  |
| (Max.)       |     | -   | -    |       |       |       |       |       |       |       |
|              |     | 6.5 | 4.5  |       |       |       |       |       |       |       |
| Results      | Bal | 5.8 | 4.19 | 0.179 | 0.011 | 0.007 | 0.053 | 0.008 | < 0.1 | < 0.4 |
|              |     |     |      |       |       |       |       |       |       |       |

#### 3. Mechanical Properties:

| Test Items   | Tensile Strength | Yield Strength | Elongation | Area of   |
|--------------|------------------|----------------|------------|-----------|
|              | Rm               | Rp0.2          | A          | Reduction |
|              | [Mpa]            | [Mpa]          | [%]        | Z         |
|              |                  |                |            | [%]       |
| Requirements | ≥860             | ≥795           | ≥10        | ≥25       |
| Results      | 940              | 807            | 23         | 23        |
|              | 997              | 895            | 17.5       | 17.5      |
|              | 1033             | 930            | 15         | 15        |

#### 4. Other Test Items:

| Microstructure | Ultrasonic | Dimensional | Visual     | Surface       |
|----------------|------------|-------------|------------|---------------|
|                | Test       | Inspection  | Inspection | Contamination |
| Qualified      | Qualified  | Qualified   | Qualified  | Clean         |

#### 5. Conclusion and Statement:

We hereby certify that these Titanium Ti-6Al-4V ELI bars/rods herein has been manufactured, sampled, tested, and inspected in accordance with ASTM F136 and other specified requirements of contract number TG1800146a, and met these requirements.

| Inspected by                 | Prepared by                   | Approved by                   |  |
|------------------------------|-------------------------------|-------------------------------|--|
| Michelle Zhang               | Jimmy Liu                     | Jianyin Xu                    |  |
| Jan.18 <sup>th</sup> , 2019. | Jan. 18 <sup>th</sup> , 2019. | Jan. 18 <sup>th</sup> , 2019. |  |

#### **END OF REPORT!**