

Les potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la Section E.

| 1 - POTENTIEL / T.B.O                                                 |       |                      |                         |
|-----------------------------------------------------------------------|-------|----------------------|-------------------------|
| Moteur non modulaire ou<br>modules / Non modular<br>engine or modules | Total | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                       | h     | h                    | h                       |
| Boîte accessoires<br>Accessory gearbox                                |       |                      |                         |
| Compresseur axial<br>Axial compressor                                 |       |                      |                         |
| Générateur de gaz<br>Gas generator                                    |       |                      |                         |
| Ensemble T.L.<br>Free turbine assy                                    |       |                      |                         |
| Réducteur T.L.<br>Free turbine reduction gear                         |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |

Lettre service / Service letter

La disponibilité résultante du moteur complet (tableau 3) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1 et 2.

The resulting life for the complete engine (table 3) is the smaller of the two values shown in tables 1 and 2 in hours and / or cycles.

TBOs of non modular engines or modules and part life limits may be changed in agreement with the competent Authority and the constructor. These are issued to the operator via official documents. Record the running hours and / or cycles according to the data on module log cards and in Section E, as applicable.

| 2 - VIE LIMITE / LIFE LIMIT                      |        |                      |                         |
|--------------------------------------------------|--------|----------------------|-------------------------|
| Pièces / Parts                                   | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                  | cycles | cycles               | cycles                  |
| Roue compresseur axial<br>Axial compressor wheel |        |                      |                         |
| Rouet centrifuge<br>Centrifugal impeller         |        |                      |                         |
| Roue injection<br>Injection wheel                |        |                      |                         |
| Disque turbine HP<br>HP turbine disc             |        |                      |                         |
| Disque turbine libre<br>Free turbine disc        |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |

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| 3 - DISPONIBILITE RESULTANTE / RESULTING LIFE |              |             |                      |
|-----------------------------------------------|--------------|-------------|----------------------|
| Heures / Hours                                | Cycles/Cycle | Date / Date | Signature /Signature |
|                                               |              |             |                      |

Les potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la Section E.

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### 1 - POTENTIEL / T.B.O

| Moteur non modulaire ou<br>modules / Non modular<br>engine or modules | Total | Effectué<br>Consumed | Disponible<br>To be run |
|-----------------------------------------------------------------------|-------|----------------------|-------------------------|
|                                                                       | h     | h                    | h                       |
| Boîte accessoires<br>Accessory gearbox                                |       |                      |                         |
| Compresseur axial<br>Axial compressor                                 |       |                      |                         |
| Générateur de gaz<br>Gas generator                                    |       |                      |                         |
| Ensemble T.L.<br>Free turbine assy                                    |       |                      |                         |
| Réducteur T.L.<br>Free turbine reduction gear                         |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |

Lettre service / Service letter

La disponibilité résultante du moteur complet (tableau 3) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1 et 2.

The resulting life for the complete engine (table 3) is the smaller of the two values shown in tables 1 and 2 in hours and / or cycles.

### 2 - VIE LIMITE / LIFE LIMIT

| Pièces / Parts                                   | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|--------------------------------------------------|--------|----------------------|-------------------------|
|                                                  | cycles | cycles               | cycles                  |
| Roue compresseur axial<br>Axial compressor wheel |        |                      |                         |
| Rouet centrifuge<br>Centrifugal impeller         |        |                      |                         |
| Roue injection<br>Injection wheel                |        |                      |                         |
| Disque turbine HP<br>HP turbine disc             |        |                      |                         |
| Disque turbine libre<br>Free turbine disc        |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |
|                                                  |        |                      |                         |

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### 3 - DISPONIBILITE RESULTANTE / RESULTING LIFE

| Heures / Hours | Cycles/Cycle | Date / Date | Signature /Signature |
|----------------|--------------|-------------|----------------------|
|                |              |             |                      |

|   |    |                     |
|---|----|---------------------|
| D | /2 | Moteur/ Engine      |
|   |    | ARRIEL 2B S/N 22089 |

| 3 - OEI |                      |                         | 4 - VIE LIMITE / LIMIT LIFE                      |        |                      |                         |
|---------|----------------------|-------------------------|--------------------------------------------------|--------|----------------------|-------------------------|
| Total   | Effectué<br>Consumed | Disponible<br>To be run |                                                  | Total  | Effectué<br>Consumed | Disponible<br>To be run |
| Minutes |                      |                         |                                                  | Cycles |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         | Roue comp. Axial<br>Axial compressor rotor       | 22000  | 610.0                | 21390                   |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
| N/A     | N/A                  | N/A                     | Compresseur cent. mono<br>Centrifugal comp. assy | 22000  | 610.0                | 21390                   |
|         |                      |                         | Roue injection<br>Injection wheel                | 6500   | 5359.28              | 1140.72                 |
|         |                      |                         | Disque HP<br>HP turbine disk                     | 17000  | 5359.28              | 11640.72                |
| N/A     | N/A                  | N/A                     | Disque de turbine libre<br>Free turbine disc     | 22000  | 4098.91              | 17901.09                |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |

| 5 DISPONIBILITE RESULTANTE/ RESULTING LIFE                                          |                                |     |                           |                                                                                     |
|-------------------------------------------------------------------------------------|--------------------------------|-----|---------------------------|-------------------------------------------------------------------------------------|
| Heure<br>Hours                                                                      | Cycles                         | OEI | Calendaires<br>Calendarly | Date                                                                                |
| 665.17                                                                              | 1140.72<br>GG<br>5901.09<br>PT | N/A | 14yrs                     | 31-Jan-08                                                                           |
| Signature                                                                           |                                |     |                           |                                                                                     |
|  |                                |     |                           |  |

La disponibilité résultante du moteur complet (tableau 5) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1, 2, 3 et 4.

The resulting life for the complete engine (table 5) is the smaller of the two values shown in tables 1, 2, 3, and 4 in hours and/or cycles.

|   |    |                     |
|---|----|---------------------|
| D | /1 | Moteur/ Engine      |
|   |    | ARRIEL 2B S/N 22089 |

## ETAT DES DISPONIBILITES / STATUS OF AVAILABLE

Les potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la section E.

TBOs of non modular engines or modules and part life limits may be changed in agreement with the component Authority and the constructor. These are issued to the operator via official documents. Record the running hours and/or cycles according to the data on module log cards and in section E, as applicable.

| 1 - POTENTIEL / T.B.O                                                      |                |                      |                         |                                           |                      |                         | 2 - LIMITE D'UTILISATION / LIMITATION OF OPERATION              |                |                      |                         |        |                      |                         |
|----------------------------------------------------------------------------|----------------|----------------------|-------------------------|-------------------------------------------|----------------------|-------------------------|-----------------------------------------------------------------|----------------|----------------------|-------------------------|--------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules<br><br>Non modular engine or<br>modules | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total                                     | Effectué<br>Consumed | Disponible<br>To be run |                                                                 | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                            | Heures / Hours |                      |                         | Calendaire en années<br>Calendar in years |                      |                         |                                                                 | Heures / Hours |                      |                         | Cycles |                      |                         |
| Boîte accessoires<br>Accessories gear box                                  | 3500           | 1874.37              | 1625.63                 | 15                                        | 1                    | 14                      | Roulement 23 dents x2<br>Bearing gear 23 teeth x2               | O/C            | 1874.37              | O/C                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement 41/17 dents x2<br>Bearing Pinion 41/17 teeth x2       | O/C            | 1874.37              | O/C                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement arbre puissance<br>Bearing power shaft                | O/C            | 1874.37              | O/C                     | /      | /                    | /                       |
| Compresseur axial<br>Axial compressor                                      | 3500           | 1574.53              | 1925.47                 | 15                                        | 1                    | 14                      | Roulement AV comp. Axial<br>Axial comp. front bearing           | 7000           | 1059.53              | 5940.47                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR comp. Axial<br>Axial comp. rear bearing            | 7000           | 1059.53              | 5940.47                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement pignon conique<br>Bearing bevel gear                  | 7000           | 1059.53              | 5940.47                 | /      | /                    | /                       |
| Générateur de gaz<br>Gas generator                                         | 3500           | 2834.83              | 665.17                  | 15                                        | 1                    | 14                      | Roulement<br>Bearing                                            | 7000           | 2834.83              | 4165.17                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Disque Turbine HP<br>HP blades                                  | 6000           | 881.6                | 5118.4                  | 10000  | 1145.05              | 8854.95                 |
|                                                                            |                |                      |                         |                                           |                      |                         |                                                                 |                |                      |                         | /      | /                    | /                       |
| Ensemble turbine libre<br>Free turbine assy                                | 3500           | 778.98               | 2721.02                 | 15                                        | 1                    | 14                      | Roulement AV E.T.T.L<br>Free turbine front brg                  | 3500           | 281.52               | 3218.48                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR/AV T.L<br>Free turbine rear brg                    | 3500           | 281.52               | 3218.48                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Pales de turbine libre<br>PT blades                             | 6000           | 3168.52              | 2831.48                 | 10000  | 4098.91              | 5901.09                 |
|                                                                            |                |                      |                         |                                           |                      |                         | PT Ecrou cannelé<br>PT splined nut                              | 3500           | 778.98               | 2721.02                 | /      | /                    | /                       |
| Réducteur turbine libre<br>Free turbine reduction gear                     | 3500           | 2104.67              | 1395.33                 | 15                                        | 1                    | 14                      | Roul. AV pignon menant<br>Drive gear front bearing              | 7000           | 281.52               | 6718.48                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon menant<br>Drive gear rear bearing               | 7000           | 821.52               | 6718.48                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon de sortie<br>Output gear front bearing          | 7000           | 2104.67              | 4895.33                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon de sortie<br>Output gear rear bearing           | 7000           | 281.52               | 6718.48                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon intermédiaire<br>Intermediate gear front bearin | 3500           | 1079.67              | 2420.33                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon intermédiaire<br>Intermediate gear rear bearing | 3500           | 1079.67              | 2420.33                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement couplemètre<br>Torquemeter bearing                    | 7000           | 2104.67              | 4895.33                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Ecrou cannelé<br>Splined nut                                    | 3500           | 1079.67              | 2420.33                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Manchon d'accouplement<br>Coupling sleeve                       | 3500           | 1079.67              | 2420.33                 | /      | /                    | /                       |

#### 4 - VIE LIMITE / LIMIT LIFE

## 5 DISPONIBILTE RESULTANTE/ RESULTING LIFE

~~The resulting life for the complete engine (table 5) is the smaller of the two values shown in tables 1, 2, 3, and 4 in hours and/or cycles.~~

|   |    |                     |
|---|----|---------------------|
| D | /1 | Moteur/ Engine      |
|   |    | ARRIEL 2B S/N 22089 |

# ETAT DES DISPONIBILITES / STATUS OF AVAILABLE

Les potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la section E.

TBOs of non modular engines or modules and part life limits may be changed in agreement with the component Authority and the constructor. These are issue to the operator via official documents. Record the running hours and/or cycles according to the data on module log cards and in section E, as applicable.

Section E.

| 1 - POTENTIEL / T.B.O                                                      |                |                      |                         |                                           |                      |                         | 2 - LIMITE D'UTILISATION / LIMITATION OF OPERATION               |                |                      |                         |        |                      |                         |
|----------------------------------------------------------------------------|----------------|----------------------|-------------------------|-------------------------------------------|----------------------|-------------------------|------------------------------------------------------------------|----------------|----------------------|-------------------------|--------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules<br><br>Non modular engine or<br>modules | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total                                     | Effectué<br>Consumed | Disponible<br>To be run |                                                                  | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                            | Heures / Hours |                      |                         | Calendaire en années<br>Calendar in years |                      |                         |                                                                  | Heures / Hours |                      |                         | Cycles |                      |                         |
| Boîte accessoires<br>Accessories gear box                                  | 3500           | 1592.85              | 1907.15                 | 15                                        | 0                    | 15                      | Roulement 23 dents x2<br>Bearing gear 23 teeth x2                | O/C            | 1592.85              | O/C                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement 41/17 dents x2<br>Bearing Pinion 41/17 teeth x2        | O/C            | 0                    | O/C                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement arbre puissance<br>Bearing power shaft                 | O/C            | 1592.85              | O/C                     | /      | /                    | /                       |
| Compresseur axial<br>Axial compressor                                      | 3500           | 497.46               | 3002.54                 | 15                                        | 0                    | 15                      | Roulement AV comp. Axial<br>Axial comp. front bearing            | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR comp. Axial<br>Axial comp. rear bearing             | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement pignon conique<br>Bearing bevelgear                    | 7000           | 0                    | 7000                    | /      | /                    | /                       |
| Générateur de gaz<br>Gas generator                                         | 3500           | 497.46               | 3002.54                 | 15                                        | 0                    | 15                      | Roulement<br>Bearing                                             | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Disque Turbine HP<br>HP blades                                   | 6000           | 497.46               | 5502.54                 | 10000  | 1120.77              | 8879.23                 |
|                                                                            |                |                      |                         |                                           |                      |                         |                                                                  |                |                      |                         | /      | /                    | /                       |
| Ensemble turbine libre<br>Free turbine assy                                | 3500           | 497.46               | 3002.54                 | 15                                        | 0                    | 15                      | Roulement AV E.T TL<br>Free turbine front brg                    | 3500           | 0                    | 3500                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR/AV TL<br>Free turbine rear brg                      | 3500           | 0                    | 3500                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Pales de turbine libre<br>PT blades                              | 6000           | 2887                 | 3113                    | 10000  | 3384.47              | 6615.53                 |
|                                                                            |                |                      |                         |                                           |                      |                         | PT Ecrou cannelé<br>PT splined nut                               | 3500           | 497.46               | 3002.54                 | /      | /                    | /                       |
| Réducteur turbine libre<br>Free turbine reduction gear                     | 3500           | 1823.15              | 1676.85                 | 15                                        | 0                    | 15                      | Roul. AV pignon menant<br>Drive gear front bearing               | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon menant<br>Drive gear rear bearing                | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon de sortie<br>Output gear front bearing           | 7000           | 1823.15              | 5176.85                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon de sortie<br>Output gear rear bearing            | 7000           | 0                    | 7000                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon intermédiaire<br>Intermediate gear front bearrin | 3500           | 798.15               | 2701.85                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon intermédiaire<br>Intermediate gear rear bearing  | 3500           | 798.15               | 2701.85                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement couplemètre<br>Torquemeter bearing                     | 7000           | 1823.15              | 5176.85                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Ecrou cannelé<br>Splined nut                                     | 3500           | 798.15               | 2701.85                 | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Manchon d'accouplement<br>Coupling sleeve                        | 3500           | 798.15               | 2701.85                 | /      | /                    | /                       |

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**1 - POTENTIEL / T.B.O**

| Moteur non modulaire ou<br>modules / Non modular<br>engine or modules | Total | Effectué<br>Consumed | Disponible<br>To be run |
|-----------------------------------------------------------------------|-------|----------------------|-------------------------|
|                                                                       | h     | h                    | h                       |
| Boîte accessoires<br><i>Accessory gearbox</i>                         |       |                      |                         |
| Compresseur axial<br><i>Axial compressor</i>                          |       |                      |                         |
| Générateur de gaz<br><i>Gas generator</i>                             |       |                      |                         |
| Ensemble T.L.<br><i>Free turbine assy</i>                             |       |                      |                         |
| Réducteur T.L.<br><i>Free turbine reduction gear</i>                  |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |
|                                                                       |       |                      |                         |

Lettre service / Service letter

La disponibilité résultante du moteur complet (tableau 3) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1 et 2.

The resulting life for the complete engine (table 3) is the smaller of the two values shown in tables 1 and 2 in hours and / or cycles.

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**2 - VIE LIMITE / LIFE LIMIT**

| Pièces / Parts                                          | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|---------------------------------------------------------|--------|----------------------|-------------------------|
|                                                         | cycles | cycles               | cycles                  |
| Roue compresseur axial<br><i>Axial compressor wheel</i> |        |                      |                         |
| Rouet centrifuge<br><i>Centrifugal impeller</i>         |        |                      |                         |
| Roue injection<br><i>Injection wheel</i>                |        |                      |                         |
| Disque turbine HP<br><i>HP turbine disc</i>             |        |                      |                         |
| Disque turbine libre<br><i>Free turbine disc</i>        |        |                      |                         |
|                                                         |        |                      |                         |
|                                                         |        |                      |                         |
|                                                         |        |                      |                         |
|                                                         |        |                      |                         |

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**3 - DISPONIBILITE RESULTANTE / RESULTING LIFE**

| Heures / Hours | Cycles/Cycle | Date / Date | Signature /Signature |
|----------------|--------------|-------------|----------------------|
|                |              |             |                      |

potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la Section E.

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| 1 - POTENTIEL / T.B.O                                           |       |                    |                      |
|-----------------------------------------------------------------|-------|--------------------|----------------------|
| Moteur non modulaire ou modules / Non modular engine or modules | Total | Effectué Consumed  | Disponible To be run |
|                                                                 | h     | h                  | h                    |
| Boîte accessoires<br>Accessory gearbox                          | 3000  | 1291.80            | 1708.20              |
| Compresseur axial<br>Axial compressor                           | 3000  | 0                  | 3000                 |
| Générateur de gaz<br>Gas generator                              | 3000  | 0                  | 3000                 |
| Ensemble T.L.<br>Free turbine assy                              | 3000  | 0                  | 3000                 |
| Réducteur T.L.<br>Free turbine reduction gear                   | 3000  | 1325.30<br>1674.30 | 1674.30              |
|                                                                 |       |                    |                      |
|                                                                 |       |                    |                      |
|                                                                 |       |                    |                      |
|                                                                 |       |                    |                      |

Lettre service / Service letter

La disponibilité résultante du moteur complet (tableau 3) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1 et 2.

The resulting life for the complete engine (table 3) is the smaller of the two values shown in tables 1 and 2 in hours and / or cycles.

| 2 - VIE LIMITE / LIFE LIMIT                      |        |                   |                      |
|--------------------------------------------------|--------|-------------------|----------------------|
| Pièces / Parts                                   | Total  | Effectué Consumed | Disponible To be run |
|                                                  | cycles | cycles            | cycles               |
| Roue compresseur axial<br>Axial compressor wheel | 22000  | 0                 | 22000                |
| Rouet centrifuge<br>Centrifugal impeller         | 22000  | 5257              | 16743                |
| Roue injection<br>Injection wheel                | 6500   | 0                 | 6500                 |
| Disque turbine HP<br>HP turbine disc             | 17000  | 5257              | 11743                |
| Disque turbine libre<br>Free turbine disc        | 22000  | 2128              | 19872                |
|                                                  |        |                   |                      |
|                                                  |        |                   |                      |
|                                                  |        |                   |                      |
|                                                  |        |                   |                      |

Manuel d'entretien / Maintenance manual

| 3 - DISPONIBILITE RESULTANTE / RESULTING LIFE |              |             |                                                                                       |
|-----------------------------------------------|--------------|-------------|---------------------------------------------------------------------------------------|
| Heures / Hours                                | Cycles/Cycle | Date / Date | Signature /Signature                                                                  |
| 1674.30                                       | 6500         | 6 Dec 2005  |  |



|     |                 |          |
|-----|-----------------|----------|
| D 2 | Moteur / Engine |          |
|     | ARRIEL 2B       | No 22089 |

# ETAT DE DISPONIBILITE / STATEMENT OF LIFE

| 1 - POTENTIEL / T.B.O.                                                  |            |                            |                              | 2 - O.E.I. 2 min. |                              |                                | 3 - VIE LIMITE / LIFE LIMIT                      |                 |                                 |                                   |
|-------------------------------------------------------------------------|------------|----------------------------|------------------------------|-------------------|------------------------------|--------------------------------|--------------------------------------------------|-----------------|---------------------------------|-----------------------------------|
| Moteur non modulaire<br>ou modules /<br>Nonmodular engine or<br>modules | Total<br>H | Effectuee<br>Consumed<br>H | Disponible<br>To be run<br>H | Total<br>min      | Effectuee<br>Consumed<br>min | Disponible<br>To be run<br>min | Pieces /<br>Parts                                | Total<br>Cycles | Effectuee<br>Consumed<br>Cycles | Disponible<br>To be run<br>Cycles |
| Boite accessoires<br>Accessory gearbox                                  | 3000       | 359.4                      | 2640.6                       |                   |                              |                                | Roue compresseur axial<br>Axial compressor wheel | 22000           | 924.08                          | 21075.92                          |
| Compresseur axial<br>Axial compressor                                   | 3000       | 327.2                      | 2672.8                       |                   |                              |                                | Rouet centrifuge<br>Centrifugal impeller         | 22000           | 924.08                          | 21075.92                          |
| Generateur de gaz<br>Gas generator                                      | 3000       | 327.2                      | 2672.8                       |                   |                              |                                | Roue injection<br>Injection wheel                | 6500            | 924.08                          | 5575.92                           |
| Ensemble T.L.<br>Free turbine assy                                      | 3000       | 573.5                      | 2426.5                       |                   |                              |                                | Disque turbine HP<br>turbine disk HP             | 17000           | 924.08                          | 16075.92                          |
| Reducteur T.L.<br>Free turb. Reduc. gearbox                             | 3000       | 327.2                      | 2672.8                       |                   |                              |                                | Disque turbine libre<br>Free turbine disk        | 22000           | 506.65                          | 21493.35                          |
|                                                                         |            |                            |                              |                   |                              |                                |                                                  |                 |                                 |                                   |
|                                                                         |            |                            |                              |                   |                              |                                |                                                  |                 |                                 |                                   |
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Lettre service / Service letter  
1810 / 97 / ARRIEL 2B / 1

Manuel d'entretien / Maintenance Manual  
X 292 M5 4502 CHAP. 5 5/31/2000

La disponibilite resultante du moteur complet (tableau 4) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1, 2 et 3.

The resulting life for the complete engine (table 4) is the smaller of the two values shown in tables 1, 2, and 3 in hours and/or cycles.

| 4 - DISPONIBILITE RESULTANTE / RESULTING LIFE |              |         |           |                    |
|-----------------------------------------------|--------------|---------|-----------|--------------------|
| Heures / Hours                                | O.E.I. 2 min | Cycles  | Date      | Signature          |
| 2426.5                                        | N/A          | 5575.92 | 10-Feb-01 | <i>[Signature]</i> |

|     |                |           |
|-----|----------------|-----------|
| D 2 | Moteur/ Engine |           |
|     | ARRIEL 2B      | S/N 22089 |

# ETAT DES DISPONIBILITES / STATUS OF AVAILABLE

| 1 - POTENTIEL T.B.O                                                    |       |                      |                         | 2 - OEI |                                 |                         | 3 - VIE LIMITE / LIMIT LIFE                      |        |                      |                         |
|------------------------------------------------------------------------|-------|----------------------|-------------------------|---------|---------------------------------|-------------------------|--------------------------------------------------|--------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules<br>Non modular engine or<br>modules | Total | Effectué<br>Consumed | Disponible<br>To be run | Total   | Effectué<br>Consumed<br>Minutes | Disponible<br>To be run | Pieces/ Parts                                    | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                        | H     | H                    | H                       |         |                                 |                         |                                                  |        | Cycles               |                         |
| Boîtes accessoires<br>#Name?                                           | 3000  | 746.7                | 2253.3                  |         |                                 |                         | Roue compresseur axial<br>Axial compressor wheel | 22 000 | 1747.48              | 20252.52                |
| Compresseur axial<br>Axial compressor                                  | 3000  | 714.5                | 2285.5                  |         |                                 |                         | Rouet centrifuge<br>Centrifugal impeller         | 22 000 | 1747.48              | 20252.52                |
| Générateur de gaz<br>Gas generator                                     | 3000  | 714.5                | 2285.5                  |         |                                 |                         | Roue injection<br>Injection wheel                | 6 500  | 1747.48              | 4752.52                 |
| Ensemble turbine libre<br>Free turbine assy                            | 3000  | 960.8                | 2039.2                  |         |                                 |                         | Disque turbine HP<br>Turbine disc HP             | 17 000 | 1747.48              | 15252.52                |
| Réducteur turbine libre<br>Free turbine reduction gear                 | 3000  | 714.5                | 2285.5                  |         |                                 |                         | Disque turbine libre<br>Free turbine disc        | 22 000 | 826.21               | 21173.79                |
|                                                                        |       |                      |                         |         |                                 |                         |                                                  |        |                      |                         |
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Lettre service/ Service letter N° N°1897/99/ARRIEL 2B/5

Manuel d'entretien/ Maintenance manual

X292M5 450 1 - Approuve par la DGAC le 21 dec 1999

La disponibilité résultante du moteur complet (tableau 4) est la plus petite des valeurs disponibles en heure et/ou cycles figurant dans les tableaux 1, 2 et 3.

The resulting life for the complete engine (table 4) is the smaller of the two values shown in tables 1, 2 and 3 in hours and/cycles

| 4 - DISPONIBILITE RESULTANTE /RESULTING LIFE |                          |                  |              |                                                                                       |
|----------------------------------------------|--------------------------|------------------|--------------|---------------------------------------------------------------------------------------|
| Heures<br>Hours                              | O.E.I 2 min<br>(en mn/s) | Cycles<br>Cycles | Date<br>Date | Signature<br>Signature                                                                |
| 2039.2                                       | N/A                      | 4752.52          | 10/23/01     |  |

|     |                     |
|-----|---------------------|
| D 3 | Moteur/ Engine      |
|     | ARRIEL 2B S/N 22089 |

# ETAT DES DISPONIBILITES / STATUS OF AVAILABLE

| 1 - POTENTIEL / T.B.O                                                          |       |                      |                         | 2 - OEI |                                 |                         | 3 - VIE LIMITE / LIMIT LIFE                             |        |                      |                         |
|--------------------------------------------------------------------------------|-------|----------------------|-------------------------|---------|---------------------------------|-------------------------|---------------------------------------------------------|--------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules<br><i>Non modular engine or<br/>modules</i> | Total | Effectué<br>Consumed | Disponible<br>To be run | Total   | Effectué<br>Consumed<br>Minutes | Disponible<br>To be run | Pieces/ Parts                                           | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                                | H     | H                    | H                       |         |                                 |                         |                                                         |        | Cycles               |                         |
| Boîtes accessoires<br><i>Accessory gearbox</i>                                 | 3000  | 874.4                | 2125.6                  |         |                                 |                         | Roue compresseur axial<br><i>Axial compressor wheel</i> | 22 000 | 1956.17              | 20043.83                |
| Compresseur axial<br><i>Axial compressor</i>                                   | 3000  | 842.2                | 2157.8                  |         |                                 |                         | Rouet centrifuge<br><i>Centrifugal impeller</i>         | 22 000 | 1956.17              | 20043.83                |
| Générateur de gaz<br><i>Gas generator</i>                                      | 3000  | 842.2                | 2157.8                  |         |                                 |                         | Roue injection<br><i>Injection wheel</i>                | 6 500  | 1956.17              | 4543.83                 |
| Ensemble turbine libre<br><i>Free turbine assy</i>                             | 3000  | 1088.5               | 1911.5                  |         |                                 |                         | Disque turbine HP<br><i>Turbine disc HP</i>             | 17 000 | 1956.17              | 15043.83                |
| Réducteur turbine libre<br><i>Free turbine reduction gear</i>                  | 3000  | 842.2                | 2157.8                  |         |                                 |                         | Disque turbine libre<br><i>Free turbine disc</i>        | 22 000 | 906.53               | 21093.47                |
|                                                                                |       |                      |                         |         |                                 |                         |                                                         |        |                      |                         |
|                                                                                |       |                      |                         |         |                                 |                         |                                                         |        |                      |                         |
|                                                                                |       |                      |                         |         |                                 |                         |                                                         |        |                      |                         |
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|                                                                                |       |                      |                         |         |                                 |                         |                                                         |        |                      |                         |

Lettre service/ Service letter N° N°1897/99/ARRIEL 2B/5

Manuel d'entretien/ Maintenance manual X292M5 450 1, May 2000

La disponibilité résultante du moteur complet (tableau 4) est la plus petite des valeurs disponibles en heure et/ou cycles figurant dans les tableaux 1,2 et 3.

The resulting life for the complete engine (table 4) is the smaller of the two values shown in tables 1,2 and 3 in hours and/cycles

| 4 - DISPONIBILITE RESULTANTE /RESULTING LIFE |                          |                  |              |                                                                                       |
|----------------------------------------------|--------------------------|------------------|--------------|---------------------------------------------------------------------------------------|
| Heures<br>Hours                              | O.E.I 2 min<br>(en mn/s) | Cycles<br>Cycles | Date<br>Date | Signature<br>Signature                                                                |
| 1911.5                                       | N/A                      | 4543.83          | 6/7/02       |  |

|   |     |                     |
|---|-----|---------------------|
| D | 4/1 | Moteur/ Engine      |
|   |     | ARRIEL 2B S/N 22089 |

# ETAT DES DISPONIBILITES / STATUS OF AVAILABLE



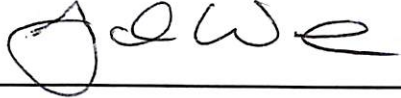
Les potentiels du moteur non modulaire ou des modules et les vies limites des pièces peuvent évoluer en accord avec l'Autorité compétente et le constructeur. Elles sont communiquées à l'utilisateur par documents officiels. Noter les heures et/ou cycles effectués d'après les indications des fiches matricules des modules et éventuellement de la section E.

TBOs of non modular engines or modules and part life limits may be changed in agreement with the component Authority and the constructor. These are issue to the operator via official documents. Record the running hours and/or cycles according to the data on module log cards and in section E, as applicable.

| 1 - POTENTIEL T.B.O                                                        |                |                      |                         |                                           |                      |                         | 2 - LIMITE D'UTILISATION LIMITATION OF OPERATION                |                |                      |                         |        |                      |                         |
|----------------------------------------------------------------------------|----------------|----------------------|-------------------------|-------------------------------------------|----------------------|-------------------------|-----------------------------------------------------------------|----------------|----------------------|-------------------------|--------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules<br><br>Non modular engine or<br>modules | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total                                     | Effectué<br>Consumed | Disponible<br>To be run |                                                                 | Total          | Effectué<br>Consumed | Disponible<br>To be run | Total  | Effectué<br>Consumed | Disponible<br>To be run |
|                                                                            | Heures / Hours |                      |                         | Calendaire en années<br>Calendar in years |                      |                         |                                                                 | Heures / Hours |                      |                         | Cycles |                      |                         |
|                                                                            |                |                      |                         |                                           |                      |                         |                                                                 |                |                      |                         |        |                      |                         |
| Boîte accessoires<br>Accessories gear box                                  | 3000           | 2776                 | 224                     |                                           |                      |                         | Roulement 23 dents x2<br>Bearing gear 23 teeth x2               | 3000           | 2776                 | 224                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement 41/17 dents x2<br>Bearing Pinion 41/17 teeth x2       | 3000           | 2776                 | 224                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement arbre puissance<br>Bearing power shaft                | 3000           | 2776                 | 224                     | /      | /                    | /                       |
| Compresseur axial<br>Axial compressor                                      | 3000           | 1100                 | 1900                    |                                           |                      |                         | Roulement AV comp. Axial<br>Axial comp. front bearing           | 3000           | 192                  | 2808                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR comp. Axial<br>Axial comp. rear bearing            | 3000           | 192                  | 2808                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement pignon conique<br>Bearing bevelgear                   | 3000           | 192                  | 2808                    | /      | /                    | /                       |
| Générateur de gaz<br>Gas generator                                         | 3000           | 1100                 | 1900                    |                                           |                      |                         | Roulement<br>Bearing                                            | 3000           | 192                  | 2808                    | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Disque Turbine HP<br>HP blades                                  | 6000           | 1100                 | 4900                    | 10000  | 3106                 | 6894                    |
|                                                                            |                |                      |                         |                                           |                      |                         |                                                                 |                |                      |                         |        |                      |                         |
| Ensemble turbine libre<br>Free turbine-assy                                | 3000           | 2250                 | 750                     |                                           |                      |                         | Roulement AV E.T TL<br>Free turbine front brg                   | 3000           | 2250                 | 750                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement AR/AV TL<br>Free turbine rear brg                     | 3000           | 2250                 | 750                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Pales de turbine libre<br>PT blades                             | 6000           | 2250                 | 3750                    | 10000  | 1195                 | 8805                    |
|                                                                            |                |                      |                         |                                           |                      |                         | PT Ecou canalé<br>PT splined nut                                | 3000           | 2250                 | 750                     | /      | /                    | /                       |
| Réducteur turbine libre<br>Free turbine reduction gear                     | 3000           | 2744                 | 256                     |                                           |                      |                         | Roul. AV pignon menant<br>Drive gear front bearing              | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon menant<br>Drive gear rear bearing               | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon de sortie<br>Output gear front bearing          | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon de sortie<br>Output gear rear bearing           | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AV pignon intermédiaire<br>Intermediate gear front bearin | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roul. AR pignon intermédiaire<br>Intermediate gear rear bearing | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Roulement couplemètre<br>Torquemeter bearing                    | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Ecou canalé<br>Splined nut                                      | 3000           | 2744                 | 256                     | /      | /                    | /                       |
|                                                                            |                |                      |                         |                                           |                      |                         | Manchon d'accouplement<br>Coupling sleeve                       | 3000           | 2744                 | 256                     | /      | /                    | /                       |

|   |     |                     |
|---|-----|---------------------|
| D | 4/2 | Moteur/ Engine      |
|   |     | ARRIEL 2B S/N 22089 |

| 3 - OEI |                      |                         | 4 - VIE LIMITE / LIMIT LIFE                      |        |                      |                         |
|---------|----------------------|-------------------------|--------------------------------------------------|--------|----------------------|-------------------------|
| Total   | Effectué<br>Consumed | Disponible<br>To be run |                                                  | Total  | Effectué<br>Consumed | Disponible<br>To be run |
| Minutes |                      |                         |                                                  | Cycles |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         |                                                  |        |                      |                         |
|         |                      |                         | Roue comp. Axial<br>Axial compressor rotor       | 22000  | 1802                 | 20198                   |
|         |                      |                         |                                                  |        |                      |                         |
| N/A     | N/A                  | N/A                     | Compresseur cent. mono<br>Centrifugal comp. assy | 22000  | 3106                 | 18894                   |
|         |                      |                         | Roue injection<br>Injection wheel                | 6500   | 3106                 | 3394                    |
|         |                      |                         | Disque HP<br>HP turbine disk                     | 17000  | 3106                 | 13894                   |
| N/A     | N/A                  | N/A                     | Disque de turbine libre<br>Free turbine disc     | 22000  | 1195                 | 20805                   |
|         |                      |                         |                                                  |        |                      |                         |
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| 5 DISPONIBILITE RESULTANTE/ RESULTING LIFE                                          |                    |     |                                                                                     |           |
|-------------------------------------------------------------------------------------|--------------------|-----|-------------------------------------------------------------------------------------|-----------|
| Heure<br>Hours                                                                      | Cycles             | OEI | Calendaires<br>Calendarly                                                           | Date      |
| 224                                                                                 | 3394 GG<br>8805 PT |     |                                                                                     | 21-JAN-05 |
| Signature                                                                           |                    |     |                                                                                     |           |
|  |                    |     |  |           |

La disponibilité résultante du moteur complet (tableau 5) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1, 2, 3 et 4.

The resulting life for the complete engine (table 5) is the smaller of the two values shown in tables 1, 2, 3, and 4 in hours and/or cycles.

**D 2** **Moteur / Engine**  
**ARRIEL 2B** No 22089

# ETAT DE DISPONIBILITE / STATEMENT OF LIFE

| 1 - POTENTIEL / T.B.O.                                                  |       |                      |                         |
|-------------------------------------------------------------------------|-------|----------------------|-------------------------|
| Moteur non modulaire<br>ou modules /<br>Nonmodular engine or<br>modules | Total | Effectue<br>Consumed | Disponible<br>To be run |
|                                                                         | H     | H                    | H                       |
| Boite accessoires<br>Accessory gearbox                                  | 3000  | 185                  | 2815                    |
| Compresseur axial<br>Axial compressor                                   | 3000  | 185                  | 2815                    |
| Generateur de gaz<br>Gas generator                                      | 3000  | 185                  | 2815                    |
| Ensemble T.L.<br>Free turbine assy                                      | 3000  | 431.3                | 2568.7                  |
| Reducteur T.L.<br>Free turb. Reduc. gearbox                             | 3000  | 185                  | 2815                    |
|                                                                         |       |                      |                         |
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| 2 - O.E.I. 2 min. |                      |                         |
|-------------------|----------------------|-------------------------|
| Total             | Effectue<br>Consumed | Disponible<br>To be run |
| min               | min                  | min                     |
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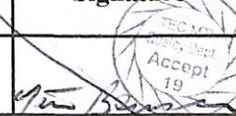
| 3 - VIE LIMITE / LIFE LIMIT                      |        |                      |                         |
|--------------------------------------------------|--------|----------------------|-------------------------|
| Pieces /                                         | Total  | Effectue<br>Consumed | Disponible<br>To be run |
| Parts                                            | Cycles | Cycles               | Cycles                  |
| Roue compresseur axial<br>Axial compressor wheel | 22000  | 675.03               | 21324.97                |
| Rouet centrifuge<br>Centrifugal impeller         | 22000  | 675.03               | 21324.97                |
| Roue injection<br>Injection wheel                | 6500   | 675.03               | 5824.97                 |
| Disque turbine HP<br>turbine disk HP             | 17000  | 675.03               | 16324.97                |
| Disque turbine libre<br>Free turbine disk        | 22000  | 405.87               | 21594.13                |
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Lettre service / Service letter  
1810 / 97 / ARRIEL 2B / 1

Manuel d'entretien / Maintenance Manual  
X 292 M5 4502 CHAP. 5

La disponibilite resultante du moteur complet (tableau 4) est la plus petite des valeurs disponibles en heures et/ou cycles figurant dans les tableaux 1, 2 et 3.

The resulting life for the complete engine (table 4) is the smaller of the two values shown in tables 1, 2, and 3 in hours and/or cycles.

| 4 - DISPONIBILITE RESULTANTE / RESULTING LIFE |              |         |        |                                                                                       |
|-----------------------------------------------|--------------|---------|--------|---------------------------------------------------------------------------------------|
| Heures / Hours                                | O.E.I. 2 min | Cycles  | Date   | Signature                                                                             |
| 2568.7                                        | N/A          | 5824.97 | 9/5/00 |  |



## ETAT DES HEURES ET DES CYCLES DISPONIBLES

### *STATUS OF AVAILABLE HOURS AND CYCLES*

L'industriel après fabrication ou révision du moteur complet, et l'utilisateur, dans le cas de remplacement de pièces à vie limite, d'échange de modules comportant ou non des pièces à vie limite, ou d'évolution dans les potentiels ou vies limites, détermine le terme de la période d'utilisation autorisée pour ce moteur, pièces ou modules, en établissant un état de disponibilité.

*The manufacturer after production or overhaul of the complete engine, and the operator, in the event of replacement of life limited parts, of replacements of modules with or without limited life parts, or of evolution in TBO or limited life determines the term of the operation period permitted for that engine parts or modules by setting up an availability statement.*