

STATEMENT OF WORK

Landing Gear Overhaul

LANDING GEAR REMOVED FROM B747-SP N4508H, S/N 22574

Date 05/24/2012



National Aeronautics and Space Administration
Dryden Flight Research Center
Edwards, California

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1.0 Background

The National Aeronautics and Space Administration (NASA) operates a Boeing 747SP aircraft as an airborne astronomical observatory under the Stratospheric Observatory for Infrared Astronomy (SOFIA) Program. This aircraft N747NA S/N 21411 is operated by NASA Dryden Flight Research Center (DFRC) and is located at Palmdale, CA. This aircraft will require the presently installed landing gear removed and replaced with a zero time overhauled ship set.

Removed from: N4508H / S/N 22547

Aircraft and Landing Gear Information

Type Aircraft	Boeing 747SP-09	
Engine Type	PW JT9D	
Tail Number	N4508H	
Line Number	N/A	
Serial Number	22547	
Effectivity	N/A	
Total Hours	59,056	
Total Cycles	10,957	
TSOH Landing Gear	3,051 Hrs.	
Nose	P/N 65B18202-9	S/N 5375
Left Hand (LH) Wing	P/N 65B18201-21	S/N 3099
Right Hand (RH) Wing	P/N 65B18201-24	S/N 3955
Left Hand (LH) Body	P/N 65B18203-19	S/N 0628
Right Hand (RH) Body	P/N 65B18203-20	S/N 0697

2.0 Objectives

Overhaul of a complete landing gear ship set for NASA's B747SP-09, with all applicable airworthiness directives and service bulletins incorporated.

3.0 Scope

Provide a complete overhauled landing gear ship set for the NASA SOFIA Programs B747-SP aircraft. This includes

- 2 ea. LH and RH Wing Main Landing Gear (MLG);
- 2 ea. LH and RH Body MLG;
- 1 ea. Nose Landing Gear (NLG)

All assemblies shall include all components that would enable an operator to install/change the landing gear has an all-inclusive Ready For Installation (RFI) assembly.

4.0 Tasks

4.1 Assembles and Components to be Overhauled

Overhaul and Build-up 747SP NLG Assembly –P/N 65B18202-9, S/N 5375

1. NLG component assembly - 65B18202-9
2. Shock strut assembly - 65B01459-8
3. Axel assembly – 65B019923
4. Drag strut assembly – 65B01222
5. Upper tripod brace – 65B01225-1
6. Lower tripod brace – 65B05271-3
7. Torsion link assemblies – 65B05340 upper & 65B05342 lower
8. Tow fitting – 65B08800-1
9. Trunnion pins – 65B05106
10. Hydraulic installation – 65B01562-1
11. Electrical installation includes all conduits, hardware etc.
12. Wire harness – 65B40862
13. Hardware installation
14. Pivot link installation – 65B82745
15. Bullnose installation – 65B14240
16. Steering collar – 65B055250-30
17. Steering actuator support assemblies
18. Steering actuators – 65B01503
19. Steering summing mechanism - 65B81434-1
20. Steering metering valve – 65B01519 – (NASA Provided)
21. Downlock actuator – 1U1204-4
22. Oleo pressure switch – 6584059-2
23. Downlock bungee – 65B05398-8
24. Retract actuator – 65B01550

Note: Wheels, Tires and Brakes are not included in the build-up.

NLG Life Limited Parts must extend to the next overhaul with time remaining; NASA currently has a required life cycle of 12 years after Landing Gear installation.

Overhaul and Build-up 747SP Wing Landing Gear (WLG)
(LH) P/N 65B18201-21 S/N 3099, (RH) P/N 65B18201-24 S/N 3955

1. Component assembly – 65B18201-23 & 24
2. Shock strut assembly – 65B18211-27 & 28
3. Torsion link assemblies – 65B18219
4. Side brace assembly – 65B18207-5 & 6
5. Drag brace assembly – 65B18218-6
6. Jury strut upper and lower assemblies- 65B05338 and 65B05336
7. Truck beam assembly. – 65B19916-1
8. Truck lock Installation– 65B01483-8
9. Hydraulic support – 65B80165
10. Hydraulic installation – 65B01561
11. Electrical harness – 65B40861
12. Attaching hardware
13. Downlock actuator – 69B80358
14. Downlock bungee- 65B08803
15. Fwd. trunnion bearing housing and fuse pin (NASA Provided)
16. Walking beam assembly – 65B01204-7
17. Brake rod assembly – 65B18225-3
18. Truck positioning actuators – 65B01539
19. Gear retract actuator – 65B01501-11

Note: Wheels Tires and Brakes are not included in the build-up

Overhaul and Build-up 747SP Body Landing Gear (BLG)
(LH) P/N 65B18203-19, S/N 0628, (RH) P/N 65B18203-20 S/N 0697

1. Component assembly – 65B18203-19 & 20
2. Shock strut assembly – 65B18231-19 & 20
3. Trunnion assembly – 65B19918
4. Up-lock Installation 65B01291-12
5. Truck beam assembly – 65B19916-3
6. Hydraulic installation– 65B01563
7. Hydraulic installation support – 65B80164
8. Electrical harness installation – 65B40863-27 & 28
9. Attaching hardware
10. Steering mechanism – 65B05160 – 5 & 6
11. Drag strut assembly – 65B18209
12. Jury strut assembly upper and lower – 65B05370 & 65B05374
13. Side brace assembly – 65B18234-1
14. Bungee assembly – 65B08802
15. Torsion link assemblies - 65B18237-3
16. Downlock actuators – 69B80358
17. Steering actuators – 1U1171-5
18. Brake rod assembly – 65B18225-3
19. Truck positioning actuators – 65B01504
20. Gear retract actuators – 65B01502

Note: Wheels and Tires and Brakes are not included in the build-up

4.2 FAA / OEM Compliance and Historical Documents

1. Exhibit A
Previously complied airworthiness directives and service bulletins
2. Exhibit B
Service Bulletins and Service Letters to be incorporated during overhaul
Oleo pressure switch shut off valve installation– SB-747-27-2283
3. Exhibit C
Previous Overhaul Documents
4. Exhibit D
Landing Gear Previously Installed Aircraft Summary Data Sheet

4.3 Overhaul Documents

1. Boeing component maintenance manuals for B747 NLG, WLG and BLG
2. Vendor overhaul and repair station manuals
3. Boeing approved expanded repair limits
4. Boeing standard practices and processes as they apply to the landing gear overhaul.
5. Compliance with all Applicable Federal Aviation Administration (FAA) airworthiness directives
6. Compliance with all applicable Original Equipment Manufacturer (OEM) service bulletins

4.4 Time between Overhauls / Life Limited Components

1. NASA requires the landing gear to be overhauled every twelve years
2. Life limited NLG components are tracked as an assembly
3. Vendor to provide life limited Time Since New (TSN) and or Cycles Since New (CSN) information
4. NLG life limited parts Installed must extend to the next scheduled overhaul after installation.

4.5 General Build-up

1. Shock strut fluid to be Castrolaero 40 or equivalent
2. Grease to meet Boeing Manufacture Specification (BMS) 3-33
3. Scraper / seal configuration compatible Mil-H-5606

5.0 Deliverables

1. Overhauled RFI main and nose landing gear ship set, for B-747SP
 - i. 2ea. wing landing gear
 - ii. 2ea. body landing gear
 - iii. 1ea. nose landing gear

2. Landing gear shall be delivered certified for type CG2 with a maximum taxi gross weight of 703K

3. Data Package

- i. Life Limited Parts (LLP) List
- ii. FAA 8103-3 for each major assembly
- iii. List of all airworthiness directives embodied
- iv. List of all service bulletins embodied
- v. List of all service letters embodied
- vi. Submittals to Boeing with Boeing response (if applicable)
- vii. 3 year warranty from delivery

4. Provide access for NASA to perform periodic facility, process and quality Inspections.

6.0 Government-Furnished Property

1. B747-SP landing gear assemblies and major components

- | | | |
|--------------|-----------------|----------|
| i. Nose | P/N 65B18202-9 | S/N 5375 |
| ii. LH Wing | P/N 65B18201-21 | S/N 3099 |
| iii. RH Wing | P/N 65B18201-24 | S/N 3955 |
| iv. LH Body | P/N 65B18203-19 | S/N 0628 |
| v. RH Body | P/N 65B18203-20 | S/N 0697 |

2. Major components

- i. Drag strut assemblies
- ii. Steering actuators
- iii. Gear retract actuators

7.0 Performance / Qualifications

- 1. FAA approved repair station with appropriate rating to perform overhaul of heavy landing gear
- 2. Qualified to perform all aspects of this work scope
- 3. Current with the changes to OEM overhaul manual and federal regulations
- 4. Capable of rendering services in analysis of landing gear technical problems
- 5. Advise NASA of any changes to inspection criteria and procedures prior to implementation

8.0 Period of Performance

The period of performance shall complete the overhaul 90 Days from reception of landing gear from NASA.