Space Shuttle
External Markings

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Reference Manual for Space Shuttle Modelers
# Enterprise - Original Markings -

**OV-101**

- **Note name and hinges on doors**
- **Note crew hatch pattern**
- **Note left tail pattern**
- **Note right tail pattern**
- **Note right side markings**
- **Note “Caution” label**
- **Note markings on top of crew cabin**
- **Note spacing of letters**

## Unmanned Captive Flights

<table>
<thead>
<tr>
<th>Flight</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight 1</td>
<td>2/18/77</td>
</tr>
<tr>
<td>Flight 2</td>
<td>2/22/77</td>
</tr>
<tr>
<td>Flight 3</td>
<td>2/25/77</td>
</tr>
<tr>
<td>Flight 4</td>
<td>2/28/77</td>
</tr>
<tr>
<td>Flight 5</td>
<td>3/2/77</td>
</tr>
</tbody>
</table>

## Manned Captive Flights

<table>
<thead>
<tr>
<th>Flight</th>
<th>Date</th>
<th>Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight 1</td>
<td>6/18/77</td>
<td>H-F</td>
</tr>
<tr>
<td>Flight 2</td>
<td>6/28/77</td>
<td>E-T</td>
</tr>
<tr>
<td>Flight 3</td>
<td>7/25/77</td>
<td>H-F</td>
</tr>
</tbody>
</table>

## Manned Free Flights

### Approach and Landing Tests

<table>
<thead>
<tr>
<th>ALT</th>
<th>Date</th>
<th>Note</th>
<th>Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7/12/77</td>
<td>Tail cone on</td>
<td>H-F</td>
</tr>
<tr>
<td>2</td>
<td>9/13/77</td>
<td>Tail cone on</td>
<td>E-T</td>
</tr>
<tr>
<td>3</td>
<td>9/23/77</td>
<td>Tail cone on</td>
<td>H-F</td>
</tr>
<tr>
<td>4</td>
<td>10/12/77</td>
<td>Tail cone off</td>
<td>E-T</td>
</tr>
<tr>
<td>5</td>
<td>10/26/77</td>
<td>Tail cone off</td>
<td>H-F</td>
</tr>
</tbody>
</table>

- **H-F: Haise - Fullerton**
- **E-T: Engle - Truly**
Enterprise
OV-101
-Repainted-
1983

Note NASA worm is black

Note crew hatch pattern

Note tail pattern

Note nose paint and windows

Note markings on top of crew cabin

External Markings used at the Paris Air Show tour in 1983

Note wing markings
Columbia
OV-102

Note name and hinges on doors
Note crew hatch pattern
Golden umbilical plate
Note right side markings
Note unique tiles
Note asymmetry of front tiles
Note markings on top of crew cabin
Unique black areas on wings
Distinctive tile pattern on elevons
Note OMS pattern

Missions flown:
STS-1
(4/12/81)
Columbia
OV-102
-Nov. 12, 1981-

Only modification is the black tile added to the lower corner of the OMS pods

Missions flown:
STS-2 11/12/81
STS-3 3/22/82
STS-4 6/27/82
STS-5 11/11/82
Missions flown:

61C 1/12/86
STS-28 8/8/89
STS-32 1/9/90
STS-35 12/2/90

* OEX: Orbiter Experiment Program
Columbia
OV-102

-Fifth Modification-
Jun. 5, 1991

Missions flown:
STS-40 6/5/91

Note labels added

Last mission that carried the SEADS experiment on nosecap
**Missions flown:**

- **STS-50** 6/25/92
- **STS-52** 10/22/92
- **STS-55** 4/26/93
- **STS-58** 10/18/93
- **STS-62** 3/4/94
- **STS-65** 7/8/94

* EDO: Extended Duration Orbiter

- Note vent doors "4" and "7" disabled
- Note the drag chute added to the tail
- Note tile pattern changed on elevons
Columbia
OV-102
-Seventh Modification-
OMDP-1

* OMDP: Orbiter Maintenance Down Period

Missions flown:

<table>
<thead>
<tr>
<th>Mission</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-73</td>
<td>10/25/95</td>
</tr>
<tr>
<td>STS-75</td>
<td>2/22/96</td>
</tr>
<tr>
<td>STS-78</td>
<td>6/20/96</td>
</tr>
<tr>
<td>STS-80</td>
<td>11/19/96</td>
</tr>
<tr>
<td>STS-83</td>
<td>4/4/97</td>
</tr>
<tr>
<td>STS-94</td>
<td>7/1/97</td>
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<tr>
<td>STS-87</td>
<td>11/18/97</td>
</tr>
<tr>
<td>STS-90</td>
<td>4/17/98</td>
</tr>
<tr>
<td>STS-93</td>
<td>7/22/99</td>
</tr>
</tbody>
</table>

Front tile pattern becoming symmetrical with removal of few tiles.
Columbia
OV-102

-Last Modification-
OMDP-2

Missions flown:

STS-109 3/1/02

STS-107 1/16/03
(Orbiter lost - Feb. 1, 2003)

Front tile pattern more symmetrical as rest of fleet, except for unique tile.

Note the NASA "Meatball" logo added and name on wing for the first time.

Note white wing panels.
Challenger
OV-099
-Original Markings-
April 4, 1983

Note tail pattern
Golden plate as Columbia
Note crew hatch pattern
Note black tile on lower corner of OMS pods
Details
This tile pattern is identical as Columbia’s last modification
Note top cabin detail
Note flag and names on wings

Missions flown:
STS-6 4/4/83
STS-7 6/18/83
STS-8 8/30/83
41-B 2/3/84
41-C 4/6/84

OMS patterns:
A: STS-6
B: STS-7, 41B
C: STS-8, 41C
Missions flown:

41-G  10/5/84
51-B  4/29/85
51-F  7/29/85
61-A  10/30/85

51-L (Jan. 28, 1986) (Orbiter lost)
Missions flown:
51-A  11/8/84
51-C  1/24/85
51-D  4/12/85
**Discovery**

OV-103

-Third Modification-

June 17, 1985

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**Missions flown:**

51-G  6/17/85

51-I  8/27/85

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Note OMS pattern and black tile area added only on left OMS pod.
**Discovery**

OV-103

-Fourth Modification-

Sep. 26, 1988

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Missions flown:

STS-26 (RTF) 9/26/88

STS-29  3/13/89

STS-33  11/23/89

STS-31  4/24/90

STS-41  10/6/90

*RTF: Return to Flight

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Note black tile areas on both sides of OMS pods.
Discovery
OV-103
-Fifth Modification-
Apr. 28, 1991

Missions flown:
STS-39  4/28/91
STS-48  9/12/91
STS-42  1/22/92

Note labels added on sides
Discovery
OV-103
-Seventh Modification-
Feb. 3, 1994

Note vent doors "4" and "7" disabled

Note top of cabin detail

Missions flown:

<table>
<thead>
<tr>
<th>Mission</th>
<th>Date</th>
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<tbody>
<tr>
<td>STS-60</td>
<td>2/3/94</td>
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<tr>
<td>STS-64</td>
<td>9/9/94</td>
</tr>
<tr>
<td>STS-63</td>
<td>2/3/95</td>
</tr>
<tr>
<td>STS-70</td>
<td>7/13/95</td>
</tr>
</tbody>
</table>
Missions flown:
STS-82  2/11/97
STS-85  8/7/97
STS-91  6/2/98
Missions flown:

STS-95  10/29/98
STS-96  5/27/99
STS-103 12/19/99
STS-92  10/11/00
STS-102  3/ 8/01
STS-105  8/10/01

OMDP-3
STS-114 (RTF)  7/26/05
STS-121 (RTF)  7/4/06
STS-116  12/9/06
STS-120  10/23/07
STS-124  5/31/08
STS-119  3/15/09
STS-128  8/28/09
STS-131  4/5/10
STS-133  2/24/11 (Last Flight)

* RTF: Return to Flight
**Missions flown:**

- **51-J**  10/3/85
- **61-B**  11/27/85

- **Atlantis**
  OV-104
  - Original Markings -
  - Oct. 3, 1985

- Crew hatch and tail pattern same as OV-103 and OV-105
- Note tile on right OMS pod only

Details
Note black tiles on both OMS pods

Missions flown:

<table>
<thead>
<tr>
<th>Mission</th>
<th>Date</th>
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<tbody>
<tr>
<td>STS-27</td>
<td>12/2/88</td>
</tr>
<tr>
<td>STS-30</td>
<td>5/4/89</td>
</tr>
<tr>
<td>STS-34</td>
<td>10/18/89</td>
</tr>
<tr>
<td>STS-36</td>
<td>2/28/90</td>
</tr>
<tr>
<td>STS-38</td>
<td>11/16/90</td>
</tr>
<tr>
<td>STS-37</td>
<td>4/5/91</td>
</tr>
</tbody>
</table>
Missions flown:

STS-43  8/2/91
STS-44  11/21/91
STS-45  3/24/92
STS-46  7/31/92
Missions flown:
STS-66  11/3/94
STS-71  6/27/95
STS-74  11/12/95
STS-76  3/22/96
STS-79  9/16/96
STS-81  1/12/97
STS-84  5/15/97
STS-86  9/26/97
Missions flown:

<table>
<thead>
<tr>
<th>Mission</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>STS-101</td>
<td>5/19/00</td>
</tr>
<tr>
<td>STS-106</td>
<td>9/ 8/00</td>
</tr>
<tr>
<td>STS-98</td>
<td>2/ 7/01</td>
</tr>
<tr>
<td>STS-104</td>
<td>7/12/01</td>
</tr>
<tr>
<td>STS-110</td>
<td>4/ 8/02</td>
</tr>
<tr>
<td>STS-112</td>
<td>10/ 7/02</td>
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<td><strong>OMDP-3</strong></td>
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<tr>
<td>STS-115</td>
<td>9/9/06</td>
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<td>STS-117</td>
<td>6/8/07</td>
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<td>STS-122</td>
<td>2/7/08</td>
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<tr>
<td>STS-125</td>
<td>5/11/09</td>
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<td>STS-129</td>
<td>11/16/09</td>
</tr>
<tr>
<td>STS-132</td>
<td>5/14/10</td>
</tr>
<tr>
<td><strong>STS-135</strong></td>
<td>7/8/11</td>
</tr>
<tr>
<td></td>
<td>LAST MISSION</td>
</tr>
</tbody>
</table>
### Endeavour

**OV-105**

**Original Markings**

May 8, 1992

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**Missions flown:**

<table>
<thead>
<tr>
<th>Mission Code</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>STS-49</td>
<td>5/8/92</td>
</tr>
<tr>
<td>STS-47</td>
<td>9/12/92</td>
</tr>
<tr>
<td>STS-54</td>
<td>1/13/93</td>
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<td>STS-57</td>
<td>6/21/93</td>
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<td>STS-59</td>
<td>4/8/94</td>
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<td>STS-68</td>
<td>9/30/94</td>
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<tr>
<td>STS-67</td>
<td>3/2/95</td>
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<tr>
<td>STS-69</td>
<td>9/7/95</td>
</tr>
<tr>
<td>STS-72</td>
<td>1/13/96</td>
</tr>
<tr>
<td>STS-77</td>
<td>5/19/96</td>
</tr>
</tbody>
</table>

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Note crew hatch and tail pattern as OV-103 and OV-104

Vent doors "4" and "7" disabled

Note drag chute

Note labels

Note top of cabin

Details
Endeavour - Second Modification - OMDP-1

Missions flown: STS-89  1/23/98

Note door hinge pattern

Note white wing panels

Note line of surface insulation and blankets
Missions flown:

<table>
<thead>
<tr>
<th>Mission</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-88</td>
<td>12/4/98</td>
</tr>
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<td>STS-99</td>
<td>2/11/00</td>
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<tr>
<td>STS-97</td>
<td>12/1/00</td>
</tr>
<tr>
<td>STS-100</td>
<td>4/19/01</td>
</tr>
<tr>
<td>STS-108</td>
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<td>STS-111</td>
<td>6/5/02</td>
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<td>OMDP-2</td>
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<td>STS-118</td>
<td>8/8/07</td>
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<tr>
<td>STS-123</td>
<td>3/11/08</td>
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<td>STS-126</td>
<td>11/14/08</td>
</tr>
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<td>STS-127</td>
<td>7/15/09</td>
</tr>
<tr>
<td>STS-130</td>
<td>2/8/10</td>
</tr>
<tr>
<td>STS-134</td>
<td>5/16/11</td>
</tr>
</tbody>
</table>

(Endeavour - Third Modification - Dec. 4, 1998)

Note NASA logos
Note trace of old wing markings
References

Space in Miniature #3 - "Space Shuttle" by Michael J. Mackowski

Space Shuttle - The History of the National Space Transportation System, The First 100 Missions by Dennis R. Jenkins

Squadron/Signal Publications #20 - "Walk around Space Shuttle"


NASA / KSC Media gallery photos