BRIEF SUMMARY

[0008] Embodiments of the invention described herein thus provide systems and methods for allowing use of what has traditionally been a cargo area of a passenger aircraft to be used as a lower deck cabin. Various modifications to the aircraft are described, as well as various features to be added in order to enhance the passenger experience. For example, there may be provided a lowered technical floor, stairs or other passageways provided at both ends of the lower deck cabin, a window replacement technique, an alternative way of storing cabin luggage, or any combination thereof.

[0008a] According to an aspect of the present invention, there is provided an aircraft fuselage defining an internal space and having a horizontal wing plane, comprising: a partition floor dividing the internal space into a main deck cabin located generally above the wing plane and a lower deck cabin located generally below the wing plane, wherein each of the main deck cabin and at least a portion of the lower deck cabin are configured for passenger transport and have one or more seating areas; and wherein the lower deck cabin comprises one or more monuments that help to reinforce the lower deck structure.

[0008b] There is provided an aircraft fuselage defining an inner space and having a horizontal wing plane, comprising: a main deck cabin and a lower deck cabin, wherein the lower deck cabin is located below the horizontal wing plane, wherein at least a portion of the lower deck cabin is configured for passenger transport and comprises one or more display screens for displaying images retrieved from one or more cameras external to the aircraft in order to accommodate for a lack of windows in the lower deck cabin.

[0008c] There is provided an aircraft fuselage defining an inner space, comprising: a main deck cabin and a lower deck cabin, a partition floor generally positioned at wing level that divides the main

deck cabin from the lower deck cabin, wherein at least a portion of the lower deck cabin is configured for passenger transport and comprises one or more side bins positioned along a lower deck cabin sidewall.

[0008d] There is provided an aircraft fuselage defining an inner space, comprising: a main deck cabin and a lower deck cabin, a partition floor generally positioned at wing level that divides the main deck cabin from the lower deck cabin, wherein at least a portion of the lower deck cabin is configured for passenger transport and comprises a luggage storage area rather than or in addition to overhead storage compartments.

[0009] Particularly, examples of the invention relate to an aircraft fuselage defining an inner space, comprising a main deck cabin, a lower deck cabin (with the lower deck cabin being positioned generally below the aircraft wing plane, which may also be referred to as a horizontal wing plane) and at least one of the following features considered alone or in combination :

- a partition floor dividing the internal space into an upper main deck cabin and a lower deck cabin;
- the main deck cabin and at least a portion of the lower deck cabin are configured for passenger transport, with each of the main deck cabin and at least a portion of the lower deck cabin having seating areas;
- first and second passageways between the upper main deck cabin and the lower deck cabin;
- the first passageway positioned at one end of the lower deck cabin seating area;
- the second passageway positioned at an opposite end of the lower deck cabin seating area;
- the first and/or second passageways comprise stairways;
- the stairways comprise one or more straight route segments;

What is claimed is:

1. An aircraft fuselage defining an internal space and having a horizontal wing plane, comprising:

a partition floor dividing the internal space into a main deck cabin located generally above the wing plane and a lower deck cabin located generally below the wing plane,

wherein each of the main deck cabin and at least a portion of the lower deck cabin are configured for passenger transport and have one or more seating areas; and

wherein the lower deck cabin comprises one or more monuments that help to reinforce the lower deck structure.

2. The aircraft fuselage according to claim 1, wherein the lower deck cabin comprises a first and second passageways between the upper main deck cabin and the lower deck cabin,

the first passageway being positioned at one end of the lower deck cabin seating area, and

the second passageway being positioned at an opposite end of the lower deck cabin seating area.

3. The aircraft fuselage according to claim 2, wherein the first and second passageways comprise stairways.

4. The aircraft fuselage according to claim 3, wherein the stairways comprise one or more straight route segments with a landing at each change in segment direction.

5. The aircraft fuselage according to any of the preceding claims, wherein the lower deck cabin comprises a lowered technical floor.

6. The aircraft fuselage according to any of the preceding claims, wherein the lower deck cabin comprises a sidewall having an increased thickness.

7. The aircraft fuselage according to any of the preceding claims, wherein at least a portion of the lower deck cabin comprises one or more display screens for displaying images retrieved from one or more cameras external to the aircraft in order to accommodate for a lack of windows in the lower deck cabin.

8. The aircraft fuselage according to claim 7, wherein the one or more display screens comprise in-flight entertainment units.

9. The aircraft fuselage according to claims 7 or 8, wherein the one or more display screens comprise screens positioned where windows would otherwise be located.

10. The aircraft fuselage according to any of claims 7 to 9, wherein the one or more display screens comprise elongated side walls of the lower deck cabin.

11. The aircraft fuselage according to any of claims 7 to 10, wherein the one or more cameras comprise fiber optic cameras.

12. The aircraft fuselage according to any of the preceding claims, wherein at least a portion of the lower deck cabin comprises one or more side bins positioned along a lower deck cabin sidewall.

13. The aircraft fuselage of claim 12, wherein the one of more side bins are secured via a bracket between the fuselage and the side bin.

14. The aircraft fuselage of claim 12, wherein the one of more side bins are secured via one or more seat tracks to a floor of the fuselage.

15. The aircraft fuselage according to any of the preceding claims, wherein at least a portion of the lower deck cabin comprises a luggage storage area rather than or in addition to overhead storage compartments.

16. The aircraft fuselage of claim 15, wherein the luggage storage area comprises a plurality of cubbies.

17. The aircraft fuselage according to any of the preceding claims, wherein the lower deck cabin is provided with a crew rest area having at least one bunk or at least one seat or both.