

**UNITED STATES PATENT AND TRADEMARK
OFFICE**

**BEFORE THE PATENT TRIAL AND APPEAL
BOARD**

MISSION INTEGRATED
TECHNOLOGIES LLC
Petitioners

v.

JOSHUA CLEMENTE
Patent Owner

Case IPR2023-00000
Patent 11,174,677

DECLARATION OF MATTHEW HAYDUK

Mission Ex. 1021



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I, Matthew Hayduk, declare as follows:

I. INTRODUCTION

1. I have been engaged by the Petitioner, Mission Integrated Technologies LLC, (“MIT”), as an expert for the Petitioner in connection with Inter Partes Review (“IPR”) proceedings before the U.S. Patent and Trademark Office, Patent Trial and Appeal Board (“PTAB”). I am being compensated for my time at my usual hourly billing rate for consulting work. No part of my compensation depends on the outcome of these proceedings.

2. I understand that these proceedings involve U.S. Patent No. 11,174,677 (“the ’677 patent”) (Ex. 1001), which issued on November 16, 2021.

3. I have been asked to provide opinions concerning the ’677 patent, and whether certain references disclose or suggest the features in the claims of this patent. This declaration addresses claims 1-17 of the ’677 patent.

4. A complete listing of the materials I reviewed in preparing this declaration is attached as Appendix A.

II. BACKGROUND AND EXPERIENCE

5. A description of my education, training, and experience is summarized below.



6. I received a B.S. in Mechanical Engineering in 1982 from the University of Massachusetts in Amherst Massachusetts.

7. From 1983 to 1994, I was employed as a Mechanical Design and Product Support Engineer by Sikorsky Aircraft. My responsibilities there included mechanical design and development of assemblies and components for use in helicopter transmissions including combining Mechanical Design, finite element analysis, acoustic testing and classical analysis to predict and verify helicopter transmission system deflections with their related gear noise. Some additional responsibilities included the Engineering Design and Analysis for the Comanche helicopter, including optimizing components for weight, stiffness and manufacture.

8. From 1994 to 1995, I was employed as an Engineering Department Manager by Bayside Precision Gearheads. My responsibilities there included incorporating Pro/Engineer 3D modeling software, while managing, training, and supporting the Engineering department personnel in design philosophy, file management, failure analysis and production support for the manufacture of servo motor and NEMA stepper motor power transmissions for the motion control industry.

9. Since January 1995 I have been employed by ADEPT Inc., where I am the President/Owner. My responsibilities there include running a



Mechanical Engineering Consulting Company for designing and conceptualizing complete machine and product designs in many industries, such as the military, recreational consumer products, industrial automation, heavy lift and excavation, communications, electronics and technical investigation.

10. As described in my curriculum vitae (“CV”) (Ex. 1020), I have extensive experience in the field of mechanical engineering of machine design.

11. I am named inventor on at least 24 issued patents and pending applications, relating to subject matters including dispensing systems and methods, helicopter noise reduction systems and towrope retrievers for watercraft.

III. LEGAL PRINCIPLES

A. Person of Ordinary Skill in the Art

12. I am informed that a “person of ordinary skill in the art” (“POSA”) refers to a hypothetical person who is presumed to have known the relevant art at the time of the invention. Many factors may determine the level of ordinary skill in the art, including: (1) the type of problems encountered in the art, (2) prior art solutions to those problems, (3) the rapidity with which innovations are made, (4) the sophistication of the technology, and (5) the



educational level of active workers in the field. I understand that a POSA is a person of ordinary creativity, meaning that a POSA may employ inferences and creative steps in their work.

13. A POSA for this patent would have at least an undergraduate degree in mechanical engineering, and about two years of experience designing structural systems like tactical staircases or elevated tactical systems that can be vehicle mounted and can be folded and stowed and elevated or deployed for use by personnel or equivalent experience. I have used this definition in my analysis below.

B. Anticipation Invalidity

14. I understand that a patent claim is “anticipated,” and, therefore, invalid, if a single prior art reference discloses (expressly or inherently) each and every element of the claimed invention in a manner sufficient to enable a POSA to practice the invention, thus placing the invention in possession of the public.

C. Obviousness Invalidity

15. I understand that even if a prior art reference fails to anticipate a patent claim, the claim may nonetheless be invalid as “obvious,” if the differences between the subject matter claimed and the prior art are such that the subject matter as a whole would have been obvious at the time the



invention was made to a POSA. I understand that several factual inquiries underlie a determination of obviousness. These inquiries include the scope and content of the prior art, the level of ordinary skill in the art, the differences between the claimed invention and the prior art, and any objective “secondary considerations.” I understand that a combination of familiar elements according to known methods may be obvious when it does no more than yield predictable results. I also understand that common sense and ordinary creativity of one skilled in the art can be relevant to obviousness, and that a claim may be obvious if the elements of the claim are all known in the art, and if POSA would have an apparent reason to combine those elements in the fashion claimed by the patent.

16. I have been informed that certain objective secondary considerations may be relevant to a determination of whether an invention was obvious. Such secondary considerations may include, e.g., (a) whether there was a long-felt and long-unmet need for the invention, (b) whether the invention achieved unexpected results, (c) the commercial success of the invention, and (d) whether the invention was copied or praised within the industry.

D. Claim Construction

17. I have been informed that, in an IPR, the PTAB will give the



claim terms in the patents under review their “broadest reasonable interpretation” in light of the patents themselves. I understand this means that the words of the claims are analyzed from the perspective of POSA and, specifically, receive the broadest reasonable meaning POSA would give them in the context of the ‘677 patent (Ex. 1001) and when the words are used as they ordinarily are used. I also understand, however, that the PTAB could determine that the inventor specifically defined a particular claim term in the patent (which I understand is referred to as “lexicography”), in which case that definition would control.

IV. THE ‘677 PATENT

A. Background

18. The ‘677 patent is directed to a vehicle-mounted elevated access system (100), which includes an inclinable access structure (110) connected to a fixed base structure (105). The fixed base structure (105) may be mounted to a suitable host vehicle (101) so the vehicle-mounted elevated access system (100) is mobile. Ex. 1001, ‘677 patent at 3:56-67.

19. The inclinable access structure (110) has a proximal end (201) that is partially connected to the fixed base structure (105) and a distal end (202) opposite to the proximal end (201). Ex. 1001, ‘677 patent at 4:5-11.



20. The inclinable access structure (110) includes a stairway including a plurality of steps (113), which may be configured to remain passively parallel to the ground during all angles of operation of the inclinable access structure (110). Ex. 1001, '677 patent at 4:12-20.

21. A plurality of lifting masts (120) is pivotably connected to the fixed base structure (105) at a proximal end of the lifting masts (120). The distal end of each of the lifting masts (120) is connected to a forward tension element (111) and a rear tension element (112), which each have fixed lengths. The forward tension elements (111) are respectively connected to the distal end of the lifting masts (120) and the distal end (202) of the inclinable access structure (110), and the rear tension elements (112) are respectively connected to the distal end of the lifting masts (120) and the fixed base structure (105). Ex. 1001, '677 patent at 4:21-36.

22. The fixed base structure (105) includes a plurality of track channels (107). The track channels (107) are oriented from a front end (203) to a rear end (204) of the fixed base structure (105). A moveable hinge carriage (108) is arranged on each track channel (107) and moves longitudinally along the respective track channel (107). A proximal end (201) of the inclinable access structure (110) is pivotably attached to the movable hinge carriages

(108). Ex. 1001, '677 patent at 4:60-5:3.

23. Actuators (140) are connected between the movable hinge carriages (108) and the fixed base structure (105). The actuators (140) are configured to pull the movable hinge carriages (108) along the track channels (107) towards the front end (203) of the fixed base structure (105), thereby moving the proximal end (201) of the inclinable access structure (110). As the proximal end (201) of the inclinable access structure (110) moves toward the front end (203) of the fixed base structure (105), the distal end (202) of the inclinable access structure (110) is elevated about the lifting masts (120) due to the fixed lengths of the front tension elements (111) and the rear tension elements (112). Ex. 1001, '677 patent at 5:4-42.

24. In addition, the elevated access system (100) includes a multi-position end breaching platform (125) which is configured to be raised by the secondary actuators (301). The multi-position end breaching platform (125) is pivotably connected to the distal end (202) of the inclinable access structure (110). Ex. 1001, '677 patent at 6:23-39.

25. The elevated access system (100) may include inclinable access handrails (130) mounted to and pivotably attached to the inclinable access structure (110) and configured to extend into a deployed position by a plurality

of linkages (115). Ex. 1001, '677 patent at 6:40-64.

26. The elevated access system (100) may also include platform handrails (131) positioned along and pivotably attached to the multi-position end breaching platform (125) and configured to extend into a deployed position by an action of a rigid linkage (e.g., multilink kinematic mechanism) (303). Ex. 1001, '677 patent at 7:55-61.

27. A controller (135) is configured to control the operation of the vehicle-mounted elevated access system (100) by controlling the movement of the actuators (140) and the movement of the actuators (301) to determine the configuration and overall height of the inclinable access structure (110) and the multi-position end breaching platform (125). Ex. 1001, '677 patent at 6:65-7:5.

28. Fig. 4 shows the vehicle-mounted elevated access system (100) in the stowed configuration, wherein the inclinable access structure (110) is positioned flat against the fixed base structure (105), and the multi-position end breaching platform (125) is folded against the inclinable access structure (110). In the stowed configuration, the moveable hinge carriages (108) are positioned at the rear of the host vehicle (101) and the distal end (202) of the inclinable access structure (110) is positioned at or near the same height as the

fixed base structure (105). Ex. 1001, '677 patent at 7:10-20.

29. Fig. 5 shows the vehicle-mounted elevated access system (100) in the deployed flat configuration, wherein the inclinable access structure (110) remains flat against the fixed base structure (105), but the lifting masts (120) are shifted into their deployed position due to retraction of the actuators (140), which pulls the tension elements (111) forward, which cause the movable hinge carriages (108) to move along the track channels (107) towards the front of the host vehicle (101). Ex. 1001, '677 patent at 7:21-61.

30. Fig. 6 shows the vehicle-mounted elevated access system (100) in the deployed low angle configuration by further movement of the actuators (140). Here, the distal ends (202) of the inclinable access structure (110) are raised to a height above the fixed base structure (105), which pulls forward the movable hinge carriages (108) by an additional amount towards the front of the host vehicle (101) along the track channels (107), as compared to the deployed flat configuration of Fig. 5. Ex. 1001, '677 patent at 7:62-8:22.

31. Fig. 7 shows the vehicle-mounted elevated access system (100) in the deployed high angle configuration by further movement of the actuators (140), wherein the movable hinge carriages (108) are pulled forward an additional amount towards the front of the host vehicle (101) along the track

channels (107) and the distal end (202) of the inclinable access structure (110) is raised to a height greater than that reached in the deployed low angle configuration shown in Fig. 6. Ex. 1001, '677 patent at 8:23-36.

32. The elevated access system (100) shifts from the deployed high angle configuration shown in Fig. 7 to the deployed high angle configuration shown in Fig. 8 with the multi-position end breaching platform (125) deployed in a stairway configuration by extension of the actuators (301). Ex. 1001, '677 patent at 8:37-50.

33. Referring to Fig. 9, a graphical user interface (900) communicates with the controller (135) on the vehicle-mounted elevated access system (100) to control the operation of the system. The graphical user interface (900) can operate in different control modes, including, a manual control mode (901), a preset mode (906), an aircraft mode, and a video streaming mode. Ex. 1001, '677 patent at 9:32-57.

34. When the preset mode (906) is selected, a user selects among different pre-programmed heights for the distal end (202) of the inclinable access structure (110). Ex. 1001, '677 patent at 10:12-33.

35. When the aircraft mode is selected, as shown in Fig. 10, the graphical user interface (900) displays a drop down "Aircraft Selection Menu."

The "Aircraft Selection Menu" provides a user with a list of commercial aircraft to choose from, such as the Airbus A380, the Boeing 777, the Boeing 747, etc. When a user selects an aircraft, a side view of that aircraft is displayed on the screen with each fuselage door having a preprogrammed height being represented by a pressable button on the touchscreen user interface (900). When a button is selected by the user, the touchscreen user interface (900) wirelessly communicates the selection to the controller (135), which raises the distal end (202) of the inclinable access structure (110) via the actuators (140) (and if needed the position of multi-position end breaching platform (125) via the actuators (301)) to the selected preprogrammed height. Ex. 1001, '677 patent at 10:41-11:2.

36. The '677 patent was filed as U.S. Application No. 16/688,884 on November 19, 2019, and claims benefit of a U.S. Provisional Application 62/770,022 (Ex. 1003, "the '022 provisional application") filed on November 20, 2018.

37. The '022 provisional application (Ex. 1003) includes seven figures, Figures 1-7, which essentially correspond to Figures 1, 4-8 and 10 of the '677 patent (Ex. 1001), respectively. However, even though Figures 2, 3 and 9 of the '677 patent (Ex. 1001) are not included in the '022 provisional



application (Ex. 1003), in my opinion all of the claimed features of the '677 patent (Ex. 1001) appear to be supported by the disclosure of the '022 provisional application.

38. Based on the priority claim made in the '677 patent (Ex. 1001), the earliest possible priority date for the claims in the 677 patent is November 20, 2018.

39. Unless another date is specified, my opinions in this declaration address what would be known and understood by POSA as of November 20, 2018.

B. Prosecution History

40. I have reviewed the file history (Ex. 1002) of the '677 patent (Ex. 1001) along with '022 provisional application (Ex. 1003). The file history is briefly summarized below.

41. A restriction requirement for election between claims 1-16 and claim 17 was issued on April 29, 2021. An election for claims 1-16 was filed on June 9, 2021. A Notice of Allowance was issued on September 1, 2021, in which withdrawn claim 17 was rejoined. The issue fee was paid on October 13, 2021 (Ex. 1002).

42. In the Notice of Allowance, the Examiner provided the



following reasons for allowance:

The prior art does not show the means for lifting the inclinable access structure comprising movable hinge carriages configured to move along a plurality of track channels; a lifting mast being connected to the distal end of the inclinable access structure by forward tension elements and being connected to the fixed base structure by rear tension, and the actuator connected between the movable hinge carriages and the fixed base structure and configured to move the movable hinge carriages to raise the distal end of the inclinable access structure via the forward tension elements, the lifting mast, and the rear tension elements.

Ex. 1002 at pages 155-156.

43. The '677 patent was issued on November 16, 2021.

C. Claims

44. The '677 patent (Ex. 1001) contains 17 claims, of which claim 1 is independent. Claim 1 reads as follows:

[a] A vehicle-mounted access system comprising: a fixed base structure comprising a plurality of track channels;

[b] a plurality of movable hinge carriages respectively on and



configured to move along the plurality of track channels;

[c] an inclinable access structure having a proximal end and a distal end, the proximal end of the inclinable access structure being pivotably connected to the plurality of movable hinge carriages;

[d] a lifting mast having a proximal end and a distal end,

[e] the distal end of the lifting mast being connected to the distal end of the inclinable access structure by forward tension elements and

[f] being connected to the fixed base structure by rear tension elements,

[g] the proximal end of the lifting mast being pivotably connected to the fixed base structure; and

[h] an actuator connected between the movable hinge carriages and the fixed base structure,

[i] the actuator being configured to move the movable hinge carriages to raise the distal end of the inclinable access structure via the forward tension elements, the lifting mast, and the rear tension elements.

Ex. 1001, '677 patent at 12:39-61.

D. Priority Benefit

45. For the reasons discussed above, in my opinion a POSA would understand that the '677 patent has an effective filing date of November 20, 2018.

V. PRIOR ART ANALYSIS

A. MIT's Articulating Rapid Entry System (ARES)

46. MIT began the development of an entirely new generation of an ARES line of products in early 2017. Ex. 1004, Alubbad Decl.¶3.

47. On June 12, 2017, MIT submitted a "Technical Offer" (Ex. 1006) to the Kingdom of Saudi Arabia, Ministry of Defense, for Two Armored Assault Vehicles with ARES System. Ex. 1004, Alubbad Decl.¶5.

48. The Technical Offer shows the ARES mounted on a host vehicle, a fully armored Lenco Bearcat. The ARES system in the Technical Offer has the exact same lifting apparatus for lifting an inclinable access structure (110) as provided in the '677 patent (Ex. 1001), which is easily visible by comparing Figure 1 of 'the 677 patent (Ex. 1001 at page 3) with the ARES (Ex. 1006 at page 4, annotated with corresponding reference numerals from the '677 patent



added) below:

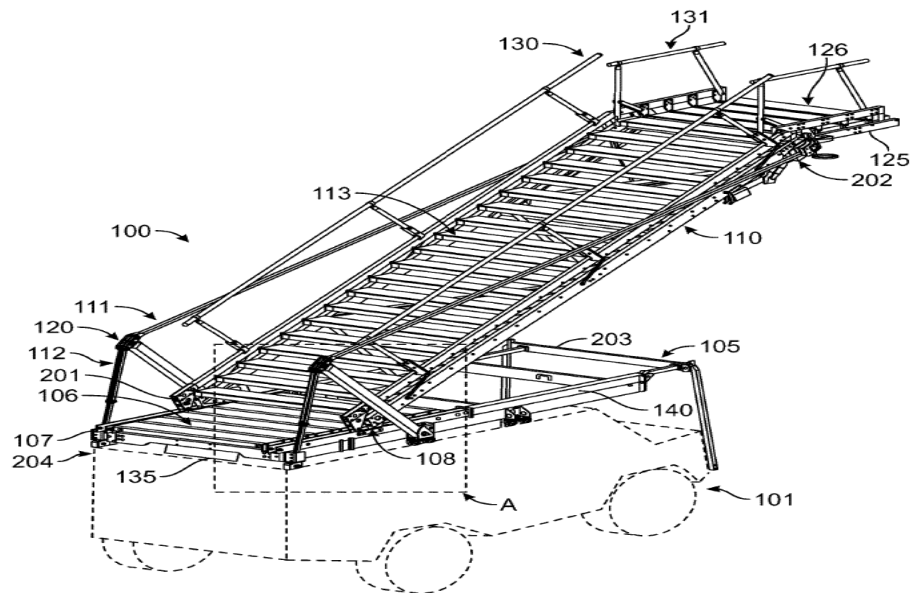
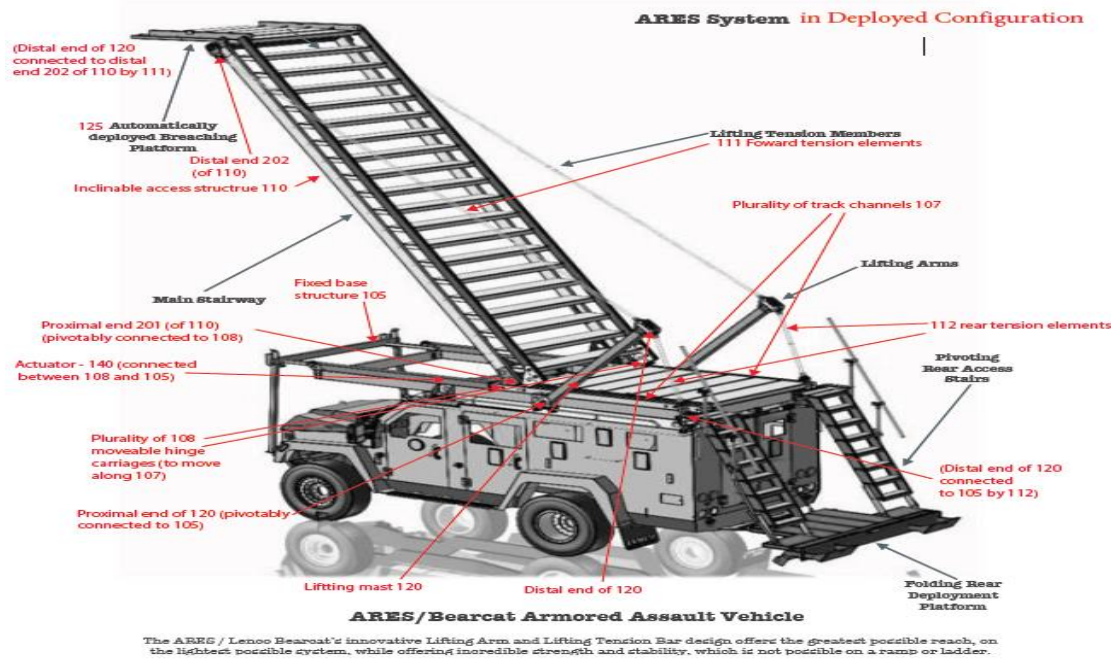


FIG. 1



Ex. 1001 at page 3; Ex. 1006 at page 4.

49. In my Opinion, the ARES's lifting apparatus (Ex. 1006 at page 4) includes a fixed based structure (105) having a plurality of track channels (107), movable hinge carriages (108) configured to move along the plurality of track channels (107); an inclinable access structure (or Main Stairway) (110) with a proximal end (201) and a distal end (202), the proximal end (201) being pivotably connected to the movable hinge carriages (108); a lifting mast (or Lifting Arms) (120) with a distal end being connected to the distal end (202) of the an inclinable access structure (or Main Stairway) (110) by forward tension elements (or Lifting Tension member) (111) and being connected to the fixed base structure (105) by rear tension elements (112); a proximal end of the lifting mast (or Lifting Arms) (120) being pivotably connected to the fixed based structure (105); and an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105).

50. Further, the Technical Offer (Ex. 1006 at page 3) discloses that the "ARES's two hydraulic cylinders push the Main Stairway forward, as the Lifting Arms and Lifting Tension Bar support as it elevates."

51. The '677 patent describes the identical configuration that "the actuators 140 may be hydraulic cylinders." Ex. 1001, '677 patent at 5:6-8.

52. The '677 patent also discloses that the actuator 140 is configured



to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112). See Paragraph 23 above.

53. Identically, the hydraulic cylinders of the ARES (Ex. 1006) are configured to move the moveable hinge carriages (108) to pull the inclinable access structure (or Main Stairway) (110) forward thereby raising the distal end (202) of the inclinable access structure (or Main Stairway) (110) as the lifting mast (or Lifting Arms) (120) and forward tension elements (or Lifting Tension member) (111) and rear tension elements (112) support as it elevates (Ex. 1006 at pages 3 and 4).

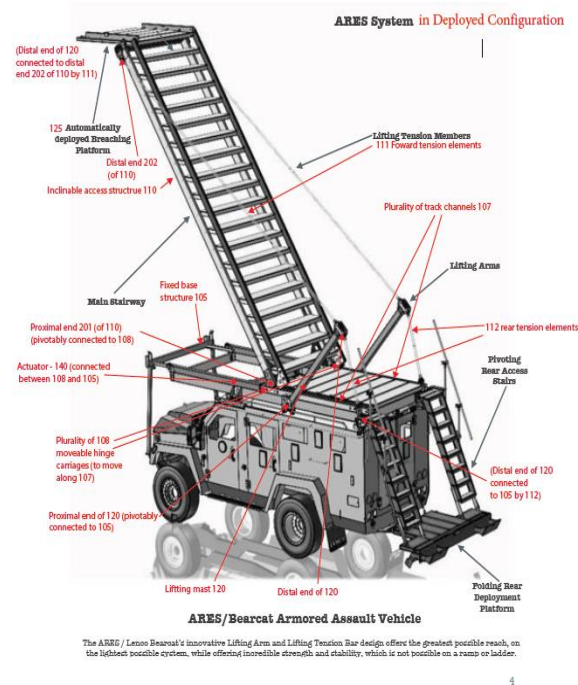
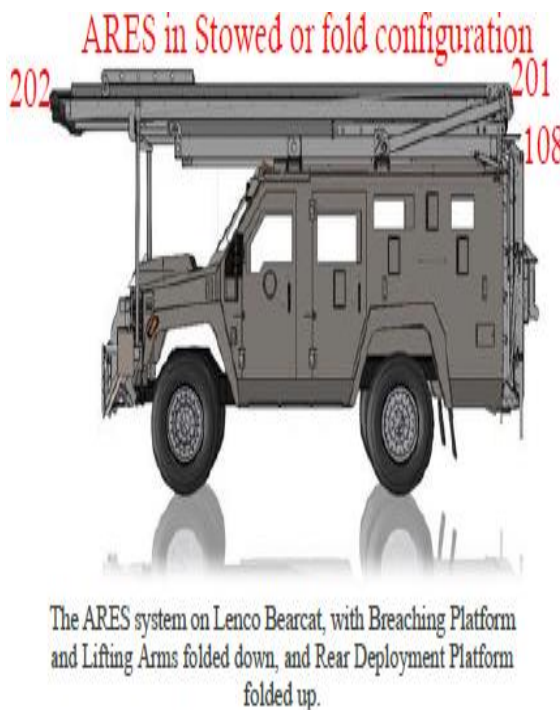
54. Thus, in my Opinion, the two hydraulic cylinders in the ARES (Ex. 1006 at pages 3 and 4) are configured to deploy the ARES in the identical way as the actuators (140) are configured to deploy the inclinable access structure (110) or vehicle-mounted access system (100) in the '677 patent (Ex. 1001).

55. This same actuator configuration and deployment is apparent by comparing the position of the moveable carriage (108), the proximal and distal ends (101, 102) of the inclinable access structure (110) in the '677 patent (Ex.



1001) to the positions of the moveable carriage (108), the proximal and distal ends (101, 102) of the inclinable access structure (or Main Stairway) (110) in both the stowed and deployed configurations in the ARES (Ex. 1006 at pages 3 and 4).

56. The vehicle-mounted ARES system on the Lenco Bearcat is shown below in the stowed and deployed configurations (Ex. 1006 at pages 3 and 4). Underneath, Figs. 4 and 7 of the '677 patent are provided (Ex. 1001 at pages 6 and 9), which shows the vehicle-mounted access system 100 in the '677 patent in the stowed and deployed configurations, respectively. See paragraphs 28 and 31 above.



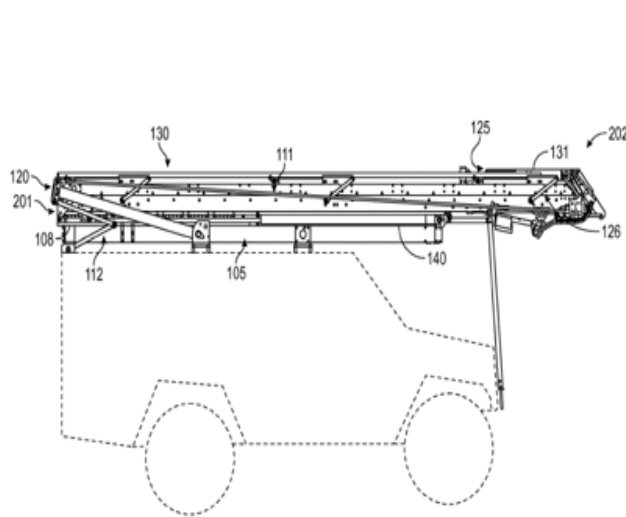


FIG. 4

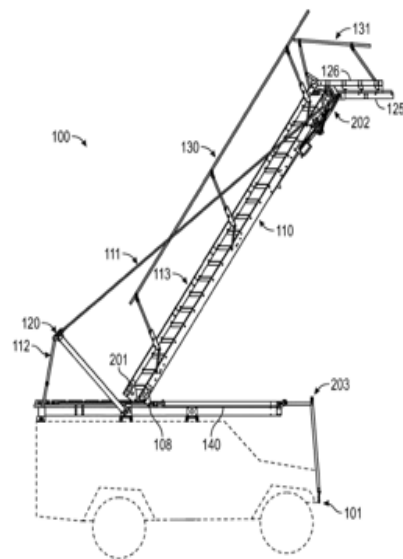


FIG. 7

Ex. 1006 at pages 3 and 4; Ex. 1001 at pages 6 and 9.

57. In the stowed position, in ARES (Ex. 1006 at page 3), the moveable hinge carriages (108) and the proximal end (201) are provided at the rear of the host vehicle with the proximal and distal ends (201, 202) of the inclinable access structure (or Main Stairway) (110) essentially flat with each other.

58. Similarly, in the stowed position in Fig. 4 of the '677 patent (Ex. 1001 at page 6), the moveable hinge carriages (108) and the proximal end (201) are provided at the rear of the host vehicle with the proximal and distal ends (201, 202) of the inclinable access structure (110) flat with each other.

59. Transitioning from the stowed position to the deployed position, the hydraulic cylinders (140) in the ARES (Ex. 1006) pull forward the moveable hinge carriages (108) along the track channels (107) toward the front of the host vehicle, Lenco Bearcat, which pulls forward the proximal end (101) of the inclinable access structure (or Main Stairway) (110) and raises the distal end (202) higher than the proximal end (101) until a desired height of the inclinable access structure (or Main Stairway) (110) is reached (Ex. 1006 at pages 3 and 4).

60. Similarly, transitioning from the stowed position to the deployed position in the '677 patent, the actuators (140) pull forward the moveable hinge carriages (108) along the track channels (107) toward the front of the host vehicle, which pulls forward the proximal end (101) of the inclined access structure (110) and raises the distal end (202) higher than the proximal end (101) until a desired height of the inclined access structure (110) is reached (Ex. 1001 at page 9).

61. Accordingly, the ARES system (Ex. 1006) includes the exact same lifting apparatus for lifting the inclinable access structure (or Main Stairway) (110) as provided in the '677 patent (Ex. 1001) and the two hydraulic cylinders in the ARES (Ex. 1006 at pages 3 and 4) are configured to deploy the ARES in the identical way as the actuators 104 are configured to

deploy the inclinable access structure 110 or vehicle mounted access system 100 in the '677 patent (Ex. 1001).

B. ARES PROMO 6 VIDEO (Ex. 1007, “The ARES 6 video”)

62. Exhibit 1007, the *ARES PROMO 6* video (“the ARES 6 video”) is a video promoting MIT’s new generation of ARES product that was published and continuously accessible to the public at the YouTube website at URL <https://www.youtube.com/watch?v=9gVnP18I39Q> from October 11, 2017 to the present and at MIT’s home page at <http://www.Mit.technology> which featured the YouTube link <https://www.youtube.com/watch?v=9gVnP18I39Q> from at least October 22, 2017 to at least November 20, 2018. Ex. 1004, Alubbad Decl. ¶¶6-15; Exs. 1008-1013.

63. As a POSA, I search for and view videos on YouTube and other platforms for information regarding my client’s products. I have found YouTube to be a great resource to learn quickly about different structural products or devices that my clients may have some interest in. Accordingly, a POSA would regularly include a YouTube search, among other searches, to research for on-line video content such as the ARES 6 video (Ex. 1007) and would have understood it as relevant to the design of a vehicle mounted elevated system as of October 11, 2017. In my opinion, Exhibit 1008 illustrates how readily accessible the ARES 6 video (Ex. 1007) is to a POSA



performing a relevant search on the YouTube search engine since October 11, 2017.

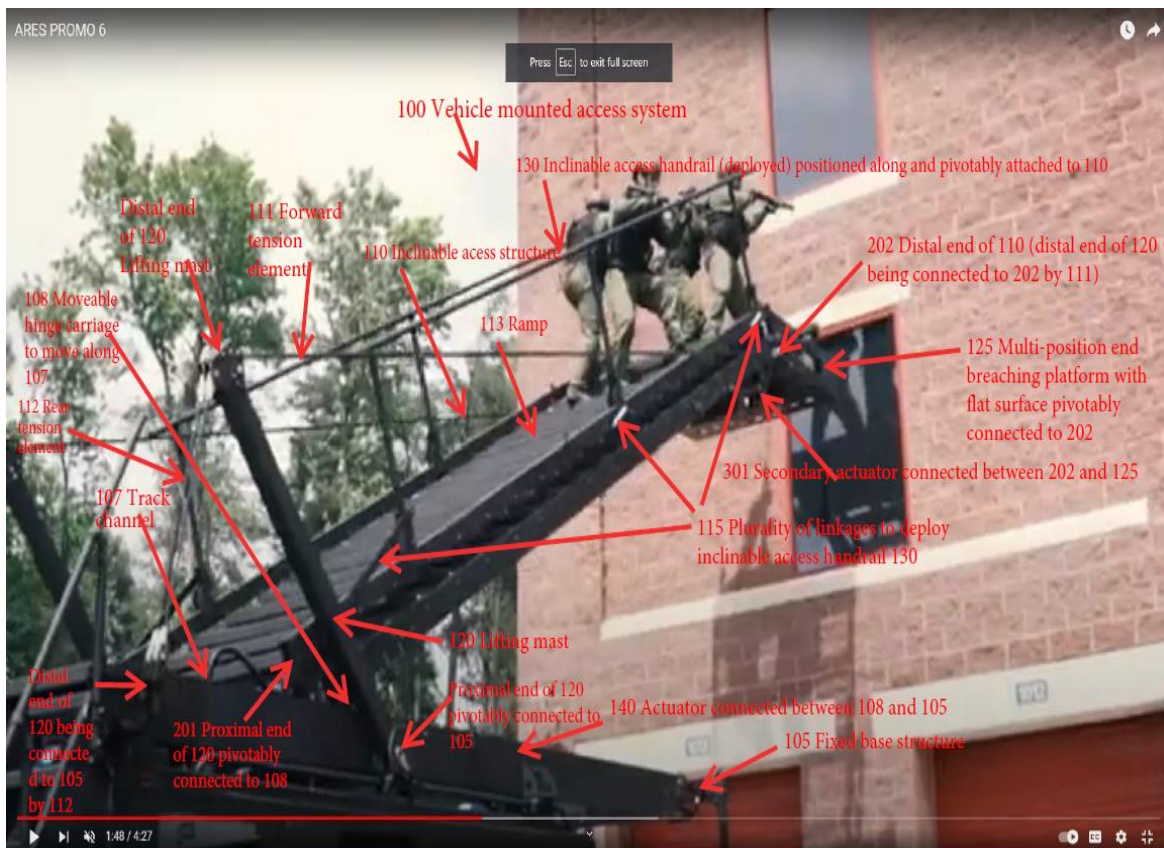
64. In addition to searching YouTube, a POSA would have been reasonably aware of websites for developers of vehicle mounted elevated systems, for example, by conducting a relevant Google search. Therefore, if a POSA was involved in researching vehicle mounted elevated systems during this time period, it would have been logical for them to search for and visit websites like MIT's to learn more about vehicle mounted elevated systems used to access elevated structures such as a building or an aircraft. Further, as discussed in paragraph 62, the YouTube link <https://www.youtube.com/watch?v=9gVnP18I39Q> was provided on the homepage of MIT's website, so in my opinion, it was readily accessible to a POSA visiting the website from at least October 22, 2017 to at least November 20, 2018. Ex. 1004, Alubbad Decl. ¶¶11-15; Exs. 1012, 1013.

65. The ARES 6 video (Ex. 1007) was accessible to the public at the Milipol 2017 trade show, since it was repeatedly played to the attendees, which numbered over 24,000, on a video monitor at MIT's Exhibit site. Ex. 1004, Alubbad Decl. ¶¶19-23; Exs. 1017 and 1018. The Milipol 2017 trade show was open to the public to attend through a simple registration process by creating an account on the Milipol website. Ex. 1004, Alubbad Decl. ¶19.

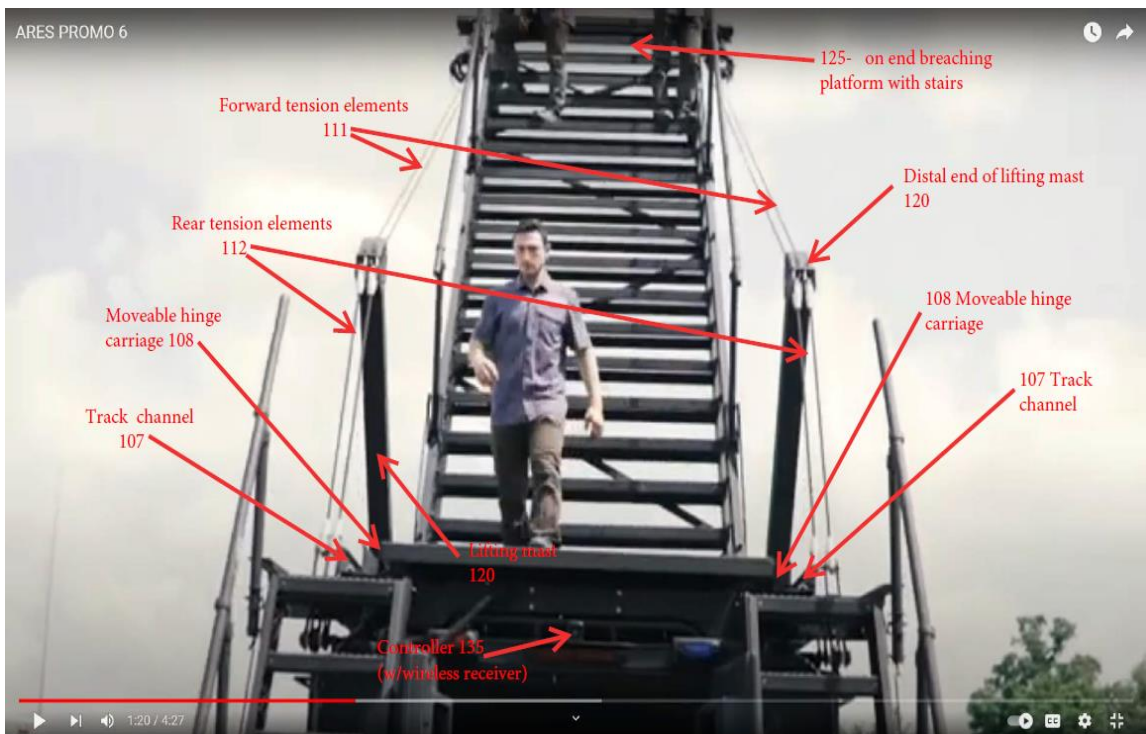


66. The URL at <https://www.youtube.com/watch?v=9gVnP18I39Q> for the ARES 6 video (Ex. 1007) was digitally distributed to potential customers via the WhatsApp app in the weeks before Milipol 2017. Ex. 1004, Alubbad Decl. ¶ 27.

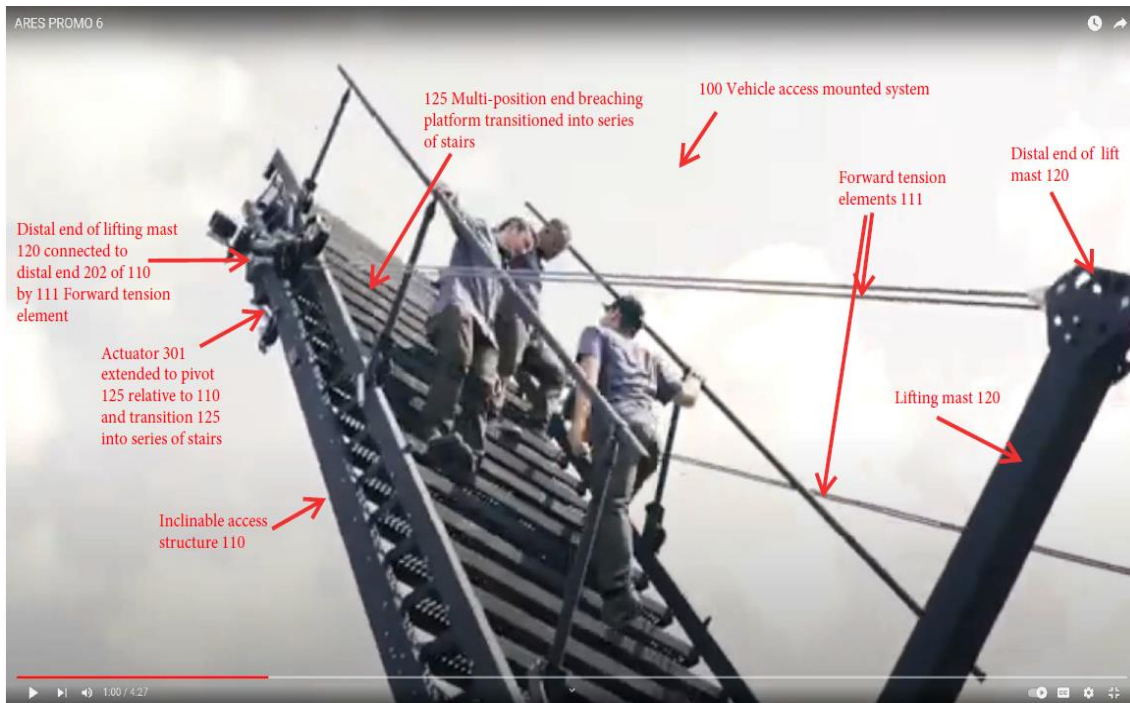
67. Exhibit 1010 is a collection of screenshots obtained from the ARES 6 video (Ex. 1007), with red annotations added. Ex. 1004, Alubbad Decl. ¶ 9. The ARES 6 video (Ex. 1007) discloses MIT's ARES mounted on a Lenco Bearcat host vehicle with the video showcasing the different features of the ARES.



Ex. 1010 at page 1.



Ex. 1010 at pages 2 and 3.



Ex. 1010 at page 4.

68. The ARES 6 video (Exs. 1007; 1010 at pages 1-3 and 8) shows the ARES mounted on a host vehicle, a fully armored Lenco Bearcat. The ARES system shows the exact same lifting apparatus for lifting an inclinable access structure (110) as provided in the '677 patent (Ex. 1001), which is easily visible by comparing Figure 1 of 'the 677 patent (Ex. 1001 at page 3) with the ARES (Ex. 1010 at page 1, annotated with corresponding reference numerals from the '677 patent added) below:

to the fixed base structure (105) by rear tension elements (112); a proximal end of the lifting mast (120) being pivotably connected to the fixed based structure (105); and an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105).

70. The '677 patent (Ex. 1001) also discloses that the actuator 140 is configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112). See Paragraph 23 above.

71. Identically, the hydraulic cylinders shown in the ARES 6 video (Exs. 1007 at 1min, 2-7secs; 1010 pages 1-4) are configured to move the moveable hinge carriages (108) to pull the inclinable access structure (110) forward thereby raising the distal end (202) of the inclinable access (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112).

72. Thus, in my Opinion, the two hydraulic cylinders (140) in the ARES (Exs. 1007 at 1min, 2-7secs; 1010 pages 1-3) are configured to deploy the ARES in the identical way as the actuators (140) are configured to deploy the inclinable access structure (110) or vehicle-mounted access system (100)



in the '677 patent (Ex. 1001).

73. This same actuator configuration and deployment is shown by comparing the position of the moveable carriage 108, the proximal and distal ends (101, 102) of the inclinable access structure (110) in the '677 patent (Ex. 1001) to the positions of the moveable carriage 108, the proximal and distal ends (101, 102) of the inclinable access structure (110) in both the stowed and deployed configurations for the ARES (Exs. 1007; Ex. 1010 at pages 1 and 8).

74. The vehicle-mounted ARES system (Exs. 1007; 1010 at pages 1-4) on the Lenco Bearcat is shown below in the stowed and deployed configuration (Ex. 1010 at pages 8 and 1). Underneath, Figs. 4 and 7 of the '677 patent are provided, which shows the vehicle-mounted access system 100 in '677 patent in the stowed and deployed configurations, respectively (Ex. 1001 at pages 6 and 9). See paragraphs 28 and 31 above.



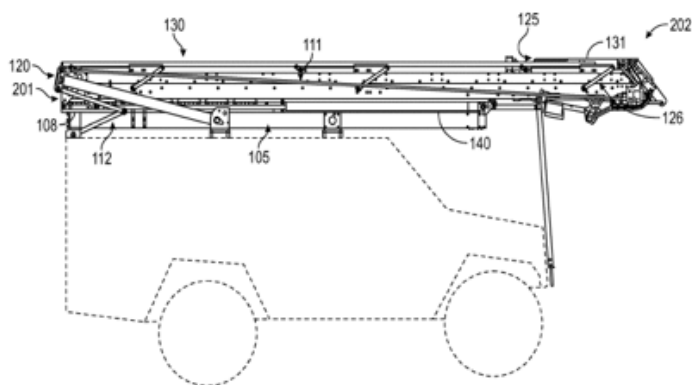
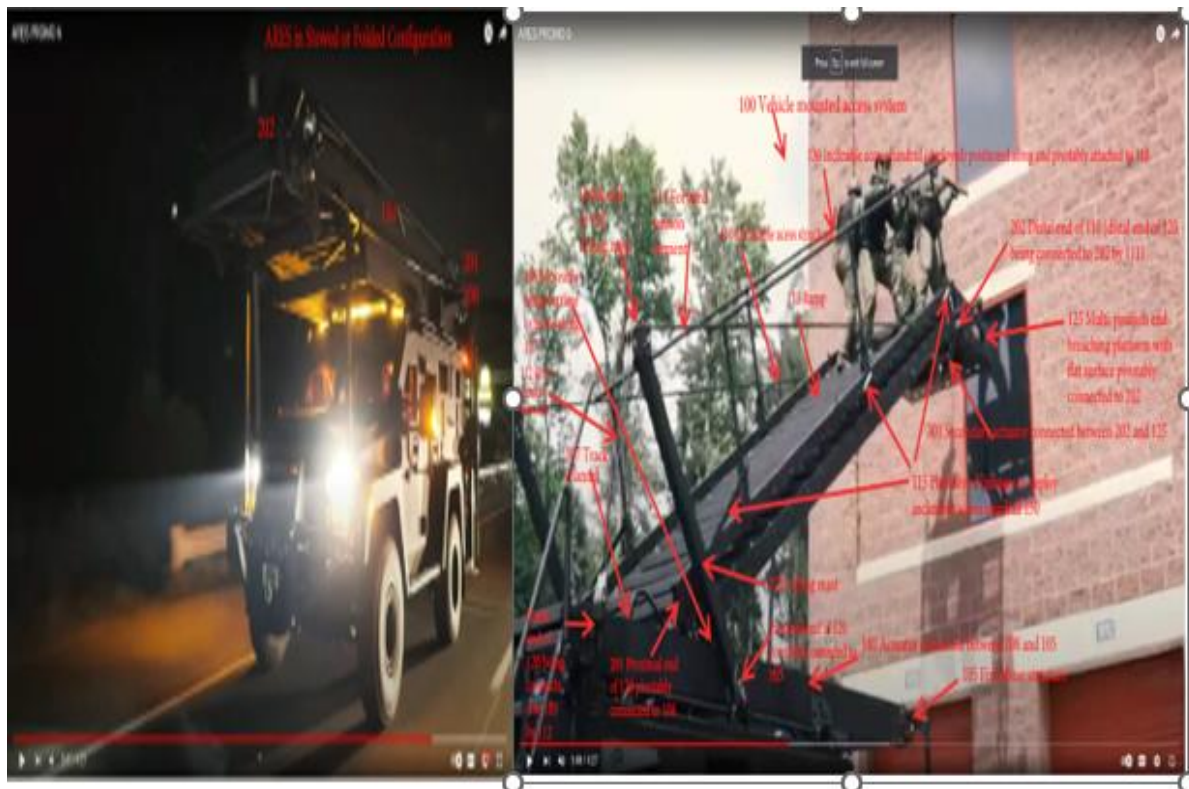


FIG. 4

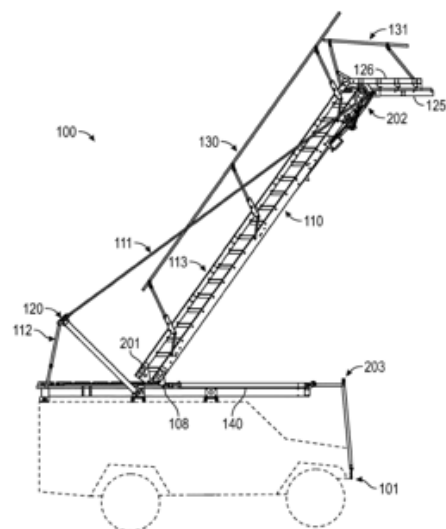


FIG. 7

Ex. 1010 at pages 8 and 1; Ex. 1001 at pages 6 and 9.

75. In the stowed position, in ARES (Exs. 1007; 1010 at page 8), the



moveable hinge carriages (108) and the proximal end (201) are provided at the rear of the host vehicle with the proximal and distal ends (201, 202) of the inclinable access structure (110) essentially flat with each other.

76. Similarly, in the stowed position in Fig. 4 of the '677 patent (Ex. 1001 at page 6), the moveable hinge carriages (108) and the proximal end (201) are provided at the rear of the host vehicle with the proximal and distal ends (201, 202) of the inclinable access structure (110) are flat with each other.

77. Transitioning from the stowed position to the deployed position, the hydraulic cylinders (140) in the ARES pull forward the moveable hinge carriages (108) along the track channels (107) toward the front of the host vehicle, Lenco Bearcat, which pulls forward the proximal end (101) of the inclinable access structure (110) and raises the distal end (202) higher than the proximal end (101) supported by the forward tension elements (111) connected to the lifting mast (120) in turn connected to the rear tension elements (112) until a desired height of the inclinable access structure (110) is reached. (Exs. 1007 at 1min, 2-7secs; 1010 at pages 1-3).

78. Similarly, transitioning from the stowed position to the deployed position in the '677 patent, the actuators (140) pull forward the moveable hinge carriages (108) along the track channels (107) toward the front of the

host vehicle, which pulls forward the proximal end (101) of the inclined access structure (110) and raises the distal end (202) higher than the proximal end (101) until a desired height of the inclined access structure (110) is reached. (Ex. 1001 at page 9).

79. Thus, the ARES 6 video (Exs. 1007 at 1min, 2-7secs; 1010 at pages 1 and 2) discloses the actuator (140) being configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112).

80. The ARES 6 video (Exs. 1007; 1010 at pages 1, 2 and 3) discloses 1[a] A vehicle-mounted access system comprising (100): a fixed base structure (105) comprising a plurality of track channels (107); and [b] a plurality of movable hinge carriages (108) respectively on and configured to move along the plurality of track channels (107).

81. The ARES 6 video (Exs. 1007; 1010 at pages 1 and 2) discloses [c] an inclinable access structure (110) having a proximal end (201) and a distal end (202), the proximal end (201) of the inclinable access structure (110) being pivotably connected to the plurality of movable hinge carriages (108).

82. The ARES 6 video (Exs. 1007; 1010 at pages 1, 2 and 4) discloses [d] a lifting mast (120) having a proximal end and a distal end, [e] the distal

end of the lifting mast (120) being connected to the distal end (202) of the inclinable access structure (110) by forward tension elements (111) and [f] and being connected to the fixed base structure (105) by rear tension elements (112).

83. The ARES 6 video (Exs. 1007; 1010 at pages 1 and 2) discloses [g] the proximal end of the lifting mast (120) being pivotably connected to the fixed base structure (105); and [h] an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105),

84. The ARES 6 video (Exs. 1007 at 1min, 2-7secs; 1010 at pages 1 and 2) discloses [i] the actuator (140) being configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112).

85. The ARES 6 video (Exs. 1007; 1010 at pages 1 and 2) discloses an inclinable access handrail (130) positioned along and pivotably attached to the inclinable access structure (110).

86. The ARES 6 video (Exs. 1007; 1010 at page 1) discloses the inclinable access handrail (130) is configured to extend into a deployed position by a plurality of linkages (115).

87. The ARES 6 video (Exs. 1007; 1010 at pages 1-4) discloses a

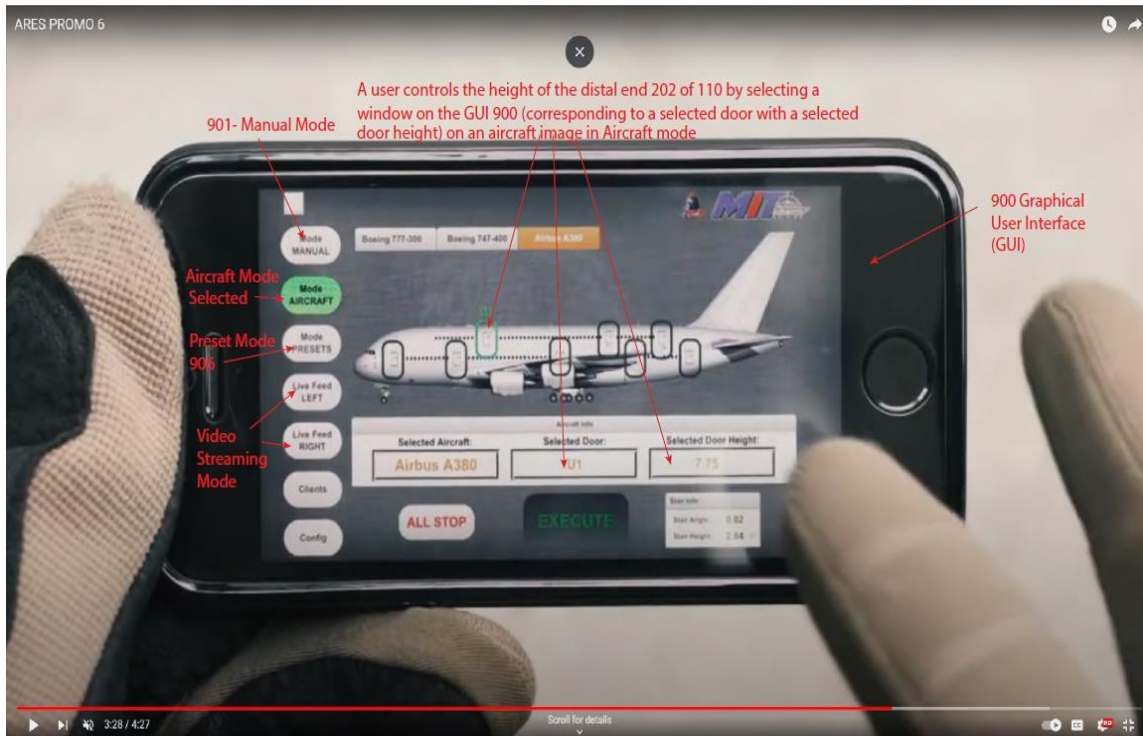
(301) are configured to extend to pivot the multi-position end breaching platform (125) relative to the inclined access structure (110) and to transition a surface of the multi-position end breaching platform (125) into a series of stairs.

90. The ARES 6 video (Exs. 1007; 1010 at page 1) discloses wherein the inclinable access structure (110) further comprises a ramp (126).

91. The ARES 6 video (Exs. 1007; 1010 at page 2) discloses wherein the inclinable access structure (110) further comprises a plurality of stairs (113) and that the plurality of stairs (113) are configured to remain passively parallel to the ground (Fig. 1).

92. The ARES 6 video (Exs. 1007 at 3min, 18-41secs; 1010 at pages 3 and 6) discloses a controller (135) configured to control movement of the actuator 140.

93. The ARES 6 video (Exs. 1007; 1010 at pages 3, 5 and 6) discloses wherein the controller (135) is operated by a touchscreen user interface (900) comprising: a manual mode (901); a preset mode (906); a video streaming mode; and an aircraft mode.



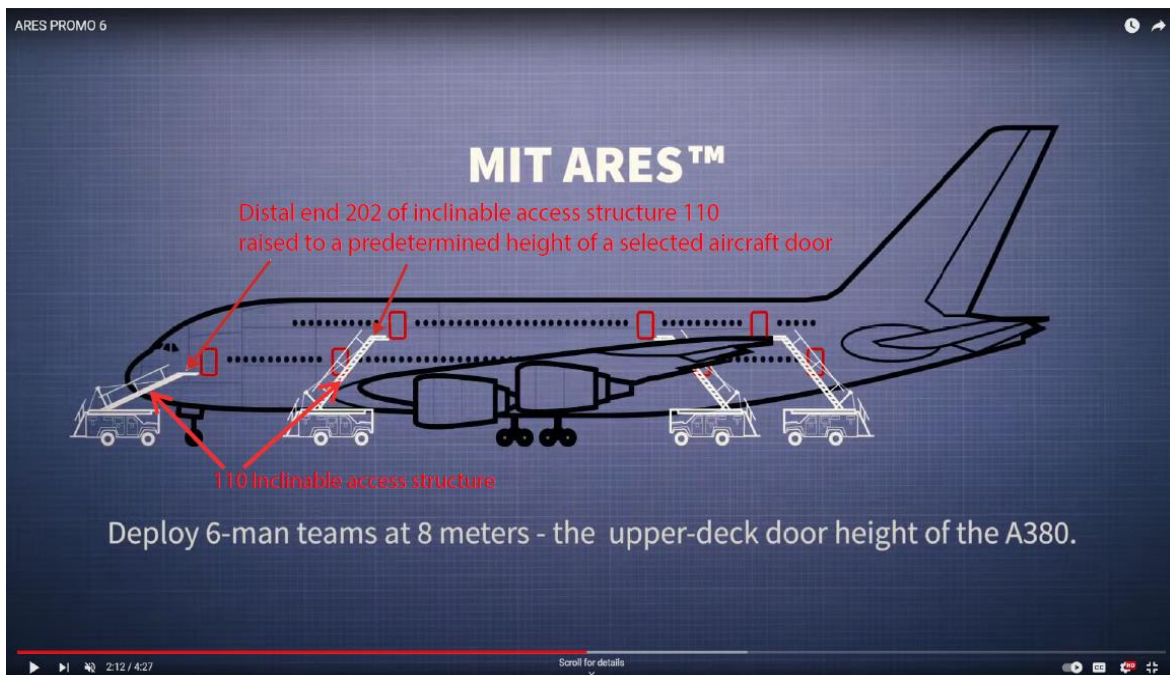
Ex. 1010 at page 6.

94. The ARES 6 video (Exs. 1107; 1010 at pages 6 and 7) discloses wherein the preset mode (906) is configured to allow a selection of pre-programmed heights of the distal end (202) of the inclinable access structure (110).

95. The ARES 6 video (Exs. 1007 at 3min, 23-30secs; 1010 at pages 3, 6 and 7) discloses wherein, in the aircraft mode, the touchscreen user interface (901) displays an aircraft, wherein, in the aircraft mode, the controller (135) is configured to allow for a selection of a pre-programmed height of the distal end (202) of the inclinable access structure (110) by selecting a window on the displayed aircraft.

96. The ARES 6 video (Exs. 1007 at 1min, 2-7secs; 1010 at pages 1 and 2) discloses the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure.

97. The ARES 6 video (Exs. 1007 at 3min, 23-30secs; 1010 at pages 1, 2, 3, 6 and 7) discloses by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface (901), an image of an aircraft; transmitting, by the touchscreen user interface (901), a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller (125) of the vehicle-mounted access system; and raising, by the controller (135), a distal end (202) of an inclinable access structure (110) connected to the vehicle-mounted access system to the preprogrammed height.



Ex. 1010 at page 7.

C. ARES Elevated Tactical System Video (Ex. 1019, “The Elevated Ares video”)

98. Exhibit 1019, the *ARES Elevated Tactics System* video (“The Elevated ARES video”), is a promotional video of the new generation ARES product that was published and continuously accessible to the public at the URL <https://www.youtube.com/watch?v=oXIgPlKBAQ4> from November 13, 2018 to the present. Ex. 1004, Alubbad Decl. ¶¶ 28-31; Exs. 1022 and 1023. The Elevated ARES video (Ex. 1019) merged footage from the ARES 6 video (Ex. 1007) with new footage of the ARES system being used to enter an upper deck fuselage door of an A380 aircraft. Ex. 1004, Alubbad Decl. ¶28. This URL for the ARES Elevated video (Ex. 1019) was digitally distributed to potential customers via the WhatsApp app in the days immediately after it was posted on YouTube on November 13, 2018. Ex. 1004, Alubbad Decl. ¶33.

99. As discussed above in Paragraph 63, as a POSA, I search for and view videos on YouTube and other platforms for information regarding my client’s products. I have found YouTube to be a great resource to learn quickly about different structural products or devices that my clients may have some interest in. Accordingly, in my opinion, a POSA would regularly include a YouTube search, among other searches, to research for on-line video content such as the Elevated ARES video (Ex. 1019) and would have understood it as

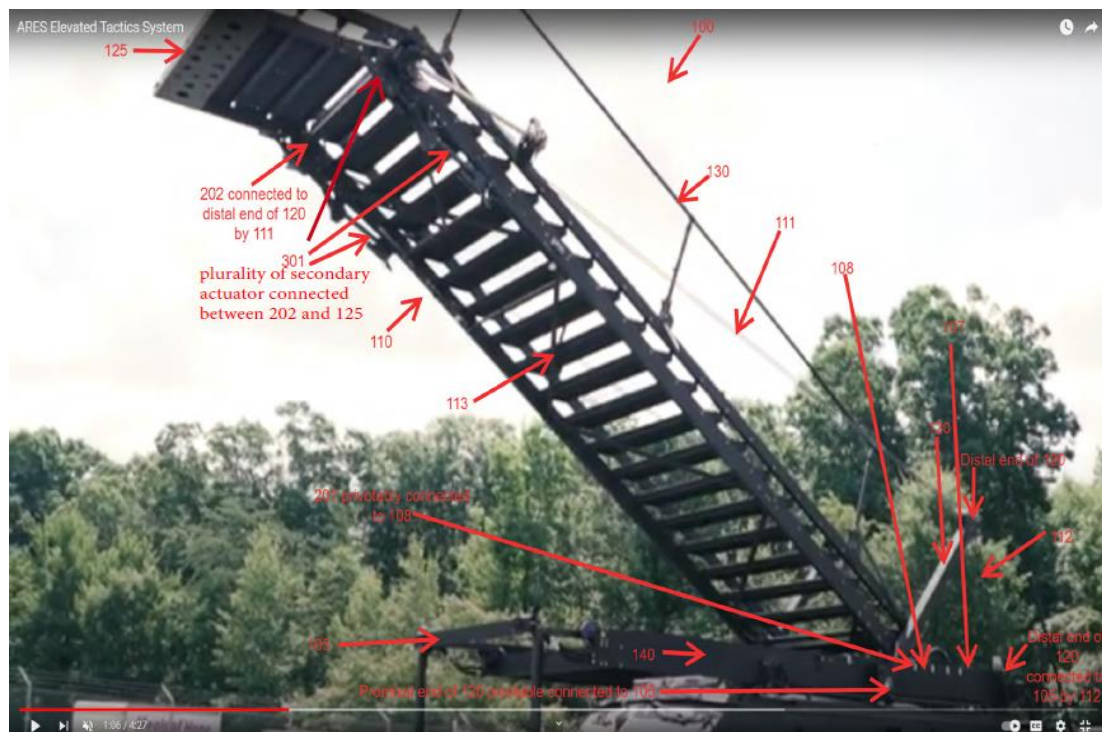


relevant to the design of a vehicle mounted elevated system as of November 13, 2018. In my opinion, Exhibit 1022 illustrates how readily accessible the Elevated ARES video (Ex. 1019) is to a POSA performing a relevant search on the YouTube search engine since November 13, 2018.

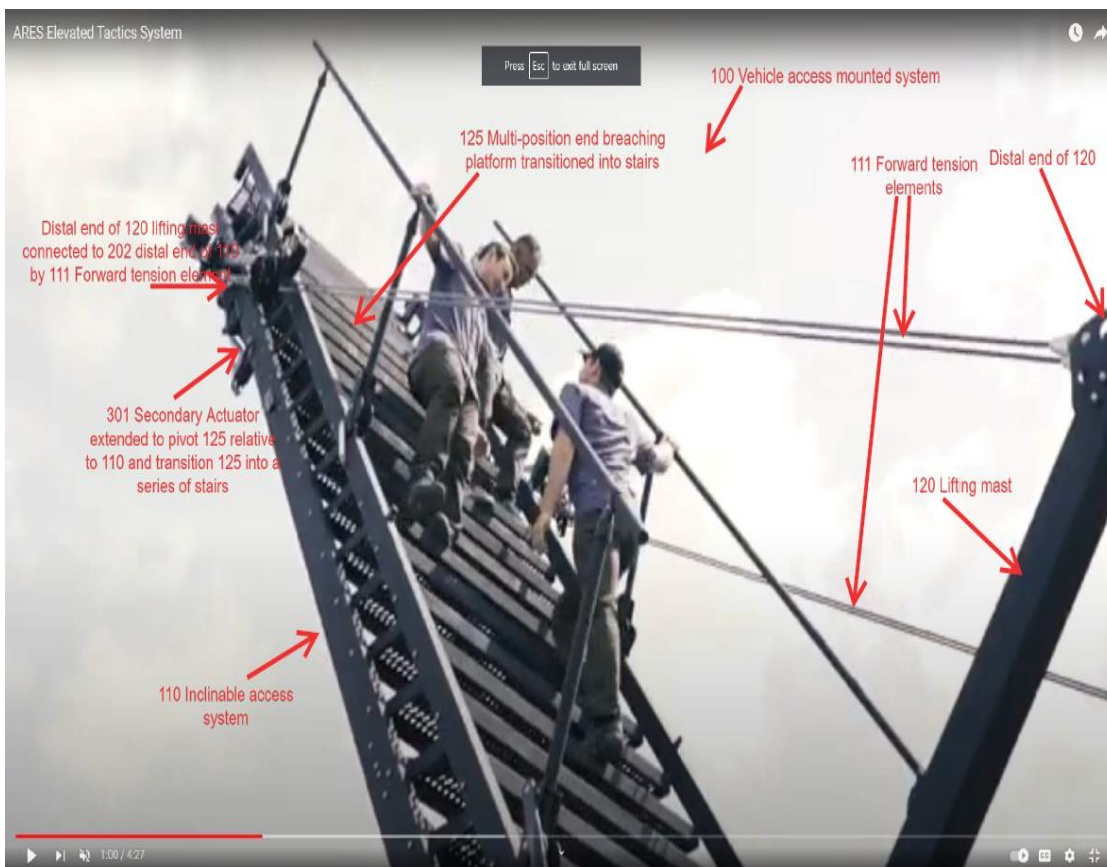
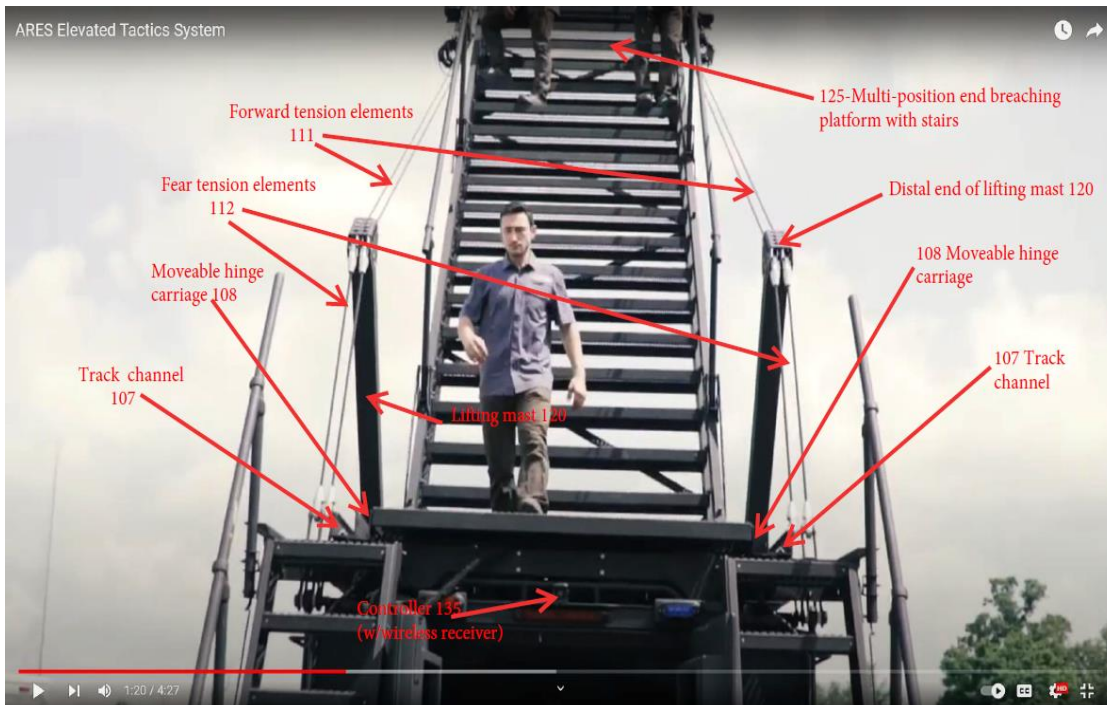
100. Ex. 1024 is a collection of screenshots from frames of the Elevated ARES video (Ex. 1019), with red annotations added. Ex. 1004, Alubbad Decl. ¶ 32.

101. The screenshots shown in pages 1-4, 6 and 7 of Ex. 1024 taken from the Elevated ARES video (Ex. 1019) are identical or almost identical to the screenshots shown in pages 1-4, 6 and 8 of Ex. 1010 taken from the ARES 6 video, respectively, since the Elevated ARES video (Ex. 1019) merged footage from the ARES 6 video (Ex. 1007) with new footage of the ARES system being used to enter an upper deck fuselage door of an A380 aircraft. See paragraph 98 above. Therefore, my opinions expressed in paragraphs 68-87 and 89-97 above are equally applicable to the disclosure of the Elevated ARES video (Ex. 1019) regarding the claim elements of the '677 patent (Ex. 1001).

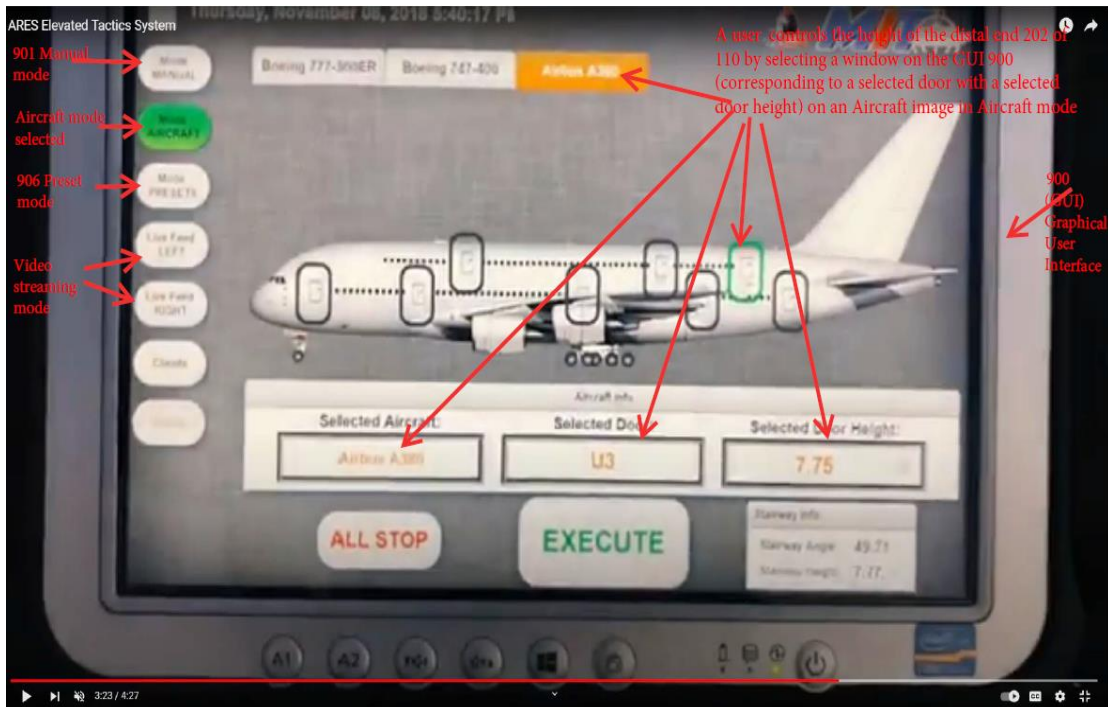




Ex. 1024 at pages 1 and 2.

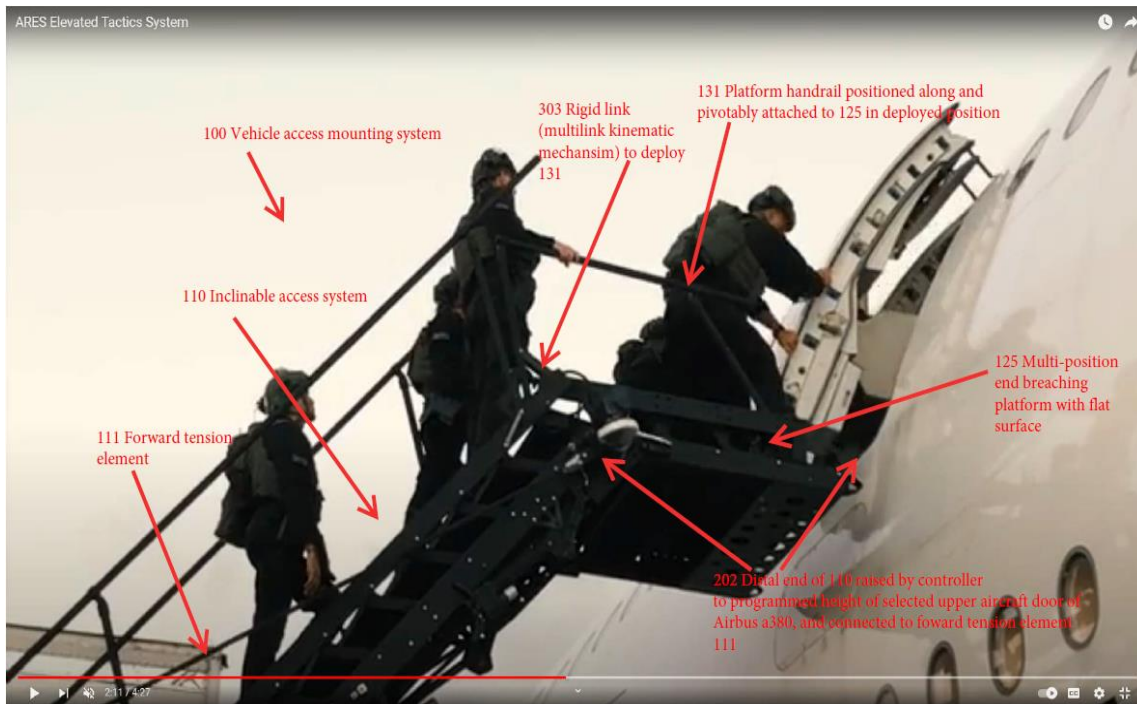


Ex. 1024 at pages 3 and 4.



Ex. 1024 at pages 6 and 7.

102. The Elevated ARES video (Exs. 1019; 1024 at page 5) discloses a platform handrail (131) positioned along and pivotably attached to the multi-position end breaching platform (125) and the platform handrail (131) is configured to extend into a deployed position by an action of a multilink kinematic mechanism (303).



Ex. 1024 at page 5.

D. MIT's ARES Marketing Brochure (Ex. 1014, "The Oct. 2017 brochure")

103. Exhibit 1014, the MIT's ARES Marketing Brochure ("The Oct. 2017 brochure") is a promotional brochure of the new generation ARES product that was created on October 31, 2017. Ex. 1004, Alubbad Decl. ¶¶16, 17, Ex. 1015. Dozens of hard copies of the Oct. 2017 brochure were

A handwritten signature in black ink, appearing to be "S.A.", located at the bottom right of the page.

distributed to attendees at MIT's exhibit site at Milipol 2017. Ex. 1004, Alubbad Decl. ¶24.

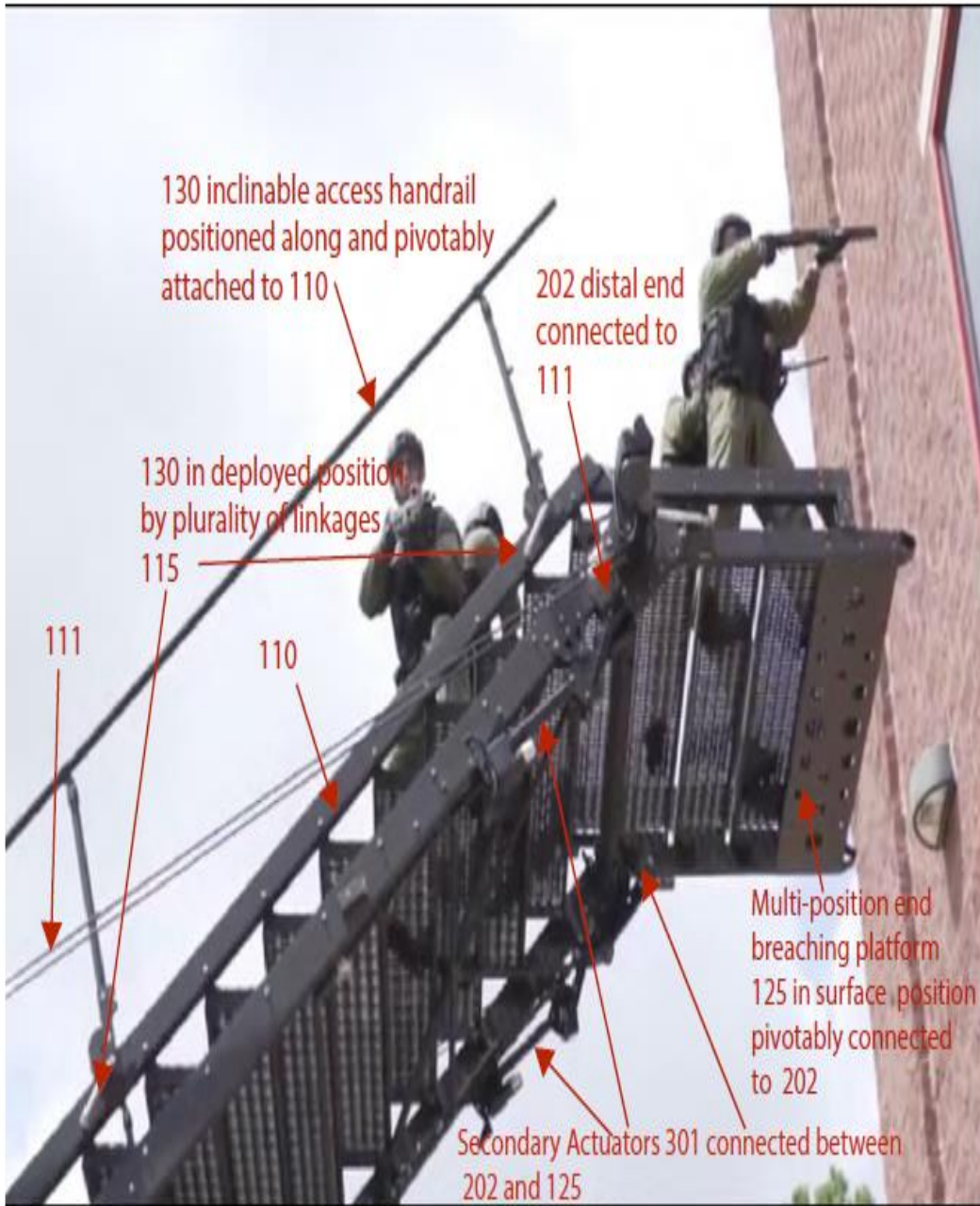
104. Copies of the Oct. 2017 brochure were digitally distributed to potential customers via the WhatsApp app in the weeks before and after Milipol 2017. Ex. 1004, Alubbad Decl. ¶¶25, 26. A copy of the Oct. 2017 brochure was emailed to a potential customer on November 8, 2017. Ex. 1004, Alubbad Decl. ¶18; Ex. 1016.

105. Figures 2-7 on pages 7-12 of the Oct. 2017 brochure (Ex. 1014) are substantially similar to the screenshots taken from the ARES 6 video provided on pages 2, 3, 5, 7, 6 and 8 of Ex. 1010, respectively, since the Oct. 2017 brochure (Ex. 1014) was created from the same July video shoot of the new generation ARES product as the ARES 6 video (Ex. 1010). Ex. 1004, Alubbad Decl. ¶¶4, 6, 16.

106. Therefore, my opinions expressed in paragraphs 68-89 and 91-97 above are equally applicable to the disclosure of the Oct. 2017 brochure (Ex. 1014) regarding the claim elements of the '677 patent (Ex. 1001).



Brochure - Fig. 1



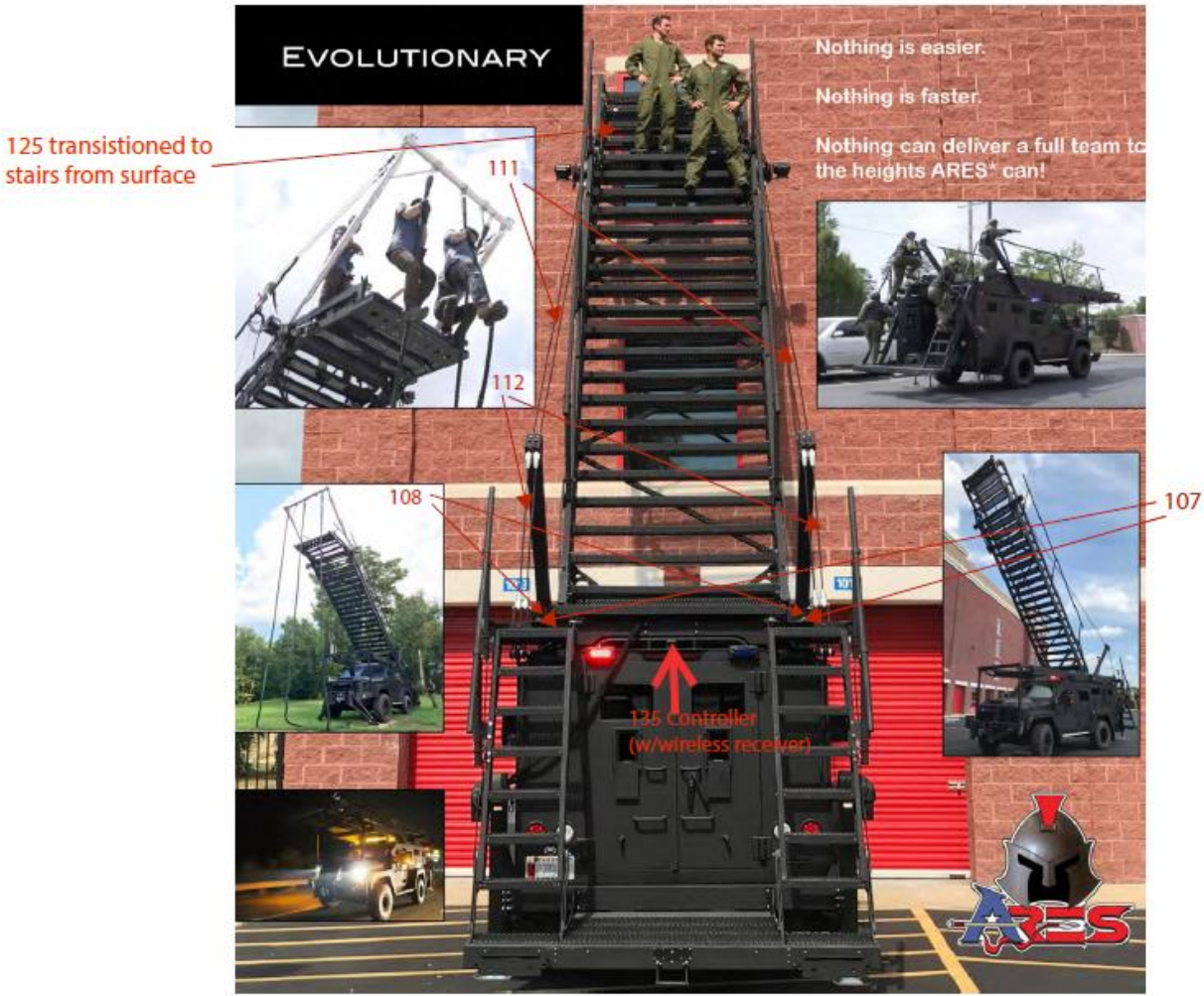
Ex. 1014 at page 6.

Brochure - Fig. 2



Ex. 1014 at page 7.

Brochure - Fig. 3



Ex. 1014 at page 8.

Brochure - Fig. 4

Touchscreen graphical user interface 900

Rigid link 303 (multilink kinematic mechanism) to deploy platform handrail 131

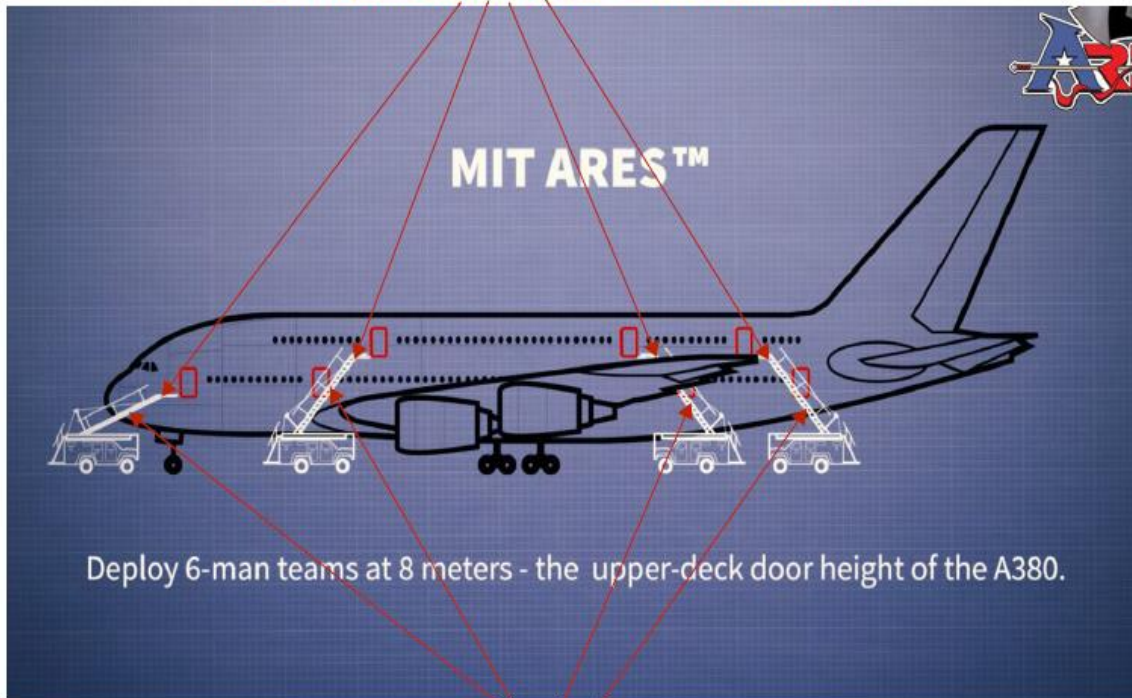


Platform handrail 131 (deployed) positioned along and pivotably attached to the multi-position end breaching platform 125

Multi-position end breaching platform 125

Brochure - Fig. 5

Distal ends 202 of inclinable access structures 110 raised to a predetermined height of selected aircraft doors



Inclinable access structure 110

Ex. 1014 at pages 9 and 10.

A handwritten signature in black ink, located at the bottom right of the page.

Brochure - Fig. 6

A user controls the height of the distal end 202 of 110 by selecting a window on the GUI (900) corresponding to a selected door with a selected door height) on an aircraft image in Aircraft Mode



Brochure - Fig. 7



Ex. 1014 at pages 11 and 12.

VI. OPINIONS ON GROUNDS FOR INTER PARTES REVIEW

A. Disclosure of Claim Limitations in the Prior Art

107. As summarized in the Table below, claims 1-17 of the ‘677 patent are disclosed by the ARES 6 video.

The ‘677 Patent Claims	The ARES 6 video
Claim 1. [a] A vehicle-mounted access system comprising: a fixed base structure comprising a plurality of track channels;	Claim 1. [a] A vehicle-mounted access system comprising (100): a fixed base structure (105) comprising a plurality of track channels (107); See Ex. 1007; Ex. 1010 at Pages 1, 2 and 3
[b] a plurality of movable hinge carriages respectively on and configured to move along the plurality of track channels;	[b] a plurality of movable hinge carriages (108) respectively on and configured to move along the plurality of track channels (107); See Ex. 1007; Ex. 1010 at Pages 1, 2 and 3
[c] an inclinable access structure having a proximal end and a distal end, the proximal end of the inclinable access structure being pivotably connected to the plurality of movable hinge carriages;	[c] an inclinable access structure (110) having a proximal end (201) and a distal end (202), the proximal end (201) of the inclinable access structure (110) being pivotably connected to the plurality of movable hinge carriages (108); See Ex. 1007; Ex. 1010 at Pages 1 and 2
[d] a lifting mast having a proximal end and a distal end,	[d] a lifting mast (120) having a proximal end and a distal end, See Ex. 1007; Ex. 1010 at Pages 1, 2 and 4



The '677 Patent Claims	The ARES 6 video
[e] the distal end of the lifting mast being connected to the distal end of the inclinable access structure by forward tension elements	[e] the distal end of the lifting mast (120) being connected to the distal end (202) of the inclinable access structure (110) by forward tension elements (111) See Ex. 1007; Ex. 1010 at Pages 1, 2 and 4
[f] and being connected to the fixed base structure by rear tension elements,	[f] and being connected to the fixed base structure (105) by rear tension elements (112), See Ex. 1007; Ex. 1010 at Pages 1 and 2
[g] the proximal end of the lifting mast being pivotably connected to the fixed base structure; and	[g] the proximal end of the lifting mast (120) being pivotably connected to the fixed base structure (105); See Ex. 1007; Ex. 1010 at Pages 1 and 2
[h] an actuator connected between the movable hinge carriages and the fixed base structure,	[h] an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105), See Ex. 1007; Ex. 1010 at Pages 1 and 2
[i] the actuator being configured to move the movable hinge carriages to raise the distal end of the inclinable access structure via the forward tension elements, the lifting mast, and the rear tension elements.	[i] the actuator (140) being configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112). See Ex. 1007 at 1min, 2-7secs; Ex. 1010 at Pages 1 and 2



The ‘677 Patent Claims	The ARES 6 video
Claim 2. The vehicle-mounted access system of claim 1, further comprising an inclinable access handrail positioned along to and pivotably attached to the inclinable access structure.	an inclinable access handrail (130) positioned along to and pivotably attached to the inclinable access structure (110). See Ex. 1007; Ex. 1010 at Pages 1 and 2
Claim 3. The vehicle-mounted access system of claim 2, wherein the inclinable access handrail is configured to extend into a deployed position by a plurality of linkages.	the inclinable access handrail (130) is configured to extend into a deployed position by a plurality of linkages (115). See Ex. 1007; Ex. 1010 at Page 1
Claim 4. The vehicle-mounted access system of claim 1, further comprising a multi- position end breaching platform that is pivotably connected to the distal end of the inclinable access structure.	a multi-position end breaching platform (125) that is pivotably connected to the distal end (202) of the inclinable access structure (110). See Ex. 1007; Ex. 1010 at Pages 1-4
Claim 5. The vehicle-mounted access system of claim 4, further comprising a platform handrail positioned along and pivotably attached to the multi-position end breaching platform.	a platform handrail (131) positioned along and pivotably attached to the multi-position end breaching platform (125). See Ex. 1007; Ex. 1010 at Page 5
Claim 6. The vehicle-mounted access system of claim 5, wherein the platform handrail is configured to extend into a deployed position by an action of a multilink kinematic mechanism.	the platform handrail (131) is configured to extend into a deployed position by an action of a multilink kinematic mechanism (303). See Ex. 1007; Ex. 1010 at Page 5



The ‘677 Patent Claims	The ARES 6 video
Claim 7. The vehicle-mounted access system of claim 4, further comprising a plurality of secondary actuators connected between the distal end of the inclinable access structure and the multi-position end breaching platform.	a plurality of secondary actuators (301) connected between the distal end (202) of the inclinable access structure (110) and the multi-position end breaching platform (125). See Ex. 1007; Ex. 1010 at Pages 1, 2 and 4
Claim 8. The vehicle-mounted access system of claim 7, wherein the secondary actuators are configured to extend to pivot the multi-position end breaching platform relative to the inclined access structure and to transition a surface of the multi-position end breaching platform into a series of stairs.	wherein the secondary actuators (301) are configured to extend to pivot the multi-position end breaching platform (125) relative to the inclined access structure (110) and to transition a surface of the multi-position end breaching platform (125) into a series of stairs. See Ex. 1007 at 1min, 25-29 and 53-55secs; Ex. 1010 at Pages 1, 2 and 4
Claim 9. The vehicle-mounted access system of claim 1, wherein the inclinable access structure further comprises a ramp.	wherein the inclinable access structure (110) further comprises a ramp (126). See Ex. 1007; Ex. 1010 at Page 1
Claim 10. The vehicle-mounted access system of claim 1, wherein the inclinable access structure further comprises a plurality of stairs.	wherein the inclinable access structure (110) further comprises a plurality of stairs (113, Fig. 1). See Ex. 1007; Ex. 1010 at Page 2
Claim 11. The vehicle-mounted access system of claim 10, wherein the plurality of stairs are configured to remain passively parallel to the ground.	wherein the plurality of stairs (113) are configured to remain passively parallel to the ground (Fig. 1). See Ex. 1007; Ex. 1010 at Page 2



The ‘677 Patent Claims	The ARES 6 video
Claim 12. The vehicle-mounted access system of claim 1, further comprising a controller configured to control movement of the actuator.	a controller (135) configured to control movement of the actuator (140). See Ex. 1007 at 3min, 18-41secs; Ex. 1010 at Pages 3 and 6
Claim 13. The vehicle-mounted access system of claim 12, wherein the controller is operated by a touchscreen user interface comprising: a manual mode; a preset mode; a video streaming mode; and an aircraft mode.	wherein the controller (135) is operated by a touchscreen user interface (900) comprising: a manual mode (901); a preset mode (906); a video streaming mode; and an aircraft mode. See Ex. 1007 at 3min, 18-41secs; Ex. 1010 at Pages 3, 5 and 6
Claim 14. The vehicle-mounted access system of claim 13, wherein the preset mode is configured to allow a selection of pre-programmed heights of the distal end of the inclinable access structure.	wherein the preset mode (906) is configured to allow a selection of pre-programmed heights of the distal end (202) of the inclinable access structure (110). See Ex. 1007; Ex. 1010 at Pages 6 and 7
Claim 15. The vehicle-mounted access system of claim 13, wherein, in the aircraft mode, the touchscreen user interface displays an aircraft, wherein, in the aircraft mode, the controller is configured to allow for a selection of a pre-programmed height of the distal end of the inclinable access structure by selecting a window on the displayed aircraft.	wherein, in the aircraft mode, the touchscreen user interface (900) displays an aircraft, wherein, in the aircraft mode, the controller (135) is configured to allow for a selection of a pre-programmed height of the distal end (202) of the inclinable access structure (110) by selecting a window on the displayed aircraft. See Ex. 1007 at 3 min, 23-30secs; Ex. 1010 at Pages 3, 6 and 7



The '677 Patent Claims	The ARES 6 video
Claim 16. The vehicle-mounted access system of claim 1, wherein the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure.	the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure. See Ex. 1007 at 1min, 2-7secs; Ex. 1010 at Pages 1 and 2
Claim 17. A method for deploying the vehicle-mounted access system according to claim 1 by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface, an image of an aircraft; transmitting, by the touchscreen user interface, a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller of the vehicle-mounted access system; and raising, by the controller, a distal end of an inclinable access structure connected to the vehicle-mounted access system to the preprogrammed height.	by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface (900), an image of an aircraft; transmitting, by the touchscreen user interface (900), a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller (135) of the vehicle-mounted access system; and raising, by the controller (135), a distal end (202) of an inclinable access structure (110) connected to the vehicle-mounted access system to the preprogrammed height. See Ex. 1007 at 3min, 23-30secs; Ex. 1010 at Pages 1, 2, 3, 6 and 7

108. As summarized in the Table below, claims 1-17 are disclosed by the Elevated ARES video.



The '677 Patent Claims	The Elevated ARES video
Claim 1. [a] A vehicle-mounted access system comprising: a fixed base structure comprising a plurality of track channels;	Claim 1. [a] A vehicle-mounted access system comprising (100): a fixed base structure (105) comprising a plurality of track channels (107); See Ex. 1019; Ex. 1024 at Pages 1, 2 and 3
[b] a plurality of movable hinge carriages respectively on and configured to move along the plurality of track channels;	[b] a plurality of movable hinge carriages (108) respectively on and configured to move along the plurality of track channels (107); See Ex. 1019; Ex. 1024 at Pages 1, 2 and 3
[c] an inclinable access structure having a proximal end and a distal end, the proximal end of the inclinable access structure being pivotably connected to the plurality of movable hinge carriages;	[c] an inclinable access structure (110) having a proximal end (201) and a distal end (202), the proximal end (201) of the inclinable access structure (110) being pivotably connected to the plurality of movable hinge carriages (108); See Ex. 1019; Ex. 1024 at Pages 1 and 2
[d] a lifting mast having a proximal end and a distal end,	[d] a lifting mast (120) having a proximal end and a distal end, See Ex. 1019; Ex. 1024 at Pages 1, 2 and 4
[e] the distal end of the lifting mast being connected to the distal end of the inclinable access structure by forward tension elements	[e] the distal end of the lifting mast (120) being connected to the distal end (202) of the inclinable access structure (110) by forward tension elements (111) See Ex. 1019; Ex. 1024 at Pages 1, 2 and 4
[f] and being connected to the fixed base structure by rear tension elements,	[f] and being connected to the fixed base structure (105) by rear tension elements (112), See Ex. 1019; Ex. 1024 at Pages 1 and 2



The '677 Patent Claims	The Elevated ARES video
[g] the proximal end of the lifting mast being pivotably connected to the fixed base structure; and	[g] the proximal end of the lifting mast (120) being pivotably connected to the fixed base structure (105); See Ex. 1019; Ex. 1024 at Pages 1 and 2
[h] an actuator connected between the movable hinge carriages and the fixed base structure,	[h] an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105), See Ex. 1019; Ex. 1024 at Pages 1 and 2
[i] the actuator being configured to move the movable hinge carriages to raise the distal end of the inclinable access structure via the forward tension elements, the lifting mast, and the rear tension elements.	[i] the actuator (140) being configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112). See Ex. 1019 at 1min, 2-7secs; Ex. 1024 at Pages 1 and 2
Claim 2. The vehicle-mounted access system of claim 1, further comprising an inclinable access handrail positioned along to and pivotably attached to the inclinable access structure.	an inclinable access handrail (130) positioned along to and pivotably attached to the inclinable access structure (110). See Ex. 1019; Ex. 1024 at Pages 1 and 2
Claim 3. The vehicle-mounted access system of claim 2, wherein the inclinable access handrail is configured to extend into a deployed position by a plurality of linkages.	the inclinable access handrail (130) is configured to extend into a deployed position by a plurality of linkages (115). See Ex. 1019; Ex. 1024 at Page 1



The '677 Patent Claims	The Elevated ARES video
Claim 4. The vehicle-mounted access system of claim 1, further comprising a multi-position end breaching platform that is pivotably connected to the distal end of the inclinable access structure.	a multi-position end breaching platform (125) that is pivotably connected to the distal end (202) of the inclinable access structure (110). See Ex. 1019; Ex. 1024 at Pages 1-4
Claim 5. The vehicle-mounted access system of claim 4, further comprising a platform handrail positioned along and pivotably attached to the multi-position end breaching platform.	a platform handrail (131) positioned along and pivotably attached to the multi-position end breaching platform (125). See Ex. 1019; Ex. 1024 at Page 5
Claim 6. The vehicle-mounted access system of claim 5, wherein the platform handrail is configured to extend into a deployed position by an action of a multilink kinematic mechanism.	the platform handrail (131) is configured to extend into a deployed position by an action of a multilink kinematic mechanism (303). See Ex. 1019; Ex. 1024 at Page 5
Claim 7. The vehicle-mounted access system of claim 4, further comprising a plurality of secondary actuators connected between the distal end of the inclinable access structure and the multi-position end breaching platform.	a plurality of secondary actuators (301) connected between the distal end (202) of the inclinable access structure (110) and the multi-position end breaching platform (125). See Ex. 1019; Ex. 1024 at Pages 1, 2 and 4



The '677 Patent Claims	The Elevated ARES video
Claim 8. The vehicle-mounted access system of claim 7, wherein the secondary actuators are configured to extend to pivot the multi-position end breaching platform relative to the inclined access structure and to transition a surface of the multi-position end breaching platform into a series of stairs.	wherein the secondary actuators (301) are configured to extend to pivot the multi-position end breaching platform (125) relative to the inclined access structure (110) and to transition a surface of the multi-position end breaching platform (125) into a series of stairs See Ex. 1019 at 1min, 23-25secs; Ex. 1024 at Pages 1, 2 and 4
Claim 9. The vehicle-mounted access system of claim 1, wherein the inclinable access structure further comprises a ramp.	wherein the inclinable access structure (110) further comprises a ramp (126). See Ex. 1019; Ex. 1024 at Page 1
Claim 10. The vehicle-mounted access system of claim 1, wherein the inclinable access structure further comprises a plurality of stairs.	wherein the inclinable access structure (110) further comprises a plurality of stairs (113, Fig. 1). See Ex. 1019; Ex. 1010 at Page 2
Claim 11. The vehicle-mounted access system of claim 10, wherein the plurality of stairs are configured to remain passively parallel to the ground.	wherein the plurality of stairs (113) are configured to remain passively parallel to the ground (Fig. 1). See Ex. 1019; Ex. 1010 at Page 2



The '677 Patent Claims	The Elevated ARES video
Claim 12. The vehicle-mounted access system of claim 1, further comprising a controller configured to control movement of the actuator.	a controller (135) configured to control movement of the actuator (140). See Ex. 1019 at 3min, 18-41secs; Ex. 1024 at Pages 3 and 6
Claim 13. The vehicle-mounted access system of claim 12, wherein the controller is operated by a touchscreen user interface comprising: a manual mode; a preset mode; a video streaming mode; and an aircraft mode.	wherein the controller (135) is operated by a touchscreen user interface (900) comprising: a manual mode (901); a preset mode (906); a video streaming mode; and an aircraft mode. See Ex. 1019 at 3min, 18-41secs; Ex. 1024 at Pages 3 and 6
Claim 14. The vehicle-mounted access system of claim 13, wherein the preset mode is configured to allow a selection of pre-programmed heights of the distal end of the inclinable access structure.	wherein the preset mode (906) is configured to allow a selection of pre-programmed heights of the distal end (202) of the inclinable access structure (110). See Ex. 1019; Ex. 1024 at Page 6
Claim 15. The vehicle-mounted access system of claim 13, wherein, in the aircraft mode, the touchscreen user interface displays an aircraft, wherein, in the aircraft mode, the controller is configured to allow for a selection of a pre-programmed height of the distal end of the inclinable access structure by selecting a window on the displayed aircraft.	wherein, in the aircraft mode, the touchscreen user interface (900) displays an aircraft, wherein, in the aircraft mode, the controller (135) is configured to allow for a selection of a pre-programmed height of the distal end (202) of the inclinable access structure (110) by selecting a window on the displayed aircraft. See Ex. 1019 at 3min, 23-30secs; Ex. 1024 at Pages 3, 5 and 6



The '677 Patent Claims	The Elevated ARES video
Claim 16. The vehicle-mounted access system of claim 1, wherein the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure.	the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure. See Ex. 1019 at 1min, 2-7secs; Ex. 1024 at Pages 1 and 2
Claim 17. A method for deploying the vehicle-mounted access system according to claim 1 by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface, an image of an aircraft; transmitting, by the touchscreen user interface, a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller of the vehicle-mounted access system; and raising, by the controller, a distal end of an inclinable access structure connected to the vehicle-mounted access system to the preprogrammed height.	by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface (900), an image of an aircraft; transmitting, by the touchscreen user interface (900), a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller (135) of the vehicle-mounted access system; and raising, by the controller (135), a distal end (202) of an inclinable access structure (110) connected to the vehicle-mounted access system to the preprogrammed height. Ex. 1019 at 3min, 23-25secs; Ex. 1024 at Pages 1, 2, 3, 5 and 6

109. As summarized in the Table below, the Oct. 2017 Brochure discloses the features of claims 1-8 and 10-17.



The '677 Patent Claims	The Oct. 2017 Brochure
Claim 1. [a] A vehicle-mounted access system comprising: a fixed base structure comprising a plurality of track channels;	Claim 1. [a] A vehicle-mounted access system comprising (100): a fixed base structure (105) comprising a plurality of track channels (107); Ex. 1014 at Pages 7 and 8
[b] a plurality of movable hinge carriages respectively on and configured to move along the plurality of track channels;	[b] a plurality of movable hinge carriages (108) respectively on and configured to move along the plurality of track channels (107); Ex. 1014 at Pages 7 and 8
[c] an inclinable access structure having a proximal end and a distal end, the proximal end of the inclinable access structure being pivotably connected to the plurality of movable hinge carriages;	[c] an inclinable access structure (110) having a proximal end (201) and a distal end (202), the proximal end (201) of the inclinable access structure (110) being pivotably connected to the plurality of movable hinge carriages (108); Ex. 1014 at Pages 7 and 8
[d] a lifting mast having a proximal end and a distal end,	[d] a lifting mast (120) having a proximal end and a distal end, Ex. 1014 at Pages 7 and 8
[e] the distal end of the lifting mast being connected to the distal end of the inclinable access structure by forward tension elements	[e] the distal end of the lifting mast (120) being connected to the distal end (202) of the inclinable access structure (110) by forward tension elements (111) Ex. 1014 at Pages 6, 7 and 8
[f] and being connected to the fixed base structure by rear tension elements,	[f] and being connected to the fixed base structure (105) by rear tension elements (112), Ex. 1014 at Pages 7 and 8



The '677 Patent Claims	The Oct. 2017 Brochure
[g] the proximal end of the lifting mast being pivotably connected to the fixed base structure; and	[g] the proximal end of the lifting mast (120) being pivotably connected to the fixed base structure (105); Ex. 1014 at Pages 7 and 8
[h] an actuator connected between the movable hinge carriages and the fixed base structure,	[h] an actuator (140) connected between the movable hinge carriages (108) and the fixed base structure (105), Ex. 1014 at Pages 7 and 8
[i] the actuator being configured to move the movable hinge carriages to raise the distal end of the inclinable access structure via the forward tension elements, the lifting mast, and the rear tension elements.	[i] the actuator (140) being configured to move the movable hinge carriages (108) to raise the distal end (202) of the inclinable access structure (110) via the forward tension elements (111), the lifting mast (120), and the rear tension elements (112). Ex. 1014 at Pages 7 and 8
Claim 2. The vehicle-mounted access system of claim 1, further comprising an inclinable access handrail positioned along to and pivotably attached to the inclinable access structure.	an inclinable access handrail (130) positioned along to and pivotably attached to the inclinable access structure (110). Ex. 1014 at Pages 6 and 7
Claim 3. The vehicle-mounted access system of claim 2, wherein the inclinable access handrail is configured to extend into a deployed position by a plurality of linkages.	the inclinable access handrail (130) is configured to extend into a deployed position by a plurality of linkages (115). Ex. 1014 at Page 6



The '677 Patent Claims	The Oct. 2017 Brochure
Claim 4. The vehicle-mounted access system of claim 1, further comprising a multi- position end breaching platform that is pivotably connected to the distal end of the inclinable access structure.	a multi- position end breaching platform (125) that is pivotably connected to the distal end (202) of the inclinable access structure (110). Ex. 1014 at Pages 6, 7 and 8
Claim 5. The vehicle-mounted access system of claim 4, further comprising a platform handrail positioned along and pivotably attached to the multi-position end breaching platform.	a platform handrail (131) positioned along and pivotably attached to the multi-position end breaching platform (125). Ex. 1014 at Page 9
Claim 6. The vehicle-mounted access system of claim 5, wherein the platform handrail is configured to extend into a deployed position by an action of a multilink kinematic mechanism.	the platform handrail (131) is configured to extend into a deployed position by an action of a multilink kinematic mechanism (303). Ex. 1014 at Page 9
Claim 7. The vehicle-mounted access system of claim 4, further comprising a plurality of secondary actuators connected between the distal end of the inclinable access structure and the multi-position end breaching platform.	a plurality of secondary actuators (301) connected between the distal end (202) of the inclinable access structure (110) and the multi-position end breaching platform (125). Ex. 1014 at Page 6



The '677 Patent Claims	The Oct. 2017 Brochure
Claim 8. The vehicle-mounted access system of claim 7, wherein the secondary actuators are configured to extend to pivot the multi-position end breaching platform relative to the inclined access structure and to transition a surface of the multi-position end breaching platform into a series of stairs.	wherein the secondary actuators (301) are configured to extend to pivot the multi-position end breaching platform (125) relative to the inclined access structure (110) and to transition a surface of the multi-position end breaching platform (125) into a series of stairs (see Fig. 8). Ex. 1014 at Page 6
Claim 10. The vehicle-mounted access system of claim 1, wherein the inclinable access structure further comprises a plurality of stairs.	wherein the inclinable access structure (110) further comprises a plurality of stairs (126, Fig. 1). Ex. 1014 at Pages 6, 7 and 8
Claim 11. The vehicle-mounted access system of claim 10, wherein the plurality of stairs are configured to remain passively parallel to the ground.	wherein the plurality of stairs (113) are configured to remain passively parallel to the ground (Fig. 1). Ex. 1014 at Pages 6, 7 and 8
Claim 12. The vehicle-mounted access system of claim 1, further comprising a controller configured to control movement of the actuator.	a controller (125) configured to control movement of the actuator (140). Ex. 1014 at Pages 8, 9 and 11
Claim 13. The vehicle-mounted access system of claim 12, wherein the controller is operated by a touchscreen user interface comprising: a manual mode; a preset mode; a video streaming mode; and an aircraft mode.	wherein the controller (135) is operated by a touchscreen user interface (900) comprising: a manual mode (901); a preset mode (906); a video streaming mode; and an aircraft mode Ex. 1014 at Pages 9 and 11



The '677 Patent Claims	The Oct. 2017 Brochure
Claim 14. The vehicle-mounted access system of claim 13, wherein the preset mode is configured to allow a selection of pre-programmed heights of the distal end of the inclinable access structure.	wherein the preset mode (906) is configured to allow a selection of pre-programmed heights of the distal end (202) of the inclinable access structure (110), (see Fig. 9). Ex. 1014 at Pages 10 and 11
Claim 15. The vehicle-mounted access system of claim 13, wherein, in the aircraft mode, the touchscreen user interface displays an aircraft, wherein, in the aircraft mode, the controller is configured to allow for a selection of a pre-programmed height of the distal end of the inclinable access structure by selecting a window on the displayed aircraft.	wherein, in the aircraft mode, the touchscreen user interface (900) displays an aircraft, wherein, in the aircraft mode, the controller (135) is configured to allow for a selection of a pre-programmed height of the distal end (202) of the inclinable access structure (110) by selecting a window on the displayed aircraft (see Fig. 10). Ex. 1014 at Pages 10 and 11
Claim 16. The vehicle-mounted access system of claim 1, wherein the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure.	the actuator is configured to pull the movable hinge carriages toward the actuator to raise the distal end of the inclinable access structure. Ex. 1014 at Pages 7 and 8
Claim 17. A method for deploying the vehicle-mounted access system according to claim 1 by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface, an image of an aircraft; transmitting, by the touchscreen user interface, a preprogrammed height selected by a	by using a touchscreen user interface, the method comprising: displaying, by the touchscreen user interface (900), an image of an aircraft; transmitting, by the touchscreen user interface (900), a preprogrammed height selected by a user by selecting a window on the image of the aircraft to a controller (135) of the vehicle-mounted access system; and raising, by the controller



user by selecting a window on the image of the aircraft to a controller of the vehicle-mounted access system; and raising, by the controller, a distal end of an inclinable access structure connected to the vehicle-mounted access system to the preprogrammed height.	(135), a distal end (202) of an inclinable access structure (110) connected to the vehicle-mounted access system to the preprogrammed height. Ex. 1014 at Pages 6, 7, 8, 10 and 11
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B. Ground 1: Anticipated over The ARES 6 video

110. As discussed in Paragraph 62, the ARES 6 video was published and continuously accessible to the public since October 17, 2017, which predates the earliest possible effective filing date of November 18, 2018 for the ‘677 patent.

111. My opinions in this declaration concerning this Ground 1 address what would be know and understood by POSA as of November 20, 2018.

112. As shown in Paragraphs 68-97 and 107, the ARES 6 video discloses all limitations of claims 1-17 of the ‘677 patent.

C. Ground 2: Anticipated over The Elevated ARES video

113. As discussed in Paragraph 98, the Elevated ARES 6 video was published and continuously accessible to the public since November 13, 2018, which predates the earliest possible effective filing date of November 18, 2018 for the ‘677 patent.

114. My opinions in this declaration concerning this Ground 2 address



what would be know and understood by POSA as of November 20, 2018.

115. As shown in Paragraphs 100-102 and 108, the Elevated ARES video discloses all limitations of claims 1-17 of the '677 patent.

D. Ground 3: Anticipated over The Oct. 2017 brochure.

116. As discussed above in Paragraphs 103 and 104, the Oct. 2017 brochure was published and accessible to the public since November 8, 2017, which predates the earliest possible effective filing date of November 18, 2018 for the '677 patent.

117. My opinions in this declaration concerning this Ground 3 address what would be know and understood by POSA as of November 20, 2018.

118. As shown in Paragraphs 105, 106 and 109, the Oct. 2017 brochure discloses all limitations of claims 1-8 and 10-17 of the '677 patent.

VII. CONCLUSION

All statements made herein of my own knowledge are true; all statements made on information and belief are believed to be true; and these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment or both under 18 U.S.C. § 1001.

Executed this 7th day of August 2023

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Matthew Hayduk', is written over a horizontal line.

Matthew Hayduk

APPENDIX A

Materials Reviewed

Exhibit 1001	U.S. Patent No. 11,174,677 (“the 677 patent”)
Exhibit 1002	File history of the ‘677 patent
Exhibit 1003	U.S. Provisional Application No. 62/770,022 claiming benefit for the ‘677 patent
Exhibit 1004	Declaration of Fahmi Alubbad (“Alubbad”)
Exhibit 1006	MIT’s <i>Technical Offer</i> of an Articulating Rapid Entry System (“ARES”) to Saudi Arabia dated June 12, 2017, with red annotations added.
Exhibit 1007	<i>ARES PROMO 6</i> video (“the ARES 6 video”) posted on YouTube on October 11, 2017
Exhibit 1008	Screenshot of search of YouTube that yields the ARES 6 video (Ex. 1007)
Exhibit 1010	Screenshots taken from the ARES 6 video (Ex. 1007) with red annotations added
Exhibit 1014	MIT’s ARES Marketing Brochure created on October 31, 2017 (“the Oct. 2017 brochure”) with red annotations
Exhibit 1019	<i>ARES Elevated Tactics System</i> (“the Elevated ARES video”) posted on YouTube on November 13, 2018
Exhibit 1022	Screenshot of search of YouTube that yields the Elevated ARES video (Ex. 1019)
Exhibit 1024	Screenshots taken from the Elevated ARES video (Ex. 1019) with red annotations added

