includes adjusting the timing of shot timings to include adjusted (e.g., dithered) by, for example, a random amount of time. Moreover, the present techniques include determination of the adjusted shot timings so that they do not conflict with one another. In this manner, sequential shots that have been adjusted will have their adjustments meet threshold requirements to preclude interference therebetween.

[0009a] According to a first aspect of the present disclosure, there is provided a method, including: firing a first source array at a first time of a first shot timing distribution comprising first time values according to a firing schedule; and firing a second source array at a second time of a second shot timing distribution comprising second time values subsequent to firing the first source array and prior to another firing of the first source array according to the firing schedule, wherein at least a portion of the second shot timing distribution overlaps with the first shot timing distribution or the at least a portion of the second shot timing distribution is separated from the first shot timing distribution by less than a predetermined period of time, wherein the first time and the second time of the firing schedule are separated by at least the predetermined period of time.

[0009b] According to a second aspect of the present disclosure, there is provided a tangible and non-transitory machine readable medium, including instructions to: generate a first shot timing distribution comprising first time values to fire a first source array; generate second shot timing distribution comprising second time values to fire a second source array, wherein at least a portion of the second shot timing distribution overlaps with the first shot timing distribution or the at least a portion of the second shot timing distribution is separated from the first shot timing distribution by less than a predetermined period of time; generate a time adjustment series comprising a plurality of pairs of timing values selected from each of the first time values and the second time values; compare each pair of timing values of the plurality of pairs of timing values against a threshold value; and generate a finalized time adjustment series comprising selected pairs of timing values of the plurality of pairs of timing values that exceed the threshold value.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Various aspects of this disclosure may be better understood upon reading the following detailed description and upon reference to the drawings in which:

[0011] FIG. 1 illustrates a flow chart of various processes that may be performed based on analysis of seismic data acquired via a seismic survey system, in accordance with embodiments presented herein;

[0012] FIG. 2 illustrates a marine survey system in a marine environment, in accordance with embodiments presented herein;

[0013] FIG. 3 illustrates a second marine survey system in a marine environment, in accordance with embodiments presented herein;

[0014] FIG. 4 illustrates a computing system that may perform operations described herein based on data acquired via the marine survey systems of FIG. 2 and/or the survey system of FIG. 3, in accordance with embodiments presented herein;

[0015] FIG. 5 illustrates a first technique of seismic acquisition in a marine environment utilizing the marine survey system of FIG. 2 or the second marine survey system of FIG. 3, in accordance with embodiments presented herein;

[0016] FIG. 6 illustrates a second technique of seismic acquisition in a marine environment utilizing the marine survey system of FIG. 2 or the second marine survey system of FIG. 3, in accordance with embodiments presented herein;

[0017] FIG. 7 illustrates a third technique of seismic acquisition in a marine environment utilizing the marine survey system of FIG. 2 or the second marine survey system of FIG. 3, in accordance with embodiments presented herein;

[0018] FIG. 8 illustrates a timing diagram that represents times at which a series of shots may be taken in conjunction with the seismic acquisition of FIG. 6 or FIG. 7, in accordance with embodiments presented herein;

[0019] FIG. 9 illustrates a shot diagram that includes a first embodiment of shot timing distributions, in accordance with embodiments presented herein;