CLAIMS

1. A method, comprising:

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.

2. The method of claim 1, comprising firing the first source array at a third time of the first shot timing distribution comprising the first time values subsequent to firing the second source array at the second time according to the firing schedule, wherein the third time and the second time of the firing schedule are separated by at least the predetermined period of time.

3. The method of claim 1, comprising firing a third source array at a third time of a third shot timing distribution comprising third time values subsequent to firing the second source array and prior to the another firing of the first source array according to the firing schedule, wherein at least a portion of the third shot timing distribution overlaps with the second shot timing distribution or the at least a portion of the third shot timing distribution is separated from the second shot timing distribution by less than the predetermined period of time, wherein the third time and the second time of the firing schedule are separated by at least the predetermined period of time.

4. The method of claim 3, wherein the first time, the second time, and the third time of the firing schedule comprise a constrained vector of timing values.

5. The method of claim 3, wherein the first shot timing distribution, the second shot timing distribution, and the third shot timing distribution share the same probability distribution function.

6. The method of claim 3, wherein the first shot timing distribution, the second shot timing distribution, and the third shot timing distribution share different probability distribution functions.

7. The method of claim 1, wherein the firing schedule is loaded into a controller of a vessel towing the first source array and the second source array prior to movement of the vessel along a shot line of a seismic acquisition.

8. The method of claim 1, wherein the firing schedule is calculated in conjunction with movement of a vessel along a shot line of a seismic acquisition.

9. The method of claim 8, comprising towing the first source array and the second source array behind the vessel.

10. The method of claim 1, comprising:

positioning the first source array at a fixed first distance from a vessel towing the first source array and the second source array; and

positioning the second source array at a fixed second distance from the vessel, wherein the fixed second distance differs from the fixed first distance.

11. The method of claim 10, comprising:

utilizing a tether having a first length to position the first source array at the fixed first distance from the vessel; and

utilizing a second tether having a second length to position the second source array at the fixed second distance from the vessel.

12. The method of claim 10, comprising altering a length of a tether coupled to the second source array to position the second source array at the fixed second distance from the vessel.

13. The method of claim 10, comprising altering a length of a tether coupled to a third source array to position the third source array at a fixed third distance from the vessel.

14. The method of claim 10, comprising:

selecting a first group of seismic sources within the first source array that have a first offset distance from a center of the first source array along the shot line direction; and

selecting a second group of seismic sources within the second source array that have a second offset distance from a center of the second source array along the shot line direction.

15. The method of claim 14, wherein the second offset distance from the center of the second source array is different from the first offset distance from the center of the first source array.

16. The method of claim 1, comprising:

disposing the first source array comprising a plurality of seismic sources over a seismic survey region prior to firing the first source array; and

disposing the second source array comprising a second plurality of seismic sources over the seismic survey region prior to firing the second source array.

17. A tangible and non-transitory machine readable medium, comprising 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.

18. The tangible and non-transitory machine readable medium of claim 17, comprising instructions to delete any pairs of timing values of the plurality of pairs of timing values that are less than the threshold value or are less than or equal to the threshold value.

19. The tangible and non-transitory machine readable medium of claim 17, comprising instructions to modify any pairs of timing values of the plurality of pairs of timing values that are less than the threshold value or are less than or equal to the threshold value by adjusting at least one of a respective first time value of the first time values and a respective second time value of the second time values of each of the any pairs of timing values of the plurality of pairs of timing values to generate modified pairs of timing values.

20. The tangible and non-transitory machine readable medium of claim 19, comprising instructions to:

compare the modified pairs of timing values against the threshold value; and

generate the finalized time adjustment series as additionally comprising selected modified pairs of timing values of the modified pairs of timing values that exceed the threshold value.

21. The tangible and non-transitory machine readable medium of claim 17, comprising instructions to transmit the finalized time adjustment series as a firing schedule of a vessel corresponding to the first source array and the second source array.