

Loran-C receivers: Financial considerations of conversion

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Another title in the series
Marine business
management

Loran is an electronic system that helps boaters determine their position at sea. Shore-based stations transmit radio signals that are "read" by onboard receivers.

The Loran-A system has been in use since World War II. By 1981, all the Loran-A systems will have been replaced by the Loran-C system. This conversion will make most Loran-A receivers obsolete—because few of them can process the Loran-C signal.

To continue using Loran for navigation, you will have to buy one or more of the different types of Loran-C receivers available. These Loran-C receivers currently range in price from \$1,000 to \$6,000.

The impending obsolescence of your Loran-A receiver and the purchase and installation of a Loran-C receiver or receivers involve several financial considerations. This bulletin discusses such tax considerations as the tax writeoff of Loran-A receivers, depreciation on Loran-C receivers, and investment credit. Also included is a discussion of financing alternatives and considerations in purchasing Loran-C receivers.



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Sea Grant advisory bulletins, trade association publications, and IRS guides offer helpful information on Loran-C tax questions.

Tax considerations

Tax treatment of Loran-A receivers.

At the time you purchased your Loran-A receiver, you either wrote off the expense during the year in which you purchased it, or you capitalized it and have been writing off the cost by claiming a depreciation deduction during the life of the receiver. You may also have purchased your Loran-A receiver as part of a used boat or a new, ready-to-use boat without listing and depreciating the Loran-A receiver separately.

If you wrote off the cost of your Loran-A receiver when you purchased it, you can take no further tax deduction when you junk the receiver.

If you capitalized and depreciated the Loran-A receiver—and if at the time you junk it, you still have some depreciation to claim on it—you can claim all the remaining depreciation during the tax year in which you junk it. However, *you must junk it* (if you are borrowing parts to repair other electronic equipment, you technically have not junked the Loran-A receiver).

Finally, if you purchased your Loran-A receiver as part of a boat and did not depreciate the receiver separately, you must continue depreciating it as part of the boat, even if you junk the receiver. You can claim a deduction for the receiver only if you can establish an adjusted basis separate from the boat at the time of junking. (See *The basics of depreciation*, "For further information.")

If you sell your Loran-A receiver instead of junking it, you will fit one of three possible tax situations:

Situation 1: Sell for less than the adjusted basis (remaining depreciable basis). The proceeds from the sale are tax-free, and the adjusted basis in excess of the sale price is a deductible loss.

Example:

Original cost—Loran-A receiver	\$1,200
Less: depreciation allowed (or allowable)	500
Adjusted basis (remaining depreciable basis)	700
Gross sales price	600
Less: adjusted basis	700
Gain (or loss)	(\$ 100)

Situation 2: Sell for more than the adjusted basis (remaining depreciable basis). The proceeds from the sale in excess of the adjusted basis are taxed as ordinary income. The amount of the proceeds equal to the adjusted basis is nontaxable.

Example:

Original cost—Loran-A receiver	\$1,200
Less: depreciation allowed (or allowable)	500
Adjusted basis (remaining depreciable basis)	700
Selling price	850
Less: adjusted basis	700
Gain (or loss)	\$ 150

Situation 3: Sell for more than original cost (although this would be rare for a Loran receiver, it *could* happen).

Proceeds from the sale of a Loran-A receiver in excess of the original cost are taxed as a capital gain. Proceeds in excess of the adjusted basis up to the original cost are taxed as ordinary income. The amount equal to the adjusted basis is nontaxable.

Example:

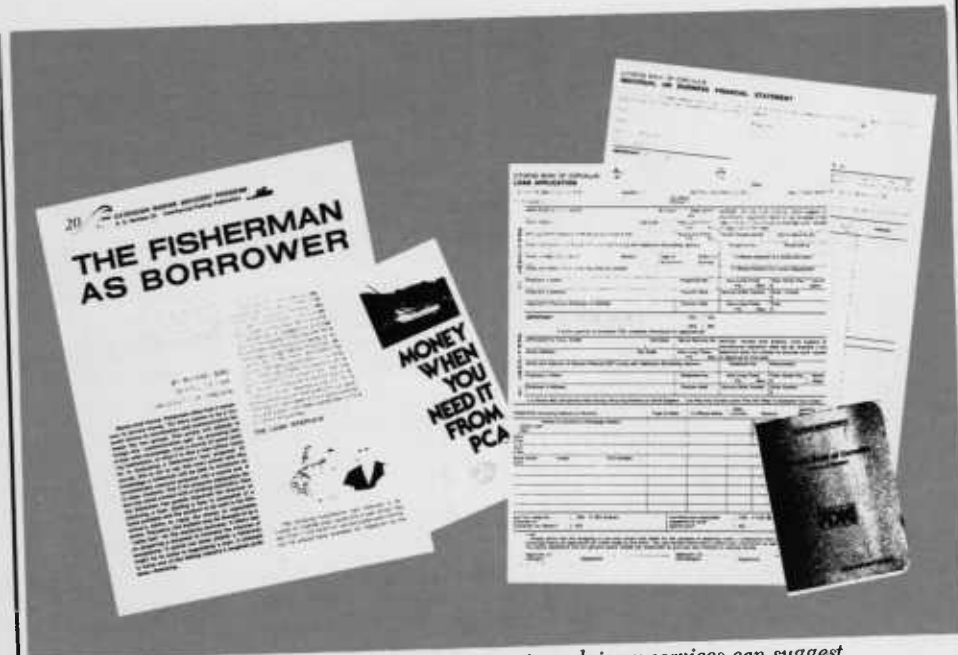
Original cost—Loran-A receiver	\$1,200
Less: depreciation allowed (or allowable)	500
Adjusted basis (remaining depreciable basis)	700
Selling price	1,320
Less: adjusted basis	700
Gain (or loss)	\$ 620
Less: depreciation allowed (ordinary income)	500
Capital gain (if held more than 1 year)	120

Tax treatment of Loran-C receivers.

You must decide how to depreciate your new Loran-C receiver. There are several important considerations in making this decision:

1. What is the expected useful life of the new receiver?
2. Will taxable incomes be higher during the early life or during the later life of the receiver?
3. Do you plan to sell the Loran-C receiver in a few years and replace it with an improved receiver?
4. Do you want to take full advantage of investment credit?

According to Internal Revenue Service (IRS) guidelines, you must depreciate a depreciable asset used in your business over its expected useful life. IRS determines useful life according to your particular operating conditions, experience, and replacement policy.



Local credit, personal savings, and Sea Grant marine advisory services can suggest possibilities for financing a new Loran-C receiver.

However, if you expect your taxable income to be high for the next several years, it may be more advantageous to use as much depreciation as possible now from the Loran-C purchase, to increase after-tax income. In this instance, a faster depreciation method may save you money.

On the other hand, you may expect taxable income to be low for the next several years, in which case a slower depreciation method may be advantageous.

The various depreciation methods are explained in the IRS Publications 334 and 595 (see "For further information").

The possible disadvantage of using a faster depreciation method is that you may sell the receiver for considerably more than its adjusted basis. This may increase your total taxable income to a higher than normal tax bracket when you sell. If your depreciation more closely matched the true decrease in resale value, you would still benefit from depreciation, and you may be able to sell the receiver tax-free.

You may also forego some investment credit if you use a shorter depreciable life. For example, if you purchase a \$3,000 Loran-C receiver and declare a 7-year or longer life, you reduce your tax liability by \$300 on the year of purchase (10 percent investment credit \times \$3,000).

However, if you declare a 5- or 6-year life, you reduce your tax liability by only \$200 in the year of purchase (10 percent investment credit \times $2/3 \times$ \$3,000).

If you declare a 3- or 4-year life, you reduce your tax liability by only \$100 (10 percent investment credit \times $1/3 \times$ \$3,000).

Finally, if you declare a depreciable life of less than 3 years, you get no investment credit.

Financing your new Loran-C receiver

To purchase a Loran-C receiver, you will need to take funds from accumulated past income, to use the proceeds of the sale of your Loran-A receiver (or other capital asset), or to borrow against future income—or to use some combination of the three. There is a cost involved in using each one of these three fund sources.

When you take funds from past or present income, you are giving up the potential earnings that income would produce if invested in a savings account, the stock market, some other business, etc.

When you borrow against future income, you will pay interest to the business or the person from whom you borrow. Sometimes it is cheaper to use your own money, and sometimes it is cheaper to borrow. The following example will illustrate this point:

Purchase and installation of Loran-C receiver	\$3,200
Sale of Loran-A receiver	500
Accumulated past income (savings)	8,000
Interest earned on above at 5.25 percent	400
Interest rate on borrowed funds 11 percent	352

Option A

Borrow	\$2,560 (80 percent of cost)
Use	500 (from sale of Loran-A receiver)
Use	140 (from savings)
	\$3,200

Annual interest cost is:	
11 percent of \$2,560	\$281.60
5.25 percent of \$500	26.25
5.25 percent of \$140	7.35
	\$315.20

Option B

Use	\$3,200 (from savings)
Annual interest cost is:	
5.25 percent of \$3,200	\$168.00

In this example, Option B results in lower interest costs than Option A. However, the \$3,200 may be providing some other valuable service as it sits in the savings account.

If you do borrow to purchase your Loran-C receiver, you have several fund sources. These include other individuals, your local bank, your credit union, a finance company, the Government, the manufacturer, the distributor, and—finally—the electronics retailer. Interest rates, service charges, and terms will vary considerably. You should always shop around for the best rates and terms.

The Production Credit Association is a credit union that became available to producers of aquatic products in the early 1970's. It lends only to members, and members are exclusively producers of agricultural or aquatic products.

Marine businesses may qualify for a loan backed by the Small Business Administration (SBA). Generally, you will have to be turned down by a commercial lending institution to qualify for SBA backing.

Loran users involved in the harvesting or processing of some seafoods can also obtain backing by the National Marine Fisheries Service (NMFS)—but this is usually for very large loans.

In obtaining a loan from any source, you should lay out on paper:

1. purchase and installation costs of the Loran-C receiver;
2. expected life of the receiver; and
3. sources of funds for repayment of principal and payment of interest, and when those funds are expected.

If you are dealing with a commercial lender or the Government, all terms will be written out. If you are borrowing from another individual, all terms and conditions *should* be written out.

For further information

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