## Transcript: Considerations for Portable Batteries

Welcome to this Alaska Land Mobile Radio training presentation: considerations for portable batteries.

Satisfactory operation of portable radios depends on the size, type and care for batteries that you use in your portable radio. The choice of batteries that are used by specific agencies can vary depending on your specific operational situation. However, a battery management program and the use of the correct power battery and charging equipment is essential for ALMR users to get maximum use and reliability from their portable radios.

There are several considerations that all of our members should take into account before purchasing radio batteries. In general, the requirements of each individual agency will dictate the type of battery that must be used. OEM or original equipment manufacturer are batteries that are made by the radio manufacturer, while aftermarket batteries refer to those that are available from secondary manufacturers.

Considerations for batteries include operating in environments that may require intrinsically safe radio equipment. This may also have a requirement for certain types or models of battery. In addition, the extreme temperatures encountered in Alaska by our Members is a significant consideration for the environment that a radio operates in. Some types of batteries are able to handle temperature extremes better than others and extreme cold, for instance, may shorten the battery life.

The length of time a battery is required to power the radio is another important consideration. Some public safety users require portable radio battery to function for an 8 or 12 hour shift, while other use cases may have a shorter duration before they're able to access a charger.

Finally, different types of batteries and different capacities of batteries have different weight and dimensions. Some batteries have a much smaller footprint and are able to provide more power than other types of batteries that may have larger dimensions or heavier weight. However, there are other trade-offs to be considered when we talk about battery types.

There are three primary battery types on the market. The first type Nicad or nickel cadmium has characteristics that may have advantages in Alaska especially talking about extreme temperatures and their ability to maintain power in extreme cold or extreme heat, disadvantages of these types of batteries are typically their dimensions. They tend to be

heavier than modern batteries and require a full discharge before recharging the battery again.

In contrast, nickel metal hydride does not require full discharge and it's suitable for some temperature variations, but it's not as good as a Nicad battcery. Nickel metal hydride batteries had generally have lower power capacity than Ni-cad.

The third type of battery is lithium ion. This type of battery we're familiar with from devices such as mobile phones and laptops. They typically have the highest energy capacity, but also the lightest and compact footprint. Therefore lithium ion battery is typically has the least amount of weight and footprint compared to the energy it's able to deliver to the radio. Do keep in mind that lithium ion batteries are less able to cope with temperature variations.

This graphic shows the available OEM batteries for a particular type of APX Motorola radio. As you can see, there are three different batteries that are featured. All three batteries are of the lithium ion. However, the main difference between the battery is the capacity rating given in milliampere hours or MAh. MAh is a measure of the battery capacity, or in other words, how much electrical charge it can deliver overtime. Generally, a larger milliamp capacity battery can provide a longer duration of power to a radio.

If your use case requires continuous operation of a portable radio over a longer shift, consider a larger capacity battery such as the 4850 milliampere. Other use cases where you may be closer to a charging station or have less duration may be able to use the smaller capacity battery. This depends on your use case, environment and other factors.

Another important consideration is the type of chargers in use for your agency. Make sure you follow the recommendations of the manufacturer to ensure that the correct battery is used for your radiance. Some batteries may be of a specific class or have certain features and may require a certain type of charger.

In general, you'll see several different type of chargers, including single Bay or one radio can be plugged in or charged at a time. Multiple Bay where you can charge multiple radios or batteries. There may also be chargers that are able to handle multiple models of batteries. For instance, if you had a Motorola APX batteries as well as Motorola XTS batteries, there may be some chargers that are able to handle both. However, in general, most chargers that are original equipment manufacturer chargers are focused on specific model. There is also specialty and conditioning chargers as well as different aftermarket chargers with different capacities. Again, make sure that you follow recommendations and check with your radio dealer on warranty coverage for using non stock battery chargers. The final consideration is the use of original batteries versus aftermarket batteries. Keep in mind that original equipment manufacturer batteries can be more expensive than similar aftermarket options, and they may have limited options as far as battery type or battery capacity.

However, OEM batteries tend to be most reliable and generally of high quality. Your radio dealer can assist you in the different options available to you for original equipment manufacturer batteries. Keep in mind that using non OEM batteries may affect warranty coverage and you should check with your dealer on this staff before committing to any purchase. Additionally, some features in the radio may require a certain type of battery or certain manufacture. For instance, some radios may not be able to provide a battery display for an aftermarket battery. Keep in mind that aftermarket batteries do not have generally minimum standards that we know of for reliability or manufacturing. Therefore, they may be more affordable from a price standpoint but they may be less available for public safety grade functions and certain use cases they may not be recommended at all.

For instance, an aftermarket battery that may have a lower capacity and may not have as quite high quality parts may not function well throughout a whole shift, or when dealing with temperature extremes that we see in Alaska.

The ALMR help desk is available to assist agencies throughout business hours and is always available for emergency support.Contact information is available on the screen.