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DISCOVERY DRILLING EQUIPMENT PROFILE

CME-75

- **General:** The backbone of our operations, the CME-75 offers a high level of rotary torque for the most challenging projects. We maintain a multitude of these, and they can be mobilized in a variety of fashions. They can be outfitted on wheeled and tracked carriers (nodwells), and as of 2015, we are capable of slinging them with larger sized helicopters (UH-1, 204, or similar aircraft).

- **Drilling Applications:** Deep augered boreholes (100'+), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, wireline coring, CME continuous, etc. Our CME-75's can accommodate essentially any tooling system we field.

- **Mobilization:** Available for emplacement on truck, nodwell, helibase for slinging operations as well as TED work. Despite its large size, it can still be shipped via aircraft. A C-130 Herc can ship a 75 mounted on a truck or nodwell in one load. We can also ship a 75 for employment on a helibase in an aircraft as small as a Casa, although it will take upwards of three flights. CME-75's are also typically our go-to platforms for offshore barge work.

CME-55

- **General:** Our 55's are similar to 75's, but come in a smaller package with less rotary torque. Although some rotary torque is sacrificed for a smaller footprint, they are still capable of completing challenging rotary work and can be employed in a variety of fashions, just like their 75 counterpart.

- **Drilling Applications:** Deep augered boreholes (100' is about as far as we push these, depending on geology), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, wireline coring, CME continuous, etc. Like our 75's, the 55's can accommodate essentially any tooling system we field.

- **Mobilization:** Like the 75, the 55 can be fielded on truck, nodwell, and helibase. It is also used when we mobilize the SLED up north. It can also be shipped with aircraft as small as a Casa. It is important to note that we also field a custom built CME-55 mounted on tracks, similar in style to a Geoprobe. The "Brown Cow", as we call it, is great for limited access work that requires more rotary torque than a Geoprobe can offer.

CME-45

- **General:** These machines have a similar rotary capacity as our Geoprobes, and have become somewhat obsolete due to this fact. Since they lack self-propulsion, it typically makes more sense to employ a Geoprobe in most scenarios. They can be employed in the same fashion as their larger counterparts (55's, 75's). They still are used for remote village work occasionally, but require on-site equipment to move them from site to site. We also have a CME-45C, which is designed for employment on a helibase, and can be slung with a helicopter as small as an ASTAR B2.

- **Drilling Applications:** Augered boreholes to moderate depths (50-75' depending on geology) casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, wireline coring, CME continuous.

- **Mobilization:** Truck, nodwell, helibase. Its small size makes it convenient for shipping in aircraft as small as a Casa in two loads, assuming there is equipment to move it at its destination.

CME-850

- **General:** The workhorse of our fleet when it comes to challenging jobs that a truck can't get to. It has rotary abilities comparable to our CME-75's, and can employ the same tools. It's main advantage over a 75 on a nodwell is that its low-center of gravity and wide track base allow it to get to places that nothing else will. It can climb hills and navigate terrain that their nodwell counterparts cannot.

- **Drilling Applications:** Deep augered boreholes (100'+), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, wireline coring, CME continuous, etc. Our CME-850's can accommodate essentially any tooling system we field.

- **Mobilization:** Requires a low-boy move for mobilization via surface. Since it is not possible to break down our 850's like our other CME drills, it can only be shipped by air in a C-130 Herc.

Mobil-B53

- **General:** This drill is mounted on a truck, and is reserved for challenging air-rotary work (ODEX, downhole hammer). Although the majority of our other drills are capable of air rotary, the B-53 excels at it due to its 12’ stroke, allowing it to run 10’ tools. This makes air work substantially faster in comparison with our drills that can only handle 5’ tools. Although we have never done so, there is potential to mount this drill on a nodwell.

- **Drilling Applications:** Air rotary (down-hole hammer, ODEX).

- **Mobilization:** Currently, this drill is only capable of truck accessible drilling projects.

Mobil-B24

- **General:** These are very light duty drills, and have substantially less rotary torque than a Geoprobe or CME-45. Their applications are limited, and the inclusion of Geoprobes into our fleet have made them somewhat obsolete. We maintain multiple B24's, one of which is on a custom built tracked unit, making it similar to a Geoprobe, although much lighter.

- **Drilling Applications:** Very light duty auger work (typically 25' or less, but it will not tolerate challenging geology), downhole hammer, penetrometer, direct push applications.

- **Mobilization:** Due to their small size, these can go just about anywhere. Normally, we move our tracked B24 with a trailer or by smaller aircraft. We have also successfully employed our non-tracked B24's on a small, floating water platform (i.e. "The Yacht").

Geoprobe 7822DT

- **General:** Currently the largest and most powerful Geoprobe we field, it has an impressive amount of rotary torque for its size. It also is equipped with two winch lines and boasts a 6’ stroke for faster tooling trips. Fully capable of geotechnical work, it is equipped with an autohammer which can apply both 140# and 340# slugs. The downside of its larger size makes it less than ideal for aerial shipment. Oftentimes, this machine is mobilized when a nodwell or 850 would be overkill. When direct push is the name of the game, this drill is selected even when sites are truck accessible, as no other machine we have can rival its direct push capabilities.

- **Drilling Applications:** Moderately challenging augered boreholes (75’, although potential for 100’+ in appropriate geology), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, spot coring, CME continuous, etc. Currently, we have not set-up this machine for wireline core applications. This drill also is capable of running direct push or even ODEX systems at angles as steep as 45 degrees.

- **Mobilization:** Typically, this machine is mobilized via surface (low-boy, barge, truck & trailer, etc.), but it would be possible for aerial shipment via a C-130 Herc. It is not modular like many of our other drills, so shipment by air is not something we have done as of yet.

Geoprobe 6712DT

- **General:** Our 6712DTs are one of our most popular platforms, and excel in a variety of applications. It is designed as a heli-portable drill direct from the factory, and we have accomplished many helicopter accessible jobs with it over the past few years. It can be slung with a helicopter as small as an ASTAR B2 in three picks. The machine is also able to separate, and lay down or stand up its own tower for shipment in smaller aircraft (Casa), eliminating the need for equipment like forklifts to reassemble the drill. Since all hydraulic connections between the tower and engine are of the quick connect variety, it takes about 15 minutes to reassemble or break down the drill for shipment. Its ease of shipping, direct push and rotary capacity, and self-propulsion make it an ideal candidate for remote site work such as villages. Like its bigger brother, the 6712 also has an equipped autohammer capable of running both size slugs. It is also important to note that we have a custom designed core head that we can swap with the auger head in about 15 minutes to support wireline core drilling.

- **Drilling Applications:** Augered boreholes to moderate depths (50'-75', although we have advanced as deep as 100' in permafrost on the North Slope), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, wireline coring, CME continuous, etc. Also capable of angle holes, and we have even direct pushed holes horizontally with this machine (yes, horizontally).

- **Mobilization:** Can be mobilized via truck & trailer, small aircraft, and helicopter. This is by far the most user friendly platform we maintain in regards to helicopter slinging.

Geoprobe 6610DT

- **General:** This Geoprobe was rebuilt in-house from the ground up. We also made a modification to the tower so it resembles its 6712 counterpart – the tower conveniently separates via hydraulic quick connects, and it is also capable of laying down and standing up its own tower for transport in smaller aircraft like a Casa. Although not capable of being slung by helicopter, it has identical capabilities as the 6712 and is perfect for remote village work. We also recently mounted an autohammer on the drill to increase its geotechnical viability. This drill is lovingly known as “The Brown Bomber”.

- **Drilling Applications:** Augered boreholes to moderate depths (50’-75’, geology depending), casing advancement (driven or ODEX), downhole hammer, penetrometer, direct push applications, spot coring, CME continuous, etc. Also capable of angle holes.

- **Mobilization:** Truck & trailer, small aircraft like a Casa.

Geoprobe 66DT

- **General:** This Geoprobe has a seat, so you can ride it around like a cowboy, which is pretty cool. The 66DT is strictly a direct push platform, and does not have an auger head or autohammer. It is a simple unit, perfect for exclusively direct push applications. It has the same direct push capacity as the 6712 and 6610 Geoprobes.

- **Drilling Applications:** Direct push only.

- **Mobilization:** Truck & trailer, smaller aircraft like a Casa (although since its tower does not separate, it takes substantially longer to mobilize and demobilize by air).

Geoprobe 54LT

- **General:** The most adorable drill we own, the 54LT is built for extreme cases of limited access. It is a self-propelled tracked unit, and can fit through a standard sized door. It's a great tool for work inside buildings, or situations where there is very limited space to navigate, like service stations. It is strictly a direct push platform, and its smaller size makes it a less powerful platform than its larger counterparts.

- **Drilling Applications:** Direct push, suited for shallow boreholes typically 20' or less. Challenging geology can lead to refusal prior to these depths, however (cobbles, glacial till, dense gravels, frozen gravels). The 54LT has also been used to advance button style bits directly into bedrock for cell tower anchoring; all it requires is an air compressor to accommodate this.

- **Mobilization:** Mobilized easily by truck & trailer, and can fit in very small aircraft such as a Skyvan. It is also able to sling as a single pick with a UH-1 or 204 style helicopter.

Longyear 28 Heliportable Core Machine:

- **General:** Designed for remote wireline core drilling via helicopter access. Its core head has a very high rotational speed but low torque, so drilling additives are essentially a requirement (environmentally safe "EZ-MUD" is typically used). Its light weight is a blessing and a curse; it can be slung with the smallest of A-Stars, but its light weight means it needs to be properly anchored in order to function. If bedrock is not exposed for anchoring, drilling with the Longyear may not be ideal.

- **Drilling Applications:** Wireline coring. Capable of horizontal to vertical coring.

- **Mobilization:** Reserved for remote helicopter work.

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