SPECIALTY DRILLING IN THE CONSTRUCTION MARKET

Techniques for challenging environments

BOART LONGYEAR™

DUAL ROTARY SPECIALTY DRILLING

ADVANCE CASING THROUGH THE TOUGHEST FORMATIONS

Boart Longyear's Dual Rotary drilling method maintains borehole stability by advancing an outer casing. This outer casing allows advancement in the most challenging ground conditions where other overburden drilling systems are unsuccessful. Once the casing is in place, well installation can be accomplished in a controlled environment. Boart Longyear's Dual Rotary capabilities include:

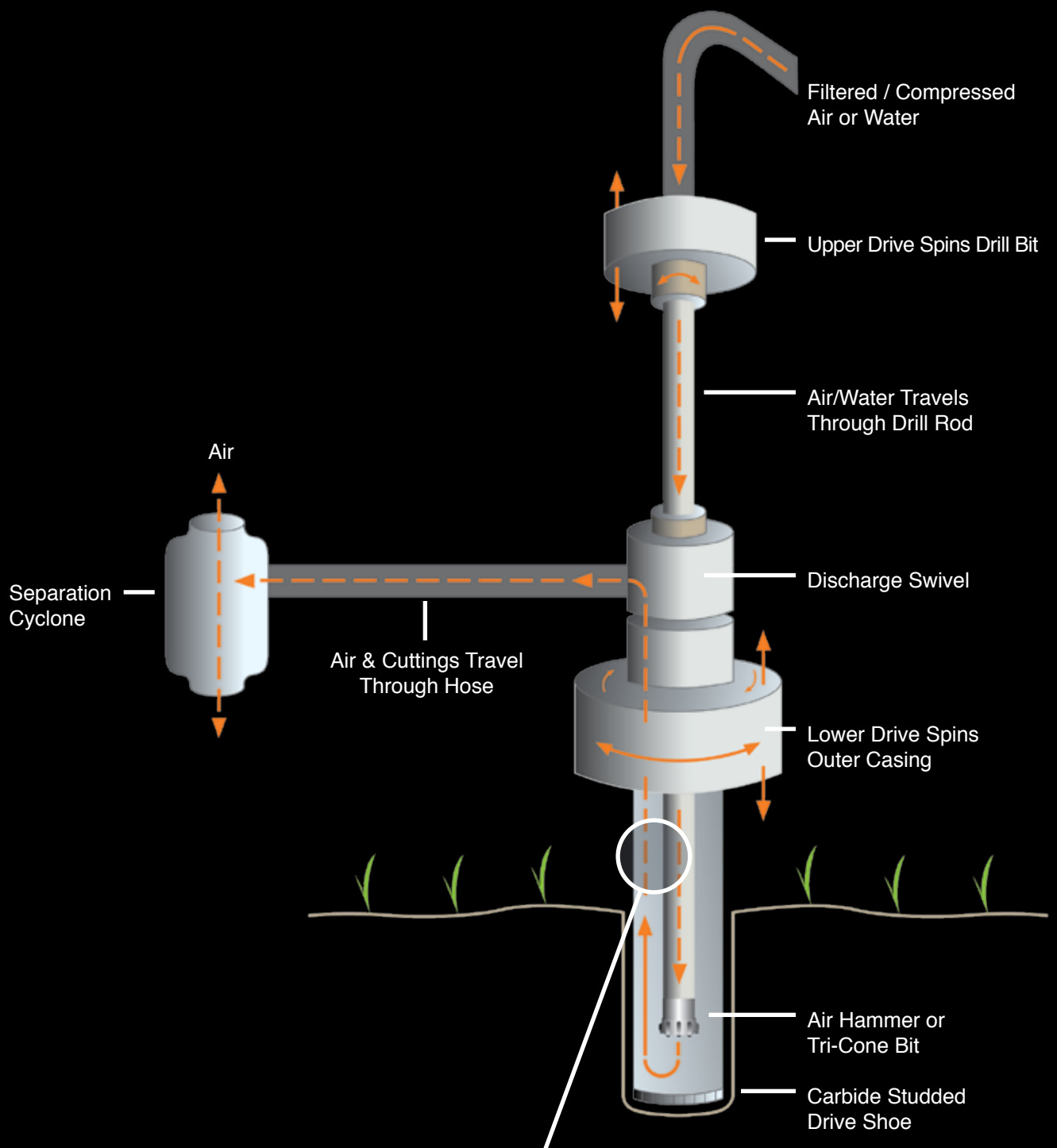
- Depths over 1000'
- Casing diameters of 6" - 48"

IDEAL APPLICATIONS OF DUAL ROTARY

Loose Overburden - Docks, wharfs and other structural foundation elements in high water table conditions can be drilled where heaving formations exist.
Obstruction Fill and rock - Drills through man-made and natural obstructions (fill, overburden, boulders and rock).
General Construction Sites - Truck, track or crane mounted options provide flexibility and increased penetration.
Structural Support - The structural support penetrates through overburden to seat piles or anchors in bearing stratum or bond zone to substantial depths.
Shaft Drilling Incline and Vertical - Accurate, straight, tight tolerance holes are achieved by advancing casing directly with dual independent drives for elevator shafts, drilled shafts and many other types of shafts.
Dewatering Wells - Casing advancement without drilling additives produces superior well construction in difficult overburden and rock formations.
Conversion from Direct to Reverse Circulation (RC) - An easy transition makes it possible for stability in heaving formations.
Vulnerable Structures and Sensitive Soil conditions can be drilled, maintaining borehole stability and avoiding the threat of subsidence and undermining.

ADVANTAGES OF USING DUAL ROTARY

- Cuts a clean borehole without the use of additives
- Assures well construction in unstable formations
- Continuously cases boreholes, providing easy access for instrumentation
- Accurate plumbness and alignment
- Maintains borehole stability with casing advancement
- Decreased well development time and increased well production
- Predictable and consistent total depth duration significantly reduces the risk to owner or client



DUAL DRIVE SYSTEM

Dual, independent drives allow both the drill string and outer casing to advance simultaneously or separate.

DANA POINT DESALINATION PLANT

DANA POINT DESALINATION PLANT / 24" SLANT WELL INSTALLATION UNDER THE OCEAN

Project:
Installation of a test slant well for development of a new desalination facility in Southern California's Doheny Beach, Dana Point, CA.

Technical:
The project called for the installation of a slant well 12.75 inches in diameter and 350 feet long. The well was to be drilled at a 23 degree angle under the ocean floor. 24 and 20 inch temporary casing were installed to 362 feet.

Problem:
To date, there had been no successful filter pack slant wells constructed under the ocean floor. The site was a high profile, environmentally sensitive area and crews were held to a strict zero-discharge threshold protocol.

Solution:
The Dual Rotary, zero-discharge drilling method allowed the filter pack to be installed in a cased environment and the boring to be advanced without discharging any fluids to the surrounding tidal area.


PTS

REVERSE CIRCULATION

REVERSE CIRCULATION, CLOSED LOOP WITH ZERO DISCHARGE

This method is valuable for job sites adjacent to or dealing with bodies of water/streams or when offsite discharge is not an option. All fluids used during drilling are contained and recycled during the drilling process. During the Process:

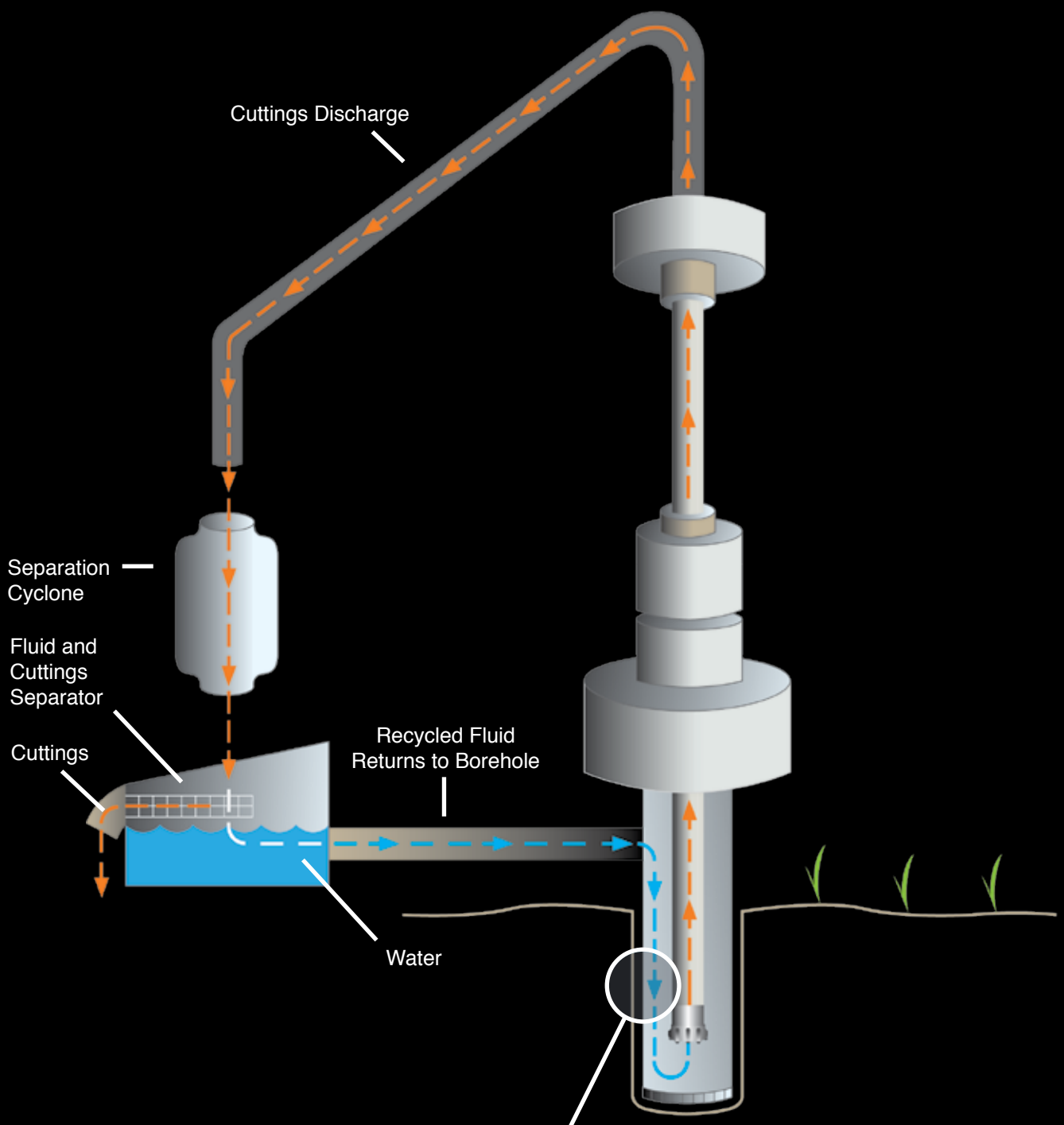
- The closed loop system utilizes fluid to remove cuttings from the borehole
- The fluid and cuttings are collected at the surface and separated
- Fluids are cleaned and re-circulated in the drilling process
- No fluid is discharged

APPLICATIONS OF REVERSE CIRCULATION

- Drilled shafts
- Slant shafts
- Caissons
- Water supply wells
- Dewatering
- Bedrock and tough drilling conditions
- Tight site conditions
- Highly productive aquifers
- Applicable with dual rotary for maximum advantage

ADVANTAGES OF REVERSE CIRCULATION

- Cuts a clean borehole with minimal or no additives
- Enhances well construction in less stable formations
- Increases well production
- Minimizes impact on the environment
- Applicable with dual rotary for maximum advantage
- Increases sample quality
- Allows for open hole drilling in less stable formations



FLUID RECYCLING

Recycled fluid is used to carry new cuttings to the surface where it is filtered and recycled in the drilling process.

NAVAJO GENERATING STATION

NAVAJO GENERATING STATION / 43" SLANT-SHAFT INSTALLATION

Project:
Relocate intake shafts for the Navajo Generating Station, a 2,500 megawatt, coal-fired steam-electric power plant. Current intakes were at risk of cavitation, due to dropping Lake Powell water levels.

Technical:
The project required five 43-inch diameter, 520-foot long slant-shafts to be installed through the highly fractured Navajo Sandstone terminating into Lake Powell.

Problem:
Initial attempts made by others to install a vertical shaft and micro-tunnels were aborted due to an inability to control ground water.

Solution:
Drilling the slant-shafts using reverse circulation, zero discharge allowed for the successful intake installation within the highly fractured and productive sandstone.

U.S. OFFICE LOCATION

Tel: +1.800.275.3885

Huntsville, AL	Indianapolis, IN	Sherwood, OR
Peoria, AR	North Borough, MA	New Ellenton, SC
Upland, CA	Flint, MI	Salt Lake City, UT
Yuba City, CA	Little Falls, MN	Fife, WA
Ocala, FL	Marietta, OH	Schofield, WI

ADDITIONAL SERVICES OFFERED

Sonic

Diamond Core

Probe

Auger

Pump Services

Well Development & Rehabilitation