Updated Technical Report on the Centennial Uranium Project Weld County, Colorado



Effective Date February 25, 2010

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#### 1.0 SUMMARY

Powertech (USA) Inc. ("Powertech") engaged W. Cary Voss, C.P.G., to write an updated National Instrument (NI) 43-101 compliant report on its Centennial Project in order to categorize its resource base under current standards of review. The author, a geologist with an abundance of uranium exploration and mining experience, has first-hand field and data review experience on these and adjacent properties. Mr. Voss is a former employee of Rocky Mountain Energy Company ("RME"), has over 35 years experience as a geologist and was familiar with the Centennial Project during its initial exploration and development phases. Mr. Voss was also instrumental in the development and use of the RME project exploration and resource calculation techniques used on this and other RME uranium properties.

The Centennial Project is located in western Weld County in northeastern Colorado, specifically located in Townships 8, 9 and 10 North; Range 67 West; 6<sup>th</sup> Principal Meridian. The project is situated within the Cheyenne Basin where uranium was discovered in 1969. RME, a subsidiary of Union Pacific Railroad Corporation, began uranium exploration on its Union Pacific Railroad mineral rights within Weld County, Colorado in 1974 and continued through 1984. In 2006, Powertech Uranium Corp. and its wholly owned subsidiary, Powertech (USA), Inc. acquired uranium rights over this area from Anadarko Petroleum Corp ("Anadarko"), the successor to Union Pacific in ownership of the mineral rights. As part of this acquisition, Powertech Uranium Corp. and/or its subsidiaries (collectively, "Powertech") has obtained all available historic data from over 3,500 exploratory drill holes, that were completed by RME and other companies in the project area during this time.

Geologically the uranium mineralization within the Centennial Project occurs as epigenetically deposited solution fronts called "roll fronts" within shallow dipping marginal marine sands of the Fox Hills Sandstone of Cretaceous age. The roll fronts consist of several stacked horizons of continuous mineralization occurring at the oxidation/reductions "(redox") boundary of downward migrating oxidizing solutions which entered the Fox Hills at the outcrop. The configuration of these roll front deposits is typical of shallow, sedimentary uranium deposits that occur within the western United States and are characterized as "C" shaped rolls, convex down gradient, with the highest grade mineralization occurring immediately on the reduced side of the redox boundary.

The original Centennial Project technical report was prepared in March 2007. An updated technical report, describing Powertech's 2007 and 2008 activities was published in June 2009. Powertech's land position has steadily increased since the publication of the original technical report. In July 2009, the Company entered into two option agreements

for the purchase of an aggregate of 3,585 acres of land, together with the associated water, mineral and lease interests, in Weld County, Colorado. Powertech's total gross mineral rights in the area have now increased to 9,615 acres, while its surface use acreage has increased to 7,262 acres. This valuable addition of surface use provides Powertech access to its privately-owned minerals, as well as enabling it to conduct mine planning and support operational facility design.

Powertech received approval from the Colorado Division of Reclamation, Mining and Safety ("DRMS") in 2008, through the filing of a Notice of Intent to conduct Prospecting Operations ("NOI"), for the completion of selected rotary drill holes, core holes and water wells. Since the filing of the June 2009 updated technical report, 16 water wells and 2 core holes have been completed on the project. These wells were developed for the purpose of conducting a pumping test to investigate aquifer characteristics and the quality of groundwater in the vicinity of Powertech's initial proposed well field. As of the writing of this report, the pumping test has not yet been conducted. 454 feet of core was collected from the two core holes and selected intervals of two water wells. Laboratory analyses were performed on this core to examine the nature of the uranium mineralization, as well as the physical characteristics of the host sandstones and confining units in the subsurface. A total of 8,677 feet of drilling was completed during this time.

The updated technical report of June 2009 increased the resource total for the Centennial Project to 11.5 million pounds of inferred resources at a 0.20 GT cut-off. Through acquisition of additional property, limited drilling and the continued evaluation of RME historic close-spaced drilling within the project boundaries, Powertech has continued to increase its resource base on the Centennial Project. To date, at a 0.20 GT cut-off, Powertech has identified 12,697,085 pounds of uranium resources on the property. Applying project-specific evaluation criteria based on Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves to these resources, 10,371,571 pounds of this total have been classified as Indicated Resources, while 2,325,514 pounds have been classified as Inferred Resources. Using a 0.50 GT cut-off, 8,762,336 pounds of uranium resources and 641,470 pounds were categorized as Inferred Resources.

A two-phased work program is recommended. The first phase is the completion of an economic evaluation to assess the viability of an in-situ recovery (ISR) mining operation at the Centennial Project. This evaluation process should be conducted by independent companies with engineering and financial expertise in the field of ISR operations. If positive results are obtained from this evaluation, a second phase of initiating operational permitting activities with the U.S. EPA and the Colorado DRMS and DPHE should commence.

#### **2.0 INTRODUCTION**

#### 2.1 Purpose of Report

This updated technical report has been prepared for Powertech in compliance with Section 4.2(1) of National Instrument 43-101 – Standards of Disclosure for Mineral Projects. The purpose of this update is to re-categorize the uranium resource base on the Centennial Project described in the original technical report on March 28, 2007 and updated on June 15, 2009.

The primary body of text in this revision remains unchanged from the original technical report prepared by W. Cary Voss and Daniel E. Gorski. However, applicable sections contain updated information to reflect the extensive geologic evaluation performed to recategorize uranium resources, in order to advance this project toward its purpose of developing an ISR mining operation for the production of uranium.

#### 2.2 Terms of Reference

Units of measurement unless otherwise indicated, are feet (ft), miles, acres, pounds avoirdupois (lbs) and short tons (2,000 lbs). Uranium content is expressed as  $%U_3O_8$  the standard market unit. Values reported for historical resources are  $%_eU_3O_8$  (equivalent  $U_3O_8$  by calibrated geophysical logging unit). Unless otherwise indicated, all references to dollars (\$) refer to the currency of the United States. Additional units of measurement are tabulated as follows:

Unit	Metric Equivalent
1 foot	0.3048 meters
1 inch	2.54 centimeters
1 pound (avdp.)	0.4536 kilograms
1 acre	0.4047 hectare

#### 2.3 Sources of Information and Data

All of the updated detailed and factual data were obtained directly from the staff of Powertech (USA), Inc. These data included drill hole data, electric logs, chemical analyses of core, results of metallurgical testing, land maps, hydrological testing and background environmental data collection.

#### 2.4 Extent of Author's Field Involvement

W. Cary Voss, was a co-author of the original technical report for the Centennial Project, along with Daniel E. Gorski. The first updated technical report was authored by James A. Bonner, Certified Professional Geologist (Wyoming PG No. 906) and Vice-President of Exploration for Powertech.

The author of this second updated technical report is W. Cary Voss. Mr. Voss' experience in the preparation of the initial technical report provides him with in-depth knowledge of the geology and resources of the project geology. This background, along with his twentyfive years experience in the uranium exploration and development and his management experience with the previous historic operator of the project, gives him unique qualifications to perform this resource re-categorization. The author has performed numerous property evaluations and resource calculation assignments. He was an Exploration Manager for RME and aware of the discovery and early development of the Centennial Project from 1978 to 1982. The author's qualifications, as required by NI 43-101, can be found in Section 21 of this report. Mr. Voss visited the site and conducted an extensive review of geologic data in Powertech's Denver office.

#### 3.0 PROPERTY DESCRIPTION AND LOCATION

#### 3.1 Location of Project Area

The Centennial Project is located in west central Weld County, in north central Colorado; about 13 miles south of the Colorado-Wyoming state line (See Figure 1). Access is provided from major U.S. Highways by numerous state and county roads that follow land subdivision lines. Interstate Highway 25 between Denver, Colorado and Cheyenne, Wyoming is three-to-five miles west of the project. The project lies within portions of Townships 8, 9 and 10 North, Range 67 West, approximately 14 miles northeast of Fort Collins and 16 miles northwest of Greeley. The southern portion of the project lies between the small towns of Wellington and Nunn.

#### 3.2 Nature of Land Position

In the original Centennial technical report, the project consisted of private mineral rights totaling 6,880 acres (See Figure 2). This included 5,760 acres (nine sections) of mineral rights, which were purchased by Powertech from Anadarko Petroleum Corporation. These Anadarko mineral rights were originally part of the Union Pacific Railroad land grant, which was comprised of alternate sections (checkerboard pattern) for 20 miles on both

sides of the Railroad right-of-way. Anadarko retained all mineral rights pertaining to oil & gas and all leasable minerals.

Powertech's land position has steadily increased since the publication of the original technical report. In July, 2009, the Company entered into two option agreements for the purchase of an aggregate of 3,585 acres of land, together with the associated water, mineral Powertech entered into an option and lease interests, in Weld County, Colorado. agreement with M.J. Diehl & Sons, Inc. and Howard Diehl and Donna Diehl (collectively, "Diehl") to purchase approximately 2,160 acres of land. Pursuant to the option agreement, the Company has 24 months to exercise the option. During the term of the option, the Company is permitted to access the property for the purposes of pumping, testing, monitoring and sampling water. An option agreement was also enter into with Thomas Varra and Dianna Varra (collectively, "Varra") to purchase approximately 1,425 acres of land. The option agreement is for a term of 12 months but can be extended for two 12 month extensions. Total gross mineral rights in the area have now increased to 9,615 acres, while its surface use acreage has increased to 7,262 acres. This valuable addition of surface use provides Powertech access to its privately-owned minerals, as well as enabling it to conduct mine planning and support operational facility design.

#### 3.3 Mineralized Areas, Surface Disturbance, Environmental Liability

The uranium deposits in the Centennial Project are classic roll front type deposits occurring in subsurface sandstones. These sandstones were deposited as shallow marine regressive and transgressive sequences within the Fox Hills Sandstone of late-Cretaceous age. The uranium roll fronts in the Centennial area are associated with oxidation/reduction interfaces and are known to cover a linear distance of at least 30 miles and extend throughout an area of more than 50 square miles. Historic data describes miles of mineralized trends developed along these oxidation/reduction interfaces, with discontinuous uranium deposits concentrated along the length of these systems. Maps prepared by RME from 1978 until 1984 (and available to the author) indicate the regional oxidation occurs in three separate sands within the Fox Hills Sandstone and that economic uranium occurs in nine distinct deposits most of the favorable environments for economic accumulations of uranium have been identified, but this limited drilling cannot exclude the possibility for discovery of future economic uranium deposits in the area.

There has been no attempt made to extract uranium from the project area. Although RME had planned in detail to surface mine a large shallow uranium deposit within the southern portion of the project, market conditions in 1982 thwarted its production plans. RME

discussed ISR extraction of the deeper uranium deposits in the northern portion of the project but no development activities were undertaken before closing the project in 1984.

Since no effort was ever made to mine the uranium deposits of the Centennial Project, there is no surface or subsurface disturbance of area due to uranium mining operations. Colorado's Department of Natural Resources had strict regulatory requirements in place for drill hole plugging and abandonment during the extensive discovery and delineation drilling for Centennial in the late 1970's. These procedures required measuring the viscosity of the bottom-hole drilling fluids at the completion of the hole. This viscosity was then increased by a minimum of 20 seconds with the addition of a bentonite-polymer. This sealing technique emplaced a solid plug in the hole, with a high degree of elasticity, to protect aquifers and confine their waters.

#### 3.4 Required Permits

Colorado is historically a mining state with a long history of underground and open pit mining. However, commercial in-situ uranium development has not been undertaken in the state. A number of permits and licenses must be acquired from federal, state and county agencies to meet the established permitting requirements. The Environmental Protection Agency ("EPA") has responsibility under the Safe Drinking Water Act (the "SDWA") to administer permits concerning the injection of fluids into subsurface aquifers. The body of regulation meeting the requirements of the SDWA (Underground Injection Control) has been well defined and is in place in several states including the adjacent states of Wyoming and Nebraska.

The Nuclear Regulatory Commission ("NRC") oversees all licenses under the Atomic Energy Act. In the State of Colorado, the Colorado Department of Public Health and Environment ("CDPHE") is authorized by the NRC to administer programs related to Source Material Licenses. This program covers all activities such as processing, concentrating and shipping of uranium; as well as its sale to a utility buyer. The CDPHE is also responsible for issuing air quality, water discharge and storm water permits. The Colorado Department of Natural Resources and its sub agency, the Division of Reclamation, Mining and Safety ("DRMS") is responsible for sewage, construction, zoning and public works permits.

An environmental background data collection program was conducted on the Centennial site from July 2007 until February 2009. This sampling program was directed by a third-party contractor and investigated pre-mining environmental conditions related to water,

soils, air, vegetation and wildlife of the site and surrounding areas. Data from this program will be incorporated into the mining permit applications described above.

# 4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

#### 4.1 Access

The Centennial Project is located about 80 miles north of Denver, Colorado (a major international airport site and supply center). The project area is connected to Denver via Interstate Highway 25. The Union Pacific Railroad between Cheyenne, Wyoming and Denver runs through the village of Nunn, five miles east of the project area. Access is provided from major U.S. Highways by numerous state and county roads that follow land subdivision section lines. Improved county roads surround numerous land sections throughout the Project area. Fort Collins is a major city located 11 miles southwest of the southern part of the project. Several small communities such as Wellington and Nunn lie near the east and west portions of the project.

4.2 Climate and Vegetation

The annual mean temperature in this area of Colorado is 62°F. The mean low temperature of 13°F occurs in January. The mean high temperature of 85°F occurs in July. Sub-freezing temperatures generally do not occur after early-May or before early-October. The average precipitation in the Centennial Project area is 12 inches. The wettest month is May when the area receives 3 inches of precipitation. Blizzards are common throughout the winter, with March receiving the greatest amount of snow at an average 10 inches. Dry land farming occurs in the southern portion of the project area where wheat is the primary crop. Vegetation in the northern portion is mainly grass land given to cattle ranching.

4.3 Local Resources

Fort Collins and Greeley are nearby cities providing housing, supplies, labor pool and temporary accommodations. Denver provides international travel communication as well as all support services to the mining industry.

#### 4.4 Infrastructure

The Centennial Project, being located in northern Colorado, is available to a vast network of transportation allowing product transportation throughout the U.S. Denver is an

international center to the mining industry and offers all of the technical services required for any mining operation.

#### 4.5 Topography and Elevation

The topography of the Centennial Project is generally flat to rolling prairie with occasional steep-sided, flat-top mesas. The whole area is incised by intermittent streams flowing southeasterly and flowing only during spring melt or from summer thunder storms. Elevation varies from near 5,700 feet above sea level in the northern part of the project to about 5,300 feet in the south part of the project. Maximum differential relief is only about 150 feet within any given section of land.

#### **5.0 HISTORY**

#### 5.1 Ownership History of the Property

Alternating sections of land for a distance of 20 miles on either side of the railroad in Weld County in northeastern Colorado were granted to the Union Pacific Railroad by the U.S Land Grant Bill in 1862. This grant included both surface and mineral rights. The majority of the surface has subsequently been sold and is now in private ownership. Uranium was discovered in Weld County in 1969, where RME controlled the mineral rights to over 115,000 acres of the Union Pacific Land Grant.

In 1974, RME began initial investigation of the area by radiometric survey and water well sampling. RME acquired the surface rights to about 5,000 acres overlying their mineral rights in the Centennial area and began an exploration drilling program. RME held these leases until sometime after the market collapse in 1984 and then allowed the surface leases to expire. Mineral ownership remained within the Union Pacific Railroad until sold to Anadarko Petroleum in 2000. Powertech purchased these mineral rights in October 2006 and is currently acquiring additional mineral and surface rights.

#### 5.2 Exploration and Development Work Undertaken

Following the original uranium discovery in Weld County in 1969, RME began exploring the Cheyenne Basin by conducting a reconnaissance program consisting of outcrop examinations, water sampling, and radon soil survey. Results were favorable and in December 1971 eleven holes were drilled to the north of the Centennial Project area. In 1973, a second radon survey was done and in 1974, 104 widely spaced stratigraphic test

holes were drilled that discovered the presence of uranium in the Fox Hills Sandstone. Exploration drilling, between 1977 and 1979, delineated uranium ore bodies at depths of 250-600 feet in the northern portion of the project and at depths of 85-125 feet to the south. RME focused on the southern shallow deposits, with a plan to develop a surface mining operation. This portion of the project was turned over to RME's Engineering Department in 1980, while its Exploration Department continued exploration activities in the northern area through 1982.

During this period, other uranium exploration companies acquired mineral rights to non-Land Grant sections in the general region and adjacent to the RME land position for its own exploration programs. These companies included Getty Oil, Wyoming Mineral Corp. (the uranium production company of Westinghouse Electric Corp.), Powerco and Mobil Oil Corp. All these companies dropped their land holdings with the collapse of the uranium market in the 1980's. However, much of the data from these exploration programs was acquired by RME through data trades. The majority of these data remained within the Centennial data base that Powertech acquired from Anadarko. The acquisition of adjacent properties with historical resources was based on these data.

RME's database, including 3,500 drill holes, has been retained in the files acquired by Powertech from Anadarko. Exploration drill hole data obtained consists of the original electric down-hole probe log of each hole. Samples of the cuttings from each hole were collected at 5-foot intervals and the geologic description of the cuttings was recorded on lithologic logs by the project geologist. Numerous cores were taken and chemically assayed from the mineralized zones to substantiate the radiometric values determined by the electric log. Data including drill hole logs and maps of drill hole locations from adjacent properties acquired from former competitors, is of equivalent quality to the main data base developed by RME.

Within the proposed surface mine area on the southern portion of the project, the RME Engineering Department logged nearly 800 holes with Princeton Gamma Tech (PGT) instrumentation that conducted spectrometric down-hole assays for protactinium. Protactinium is an early radiometric disintegration product of uranium and historically it was determined that the presence of protactinium, due to its short half life, could be directly related to the quantity of uranium present within the subsurface. RME drilled another 12 holes to depths of 250-400 feet on the northern portion of the project that were also probed using PGT logging. These data are also included with the data received from Anadarko.

All of the drill hole data was analyzed by a computer assisted program to determine the equivalent uranium value for each half-foot interval of all drill holes. RME interpreted these drill hole data to develop maps that showed oxidation-reduction (O/R) boundaries

and uranium accumulations which were then used to evaluate the amount of uranium "ore" present within the Centennial Project and to determine its opinion of a uranium "reserve" on the project that they considered minable via open pit and shipped to their milling facility north of Douglas, Wyoming. These data were incorporated into numerous reports containing drill hole maps, ore reserve estimates and proposed activities which periodically described the project. These reports and their maps were a part of the Anadarko files.

#### 5.3 Historic Mineral Resource Estimates

RME prepared numerous reports on exploration of the Centennial Project beginning in 1974. Significant shallow uranium mineralization became apparent in the southern portion of the project by 1978 and a concerted effort was made to evaluate this deposit. Only limited exploration was directed toward deeper uranium resources in the northern part of the project. An RME report dated October 1979 estimates shallow uranium resources in the inferred category as 4.9 million pounds  $U_3O_8$  with an additional probable category of 1.2-to-2.2 million pounds  $U_3O_8$  for a total resource of 5.1-to-7.1 million pounds. The depth to the top of the mineralization is stated at 82.3 feet below the surface. This same report suggests that a possible economic resource of 7.9 million cubic yards of gravel overlies the uranium resource.

A later report in the Anadarko files written by RME in March 1982, using PGT and core hole data, estimates a uranium resource in the southern portion of the project of 6.3 million pounds  $U_3O_8$ . Use of PGT and core assays eliminates the possible conflict with radiometric disequilibrium. The author has carefully evaluated these reports, completed his own calculations of resources and agrees with the interpretation presented therein. These numerous reports demonstrate that the total resources and average grades of the resources vary with respect to the grade and GT cutoffs used in the calculations. For example, the following average grades and resource totals were calculated from 1979-1982 for the shallow resources in the southern portion of the Centennial Project using different GT and grade cutoffs:

GT Cutoff	Grade Cutoff	Average Grade	Average Thickness	Pounds
0.04	0.02% U <sub>3</sub> O <sub>8</sub>	0.115% U <sub>3</sub> O <sub>8</sub>	9.41 feet	6,533,246
0.10	0.02% U <sub>3</sub> O <sub>8</sub>	0.122% U <sub>3</sub> O <sub>8</sub>	8.63 feet	6,297,421
0.40	0.05% U <sub>3</sub> O <sub>8</sub>	0.143% U <sub>3</sub> O <sub>8</sub>		4,332,840

Other reports available from the files during the same time period estimated a uranium resource in the northern portion of the project at 3.3 million pounds, with an average

thickness of 9.0 feet, an average grade of 0.08%  $U_3O_8$  and using a 0.20 grade/thickness (GT) cutoff. Based on RME reports and using a GT cutoff of 0.20, the entire Centennial Project was estimated to contain resources of over 9.6 million pounds, with an average grade of 0.10%  $U_3O_8$ , on mineral rights purchased from Anadarko.

In the original technical report, the authors estimated resources by plotting all of the 2,235 drill holes from a spreadsheet compilation. Collar coordinates and calculated GT values were entered into Mr. Gorski's licensed *Micromine* mine analysis program. Radiometric intercepts that met or exceeded 0.02%  $U_3O_8$  and were of sufficient thickness to yield a GT of 0.2 were included in the calculations. The authors calculated resources by multiplying the area in square feet enclosed by the 0.2 GT contour multiplied by the average GT times 20 and divided by the tonnage factor of 17 cu ft/ton (Avg. GT x Area in Sq ft x 20)/17 cu ft/ton = lbs uranium oxide.

In the northern portion of the Centennial Project, calculations on four individual resource areas yielded a total of 3,843,092 pounds  $U_3O_8$ . These pounds had an average thickness of 9.0 feet and an average grade of 0.085%  $U_3O_8$  (GT=0.77). Two resource areas in the southern portion of the project had a total of 5,887,398 pounds  $U_3O_8$ , averaging 8.6 feet of 0.10%  $U_3O_8$  (GT=0.86). Total inferred uranium resources for the entire Centennial Project totaled 9,730,490 pounds  $U_3O_8$ , contained in 5,175,800 tons and averaging 8.8 feet of 0.094%  $U_3O_8$  (GT=0.82).

For the June 2009 updated technical report, separate resource totals were calculated for the shallow southern area and the deeper northern portion of the Centennial Project. In the north, five deposits totaled 3,184,433 tons of resources, averaging 0.071 %  $U_3O_8$  with an average GT of 0.79. In the south, revised calculations of four deposits identified 2,930,760 tons of resources, averaging 0.118 %  $U_3O_8$  with an average GT of 1.22. As summarized below, this new resource mapping effort resulted in increasing Powertech's inferred uranium resource total at a 0.20 GT cut-off within the Centennial Project area to 11,465,500 pounds of  $U_3O_8$ .

TOTAL 2009 INFERRED RESOURCES AT 0.20 GT CUT-OFF						
TonsAverage GradePounds $(U_3O_8)$						
North Area	3,184,433	0.071 % U <sub>3</sub> O <sub>8</sub>	4,536,000			
South Area	2,930,760	0.118 % U <sub>3</sub> O <sub>8</sub>	6,929,500			
<b>Total Centennial</b>	6,115,193	0.094 % U <sub>3</sub> O <sub>8</sub>	11,465,500			

In the same updated technical report, an additional resource estimate was made utilizing a higher GT cutoff of 0.5. Because the gradational continuity of uranium in roll fronts is conducive to evaluation via GT contouring, the author was able to use the same contour

maps employed in the previous calculations. In the north, using this higher GT, four deposits totaled 1,603,322 tons of resources, averaging 0.085 %  $U_3O_8$  with an average GT of 1.08. In the south, four deposits totaled 1,766,133 tons or resources, averaging 0.141 %  $U_3O_8$  with an average GT of 1.68. Using a 0.5GT cutoff, the total in-place resource for the Centennial Project is calculated to be 7,692,300 pounds  $U_3O_8$ .

TOTAL 2009 INFERRED RESOURCES AT 0.50 GT CUT-OFF					
TonsAverage GradePounds $(U_3O_8)$					
North Area	1,603,322	0.085 % U <sub>3</sub> O <sub>8</sub>	2,727,300		
South Area	1,766,133	0.141 % U <sub>3</sub> O <sub>8</sub>	4,965,000		
Total Centennial	3,369,455	0.114 % U <sub>3</sub> O <sub>8</sub>	7,692,300		

#### 5.4 Production History

In the early 1980's, Wyoming Mineral Corp. constructed a pilot plant to mine uranium within the Cheyenne Basin using ISR method. As shown in Figure 4, this plant was located on its Grover Project (approximately 35 miles east of Centennial to evaluate uranium in the Laramie Formation). A second pilot plant was planned at Keota (42 miles east of Centennial to evaluate uranium resources within the Fox Hills Sandstone). The Keota plant was never developed. The Grover test facility operated for only a short period of time and there is no record available of how much uranium was produced. The site was successfully restored to State of Colorado reclamation standards.

#### 6.0 GEOLOGICAL SETTING

#### 6.1 Regional Geology

The Centennial Project is located within the Cheyenne Basin, a sub-basin of the greater Denver-Julesburg Basin, which is bordered on the northwest by the Hartville Uplift in Wyoming and on the east and northeast by the Chadron Arch in Nebraska (See Figure 5). To the south, the Cheyenne Basin is separated from the Denver Basin by the Greeley Arch and the western edge is bordered by the Colorado Front Range. Sediments within the basin dip inward from 0.5 degrees to 10.0 degrees, with the basin axis trending generally north-south.

As a result of uplift of the ancestral Rocky Mountains to the west, the slowly subsiding Cheyenne Basin accumulated sediments that range in age from Pennsylvanian to Quaternary. The Late Cretaceous Pierre Shale represents offshore marine sedimentation and has a gradational contact with the overlying Fox Hills Sandstone. Sandstones of the Fox Hills represent nearshore sedimentation. Overlying the Fox Hills Sandstone is the Laramie Formation which consists of terrestrial fluvial deposits. These three formations represent the last regression of the Late Cretaceous Sea.

Unconformably overlying the Laramie Formation is the tuffaceous White River Formation. This Oligocene formation is rich in volcanic fragments and is thought to be a source of uranium in the Centennial Project and the remainder of the Cheyenne Basin. In the project area the White River Formation has been deeply eroded with only isolated remnants remaining. Quaternary arkosic gravel and sand deposits cover a large portion of the present surface and form large wide southeast trending channels. The source for these channels is thought to be the White River Formation as well as the granitic highlands to the west.

#### 6.2 Local and Property Geology

The depositional environment interpretation, as reported by RME, is based on resistivity Elogs, sedimentary structures from 3-inch core and limited outcrop, isopach maps and the lateral and vertical relationships between different sedimentary facies. Figure 6 shows the generalized stratigraphic section for the Fox Hills Sandstone. In general terms this regressive sequence of sandstones was deposited by longshore currents from major distributary channels depositing sediments along the wave-dominated coastline.

The Fox Hills Sandstone on the western flank of the Cheyenne Basin can be separated into an upper and a lower member based on the depositional environment. The upper member termed the "A-WE" which includes the "A1, A2, A3, A4, and WE", is interpreted to be deposited in a barrier-island tidal-inlet complex. The lower member termed "B, C, and D" is interpreted by RME to be deposited in a wave-dominated delta complex. No economic concentrations of uranium mineralization were observed in any of the drill hole logs within these lower sands.

The lithologic units of the Fox Hills Sandstone now dip gently eastward, off the western flank of the basin. Groundwater flow through permeable sands is down this regional gradient. Since the uranium roll front ore bodies below the water table are dynamic, their deposition and tenor is factored by groundwater migration slowly moving the mineralization further down dip by multiple migration and accretion and in the process creating an oxidation/reduction roll front uranium deposit. In the southern portion of the project, recent oxidation from surface exposure has invaded the previously formed uranium roll fronts and has partially remobilized the mineralization. For this reason, RME used chemical uranium values obtained cores and interpreted uranium values from PGT logging

to calculate uranium resources for these shallow deposits. In this manner, it was not necessary to apply disequilibrium factors (DEF) to radiometric logs for the purpose of resource calculation.

#### 7.0 DEPOSIT TYPES

Uranium deposits in the Centennial Project are sandstone, roll front type typical of those in Wyoming, South Dakota and Texas, as well as some in Australia. These type deposits are usually "C" shaped in cross section, a few tens of feet-to-100 or more-feet wide and often thousands of feet long. Uranium minerals are usually deposited at the interface of oxidizing solutions and reducing solutions or redox boundaries. Typical alteration associated with the oxidized portion of this redox boundary consists of limonitic and hematitic staining of the sandstones. On outcrop, most of the sandstones of the Fox Hills Sandstone exhibit trace to pervasive limonite staining of various shades of yellow and orange. Red hematite staining is less common and occurs as scattered streaks in most outcrops. Generally, the more porous and thicker the sandstone, the more pronounced the alteration. Alteration within the host sands has been mapped by RME for distances of over 30 miles within outcrops of Fox Hills Sandstone in the Centennial Project area. Other workers have mapped redox boundaries for similar distances in other parts of the Cheyenne Basin.

As the uranium minerals precipitate, they coat sand grains and fill the interstices between grains. As long as oxidizing groundwater movement is constant, minerals will be solubilized at the interior portion of the "C" shape, and precipitated in the exterior portion of the "C" shape, increasing the tenor of the ore body by multiple migration and accretion. Thickness of the ore body is generally a factor of the thickness of the sandstone host unit. Mineralization may be 10-to-15 feet thick within the roll front while being inches to feet thick in the tail portions.

A major sub-set of this deposit model involves the depositional environment in which the host sandstones were formed. At Centennial, the host sandstones were deposited in a marginal marine depositional system and consist of barrier island and tidal channel sands. The recognition and identification of the depositional environment of the host sandstones plays an important role in establishing geological continuity of the uranium resources.

#### 8.0 MINERALIZATION

Uranium deposits are concentrated along the down-dip flank of sand deposits. Alteration depicting the oxidation/reduction contact can occur in several sand units and may be

several miles in length. Uranium deposition in significant deposits occurs discontinuously along the redox boundary with individual deposits ranging from several hundred-to a few thousand feet in length. Width of concentration is dependent upon lithology and position within the sand unit. Widths are seldom less than 50 feet and are often over 200 feet. Thickness of highly concentrated uranium mineral varies from one or two feet in limbs to ten or fifteen feet in rolls. Tenor of uranium mineralization may vary from minimal to a few percent at any point within the ore body.

Multi-element analyses of mineralized core indicate that there are minor amounts of associated minerals such as iron, vanadium, selenium and molybdenum, occurring with the uranium. These associated minerals are found only as trace amounts and therefore should not be of concern with any ISR mining or restoration of ground water.

8.1 Geologic Controls

The primary ore control of uranium mineralization in the Centennial Project is the presence of permeable sandstone within a major marginal marine, barrier bar sand system that is also a groundwater aquifer. A source rock for uranium in juxtaposition to the aquifer is necessary to provide mineral to the system. As described above the uranium-rich White River Formation originally overlay the subcropping sandstone units of the Laramie Formation and the Fox Hills Sandstone. The last control is the need for a source of reductant to precipitate dissolved uranium from groundwater solutions. Back barrier swamps and lagoons within the marginal marine depositional environment are responsible for generating extensive reductants in the form of humic acids derived from carbonaceous materials deposited with the sediments.

#### 9.0 EXPLORATION

In Colorado, all mineral exploration drilling is permitted by the Colorado Division of Reclamation, Mining and Safety ("DRMS"), through the filing of a Notice of Intent to conduct Prospecting Operations ("NOI"). Prospecting is defined as "the act of searching for or investigating a mineral deposit". Powertech's initial NOI was approved in June 2007 for the completion of 23 water wells to investigate the quantity and quality of groundwater in the vicinity of historic uranium resources within the Centennial Project. In July 2007, a modification to this NOI was approved for the completion of 24 drill holes to confirm the presence of these historical resources and to obtain core of the mineralization for chemical analyses. All drilling associated with these NOIs were completed in 2007 and will be discussed in the following section.

In August 2008, a second NOI was approved for the completion of two additional water wells and eight additional drill holes. The purpose of these drill holes were to obtain more core for testing and to investigate the uranium potential of known host sandstones, below planned production facilities, to ensure that no surface construction would take place over uranium resources. In October 2008, a modification to this NOI was approved to complete an additional 15 water wells and another core hole. These water wells would be used to conduct a large-scale pump test in the northern portion of the project area.

No additional mineral detection exploration surveys or investigations, other than drilling, were conducted on the Centennial Project.

#### 10.0 DRILLING

Since the filing of the June 2009 updated technical report, 16 water wells and 2 core holes have been completed on the project. This drilling was approved by the Colorado DRMS, through the filing of a NOI. These wells were developed for the purpose of conducting a pumping test to investigate the characteristics of the aquifer and the quality of groundwater in the vicinity of Powertech's initial proposed well field. As of the writing of this report, the pumping test has not yet been conducted. 454 feet of core was collected from the two core holes and selected intervals of two water wells. Laboratory analyses were performed on this core to examine the nature of the uranium mineralization, as well as chemical and physical characteristics of the host sandstones and confining units in the subsurface. A total of 8,677 feet of drilling was completed during this field program.

The two core holes were plugged and abandoned in accordance with State of Colorado regulations. The latest DRMS guidelines describe filling the drill hole, from the bottom upward, with a sodium bentonite plugging gel. The viscosity of this plugging gel is measured to be, at a minimum, 20 seconds higher than the viscosity of the bottom-hole drilling fluid. After a 24-hour settling period, this method of hole sealing emplaces a solid plug in the abandoned hole that has a high degree of elasticity. This type of plug conforms to any irregularity within the drill hole and is considered to provide a more effective seal than a rigid cement plug. Once the plugging gel has been allowed to settle (24-hour period), the sealing procedure is completed by filling the remaining portion of the open hole with bentonite chips to within thirteen feet of the surface. A ten-foot cement cap is placed on the bentonite chips and the final three feet of the hole is filled with soil.

#### 10.1 Mud-Rotary Drilling

No exploratory rotary drilling was performed on the Centennial Project since the publication of the updated technical report in June 2009. Prior to the issuance of that technical report, Powertech had used a truck-mounted rotary drill rig using mud recovery fluids to complete 15 rotary holes. This style of drilling is consistent with historical drilling programs from the 1970's and 1980's. A 6.5-inch hole was drilled and rotary cutting samples were collected at 5-foot intervals. A description of these cuttings are made by the on-site geologist and compiled into a lithology log for each drill hole. This rotary drilling was used to confirm several critical issues regarding previously identified uranium resources at the Centennial Project.

Electric logs and geologic logs from this drilling confirmed the presence and tenor of multiple, mineralized Fox Hills sand units in the area. This drilling also examined the geologic setting of the project and the nature of the Fox Hills host sands, by demonstrating that the depositional environments and lithologies of the Fox Hills Sandstone and the overlying Laramie Formation were found to be consistent with descriptions presented in the geologic literature and by previous operators on the project site.

Most importantly, the observation that geochemical oxidation cells within the host sands in the subsurface were directly related to uranium mineralization, establishes well-known geologic controls to uranium resources on this project. Encountering mineralized trends associated with "oxidized" and "reduced" sands within multiple sand units, provides reliable guides to the identification of resource potential, as well as to demonstrating continuity within known resource areas. This drilling demonstrated that originally hypothesized "roll-front" deposit model is appropriately applied to this project.

#### 10.2 Core Drilling

The core drilling programs designed by Powertech utilized rotary drilling to reach core point. At that point, a 10-foot-long, HX or 3-inch diameter core barrel (with core bit) is lowered into the drill hole. In the Fall of 2009, two core holes were completed. In addition, mineralized core was obtained during the drilling of two water wells, totaling 454 feet of HX or 3-inch core. Among other purposes, the coring was planned to intercept various parts of these uranium roll front deposits to obtain samples of mineralized sandstone for chemical analyses and metallurgical testing. Two of these core holes also provided core of the entire Upper Fox Hills Sandstone, and portions of the Laramie and Lower Fox Hills Formations. Powertech used the coring information to examine the stratigraphy of this portion of the formation in detail to gain an in-depth understanding of the geologic character of the host sands, as well as the overlying and underlying sands and confining sediments.

120 <sup>1</sup>/<sub>2</sub>-foot samples of mineralized core were sent to Energy Labs, Inc. ("ELI") in Casper, WY for multi-element analyses. These analyses included values for uranium (chemical), uranium (gamma), vanadium, selenium, molybdenum, iron, arsenic, calcium, sulfur and organic carbon. This "rock chemistry" provides valuable information for the design of ISR well field operations. Results of uranium assays are included in the equilibrium analyses contained in **Section 13.0 - Data Verification** of this report.

Laboratory analyses were performed on selected core samples to determine the physical parameters for permeability and porosity of the mineralized sands, as well as overlying and underlying clays. This data will be incorporated into hydrological modeling for future aquifer pumping tests in the project area. Composite bulk densities were calculated for mineralized sands, yielding a 16.75 cu. ft/ton value, which was used in the resource evaluation portion of this report.

#### 10.3 Groundwater Wells

Two pumping tests in the northern portion of the project area were conducted in October 2007 and February 2008. These tests demonstrated that production rates varied from 10-30 gpm and that there was excellent confinement between the mineralized Fox Hills sands and sub-aquifers in the overlying Laramie Formation. These tests also determined that an additional large-scale pumping test should be conducted in this region to obtain more hydrologic data for mine planning.

In anticipation of this large-scale pump test, sixteen water wells were completed within the northern portion of the Centennial Project area. The pump well for this test is completed in a mineralized A2 Sand, while monitoring wells were installed:

- Within the A2 Sand at varying distances from the pump well
- Within the overlying Laramie sands, and
- Within the underlying WE and B Sands

It is expected that the pumping test will be conducted in the Spring of 2010.

#### 11.0 SAMPLING METHOD AND APPROACH

An overall assessment of the data used for the classification of resources into various categories is required by the CIM Definition Standards for Mineral Resources and Mineral Reserves. This assessment pertains to the level of confidence in the geological information available on the mineral deposit. As described in the following subsections, the author believes the drill and core hole data for the Centennial Project were obtained by acceptable and professional practices.

#### 11.1 Electric Logs

The majority of historical electric logs at Centennial were run by nationally-recognized contracting companies, such as Century Geophysical Corporation and Geoscience Associates. These logging companies were equipped with on-board processors that allowed for down-hole ore grade calculation of uranium mineralization. This type of log calculation was extremely accurate and eliminated the possibility of human error. The contracting companies ensured the gamma ray logging equipment was routinely calibrated at AEC/DOE test pits located in Grand Junction, CO.

Powertech owns a geophysical logging truck, manufactured by Geoinstruments Logging, Inc. This unit produces down-hole electric logs, consisting of resistivity, "spontaneous" or "self-potential", gamma ray curves and deviation surveys. This suite of logs is the industry standard for defining lithologic units in the subsurface. The resistivity and self-potential curves provide quantitative measurements of lithology resistance, water conductivity, and formation porosity, which are used to identify sandstones, clays, and other lithologic units in the subsurface. These geophysical techniques enable geologists to interpret and correlate geologic units, and perform detailed subsurface geologic mapping. These electric logs were run on all confirmation drill holes completed within the Centennial Project site. The geophysical logging tools currently employed are practically identical to the geophysical instruments used historically throughout the uranium industry in the U.S. and are readily correlated to RME's historic drill hole logs for the project. Powertech requires its logging unit to be calibrated at the DOE test pits in Casper, WY prior to each drilling program.

#### 11.2 Drill Cuttings

Mud rotary drilling relies upon drilling fluids to prevent the drilling bit from overheating and to evacuate drill cuttings from the hole. These drill cuttings (samples) are collected at five-foot intervals by the drill rig hands at the time of drilling. The samples are collected in order to determine the lithology of the material being drilled at its respective depth. After the hole is completed, a geologist will describe the cuttings into a geologist's lithology log of the hole. This log will describe the entire hole, but detailed attention will be directed toward prospective sands and any alteration (oxidation or reduction) associated with these sands. Chemical assaying of drill hole cuttings is not practical since dilution is so great by the mud column in the drill hole and sample selection lacks depth precision.

11.3 Core Samples

Core samples were collected to enable precise chemical analyses and metallurgical testing at depth, and to obtain physical parameters of mineralized sands, confining units, and adjacent sands. The mud rotary drill rig had the capability to selectively core portions of any drill hole, using a 10-foot barrel.

A portable core table was set up at the drilling site. Core was taken directly from the inner core barrel and laid out on the table. The core was measured to determine the percentage of core recovery, washed, photographed, and logged by the site geologist. The core was then sealed in plastic, and cooled to maintain moisture content and prevent geochemical alteration. The sealed core was placed into into core boxes and cooled storage for later sample preparation. Overall core recovery was greater than 92%.

#### 12.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

Analyses of recent core samples are included in this updated report. The down-hole electric log was used in conjunction with the geologist's lithology log of the core to select intervals for testing. 6-inch intervals of whole core (3-inch diameter) were selected for physical parameter testing (permeability, porosity, density). Mineralized sands selected for chemical analyses were cut into ½-foot intervals and then split in half. One of the splits was used for chemical analyses and the other split was set aside for metallurgical testing. This sample identification and selection process was performed by Powertech geological staff. Chain-of-custody (COC), sample tags were filled out for each sample and samples were packed into ice chests for transportation to the analytical laboratories.

Samples were sent to ELI's Casper, WY facility for analyses. Upon receipt at the laboratory, the COC forms were completed and maintained, with the lab staff taking responsibility for the samples. The first step in the sample preparation process involved drying and crushing the selected samples. This pulp was then subjected to an EPA 3050 strong acid extraction technique. Digestion fluids were then run through an Inductively Coupled Argon Plasma Emission Spectrometer (ICPMS) according to strict EPA analytical procedures. Multi-element chemical analyses included values for uranium (chemical),

vanadium, selenium, molybdenum, iron, calcium and organic carbon. This "rock chemistry" provides valuable information for the design of ISR well field operations.

ELI is a certified through the National Environmental Laboratory Accreditation Program (NELAP). NELAP establishes and promotes mutually acceptable performance standards for the operation of environmental laboratories. The standards address analytical testing, with state and federal agencies serving as accrediting authorities with coordination facilitated by the EPA to assure uniformity. Maintaining high quality control measures is a prerequisite for obtaining NELAP certification. As an example, nearly 30% of the individual samples run through ICPMS are control or blank samples to assure accurate analyses. In the author's opinion, ELI has demonstrated professional and consistent procedures in the areas of sample preparation and sample security, resulting in reliable analytical results.

#### **13.0 DATA VERIFICATION**

#### 13.1 Review of Historical Records

The CIM Definition Standards state that in order to classify resources, the nature, quality, quantity and distribution of data must be such as to allow confident interpretation of the geological framework and continuity of mineralization for the deposit. The historic database contains most of the data used to calculate resources for the project. This database consists of over 3,500 drill holes, which includes down-hole assay logs for 799 drill holes and 124 core holes; with supporting electric logs, lithology logs, assay reports and resource calculations. Numerous reports written by various departments within RME are also present. All drill holes were surveyed by a Registered Professional Land Surveyor, resulting in collar elevations and survey coordinates (Colorado Northern State Plane System) for each drill hole. A computer-generated listing of this survey information is part of the database.

RME utilized a Princeton Gamma-Tech (PGT) down-hole logging system to obtain in-situ chemical assays within the shallow resource areas in the southern portion of the Centennial Project. PGT had been used successfully on South Texas roll front deposits and RME was the first company to employ this technology to roll front deposits in Colorado. The PGT probe is a high-resolution gamma ray spectrometer that is capable of separating and identifying all of the gamma ray emitters present in a uranium deposit. It measures a 1 MeV gamma ray from Protactinium-234 (a 24.1-day half life), very promptly after the decay of Uranium-238. Since there can be virtually no geochemical mobilization in such a short time, the 1 MeV gamma ray is an excellent measure of the concentration of uranium, unaffected by disequilibrium. The PGT system was determined to be quite reliable for the in-situ assay of uranium, although when this technology was compared to the results of

chemical analyses of core holes, it was determined that this logging technique was conservative, underestimating mineable resources by approximately 6%.

All historical drill hole intercept data from gamma logs were digitized by RME and converted to ½-foot printouts. In addition, 1-foot digital printouts are also available for the 799 down-hole assay logs (PGT) and the assay data of the 124 core holes. Individual databases for each resource area were developed using this digital data, along with recent intercept data from confirmation drilling

#### 13.2 Data Verification Procedures

An overall assessment of the data used for the classification of resources into various categories is required by the CIM Definition Standards for Mineral Resources and Mineral Reserves. This assessment showed that historic data gathering and interpretation of the data was conducted by a well-respected and major uranium exploration company, with a highly qualified uranium exploration staff. The assessment also showed that at key points, professional geologic consultants reviewed and verified the results of the historic exploration programs. Numerous academic reports have also been published on geologic settings and uranium mineralization in and around the project area. Current interpretive work has been completed under the direction of Powertech's senior geologic staff. Powertech's Chief Geologist alone has over 40 years of uranium experience, including well field development assignments at several South Texas ISR facilities. All these factors provide a high level of confidence in the geological information available on the mineral deposit and that historic drill hole data on the Centennial Project is accurate and useable for continued evaluation of the project.

The author is in a unique position to verify that the historical data is valid and can be relied upon. The author was the Exploration Manager for RME, which had a reputation in the uranium industry as a reliable and knowledgeable uranium operating company. The author spent considerable time in the field overseeing RME operations and procedures. With respect to all data used in this resource evaluation, the author examined geologic data located in Powertech's Denver office, performed quality assurance checks of gamma logging data contained in resource databases/maps and prepared or reviewed geologic cross sections to assure continuity of geology and grade throughout the resource areas.

#### 13.3 Data Confirmation

Geological information and evidence used to support an assessment of the geologic and grade continuity of the uranium resources at the Centennial Project is derived from the

interpretation and analyses of the results of historic and recent drilling and coring programs. This drill hole information is used to define both uranium resource areas and the geologic setting that contains these resources.

<u>Confirmation Drilling</u> - Powertech's confirmation drilling programs were successful in verifying RME's geologic and geochemical controls on the deposition of uranium mineralization within the Centennial Project. This drilling demonstrated that the uranium mineralization within the project area fits into a sandstone roll-front deposit model. Accordingly, the oxidized host sandstone encounters strong reducing conditions at depth and there is a consistent and predicable precipitation of uranium at the oxidation/reduction (redox) boundary.

Figure 7 is a cross section of Powertech confirmation holes located in Section 33, T10N, R67W in a northern resource area of the Centennial Project. This section illustrates the geochemical system associated with a sandstone roll-front uranium deposit and the concentration of uranium resources at the redox boundary. It also shows the location of this concentrated uranium mineralization with respect to a GT contour map of the resource area. The high-grade uranium encountered in the confirmation drilling corresponds to the higher GT contours based on historic drilling, thus demonstrating continuity of grade within this resource area.

Figure 8 is a frequency distribution plot from the same northern resource area, utilizing 230 <sup>1</sup>/<sub>2</sub>-foot uranium intercepts from confirmation drill holes compared to an equal number of <sup>1</sup>/<sub>2</sub>-foot uranium intercepts from historic drill holes in the immediate area. The similar nature of the distribution curves indicate that the grades of uranium encountered in the Powertech drilling were comparable to the grades of the historic drilling. The slightly higher average grade of the confirmation drilling is due to the fact that these holes were located on a previously identified roll-front.

<u>Equilibrium Analyses</u> - Naturally-occurring uranium (U238) is detected in the subsurface by gamma ray emissions from its radioactive daughter products. Uranium is in a state of equilibrium when these gamma ray emissions are equal to its chemical uranium values. It has been calculated that uranium and the gamma ray signature of its daughters are in equilibrium when the uranium remains stationary for approximately 1 million years. Along the oxidation/reduction boundary associated with a typical "roll front" uranium deposit, there is a natural and expected change in the equilibrium state of uranium. Because these uranium deposits are dynamic, there is continual accretion of uranium under oxidizing conditions. This results in roll fronts exhibiting chemical depletion at the oxidized boundary and chemical enrichment further down gradient. These values can be graphed on an equilibrium plot to indicate if the subsurface uranium is in equilibrium or if there has been separation (mobilization) of the chemical uranium from the daughter products.

Figure 9-A is an equilibrium plot of U  $_{Gamma}$  and U  $_{Chemical}$  values of the mineralized intercepts of 0.02% U<sub>3</sub>O<sub>8</sub> or greater from four core holes in the northern Section 33 resource area. Overall, the character of the plot demonstrates a state of equilibrium – with some chemical enrichment. This is to be expected when the location of the core holes are reviewed. They were all located to retrieve reduced core from the center or adjacent to the "roll front". Accordingly, the chemical assays showed equivalent to positive chemical:gamma uranium ratios, with an average ratio of 1.1:1. This is a typical equilibrium ratio for this portion of a sandstone roll-front deposit and demonstrates that conventional down-hole gamma ray logging in this area provides a valid representation of in-place uranium resources.

In the southern portion of the Centennial Project, the resources are shallow, ranging from 60-260 feet below surface. Because of these shallow depths, approximately only 26% of these resources are located below the zone of saturation, with the remainder at or above the water table. Historic drilling and coring, along with confirmation coring by Powertech, has demonstrated that there has been some recent mobilization of chemical uranium from its daughter products in this area. For this reason, conventional gamma logging is not sufficient to characterize these shallow resource areas. Historically, RME utilized 799 previously-described PGT drill holes and 124 core holes to delineate the shallow, southern resource areas. Figure 9-B is an equilibrium plot of U Gamma and U Chemical values of mineralized intercepts of 0.02% U<sub>3</sub>O<sub>8</sub> or greater from the Section 34/35 Resource Area. Over 1900 PGT log data points from this resource area were used in this analysis. Even though there has been some recent minor mobilization of uranium within the roll fronts, by using the down-hole assays, it can be demonstrated that uranium was mobilized only a short distance and that an overall state of equilibrium exists within the deposit. This equilibrium analysis showed chemical:gamma uranium ratios averaging 1.58:1. This equilibrium ratio is much higher than that associated with deeper resources in the northern portion of the project and is indicative of recent uranium mobilization. Similar results were obtained from equilibrium plots for the other southern resource areas.

For this reason, only chemical uranium values were used in the GT contouring of these resource areas for this updated report. These chemical values were derived from downhole assays from 799 PGT drill holes and from laboratory analyses of core from 124 historical and five confirmation core holes. Powertech recognizes that future work on the Centennial Project will involve continuously monitoring the equilibrium state of uranium within its resource areas. In addition to collecting core samples, Powertech has the capability of performing down-hole chemical logging with its Prompt Fission Neutron (PFN) logging tool. This tool overcomes the issue of disequilibrium of U238 by

measuring U235 directly, then back-calculating to U238. This sophisticated technique involves generating pulsed neutrons down-hole and measuring the response returning to the tool. Future delineation drilling using this logging technique will provide accurate measurements of uranium resources.

#### 14.0 ADJACENT PROPERTIES

There are no operating uranium mines near the Centennial Project. There are no indications that any other uranium mining companies have any leasing or acquisition activity near the project. Powertech is confident that they have secured the most favorable portions of the mineralized trends for this region.

All of the areas planned to be mined by Powertech are well within the present property boundaries and do not conflict with adjacent ownership. In the rare event where uranium roll front deposits might pass onto uncontrolled properties, the flow of solutions can be controlled by well spacing to within a few hundred feet of any adjacent property not now under the control of Powertech. Exact control of solution mining is extremely critical when mining progresses from one royalty owner to another. This situation is well known to ISR mine operators and is common practice in many an ISR mining operation.

#### 15.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Powertech has completed leach amenability studies on uranium core samples obtained in the previously-described coring program. The tests were conducted at ELI's Casper facility between October 27 and November 5, 2007. Leach amenability studies are intended to demonstrate that the uranium mineralization is capable of being leached using conventional ISR chemistry. The leach solution is prepared using sodium bicarbonate as the source of the carbonate complexing agent (formation of uranyldicarbonate (UDC) or uranyltricarbonate ion (UTC). Hydrogen peroxide is added as the uranium oxidizing agent as the tests are conducted at ambient pressure.

Sequential leach "bottle roll" tests were also conducted on the same two core composite intervals selected by Powertech personnel. The tests are not designed to approximate insitu conditions (permeability, porosity, pressure) but are an indication of an ore's reaction rate and the potential uranium recovery. The leach tests were conducted on two core intervals recovered from two holes. One interval represented low grade ore at 0.073% U<sub>3</sub>O<sub>8</sub>, and the other interval represented higher grade material averaging 0.116% U<sub>3</sub>O<sub>8</sub>. Based on the known volume of core in the selected intervals, and the apparent wet density, wet masses of sample representing a 100ml pore volume (PV)- assuming 30% porosity-were delivered to the reaction vessels. 5 PV lixiviant charges (500ml of 2g/L HCO3, 0.5 g/L H2O2) were mixed with the ore samples, and vessel rotation was started. Over a six

day period, 30 PV of lixiviant was delivered to, and extracted from the vessels. Analysis results of the resulting leach solution indicated leach efficiencies of 71% to 95%.

These preliminary leach tests showed typical leach curves and indicated that the uranium deposits at Centennial appear to be readily mobilized in oxidizing solutions and are well-suited for ISR mining.

#### 16.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The primary purpose of this technical report is to re-categorize the total resource base within the Centennial Project. To date, all subsequent technical reports have categorized these resources as "inferred resources", based solely on historical data. As presented in **Section 13.0 - Data Verification** of this report, the results of Powertech's confirmation drilling programs from 2007 -2009 have successfully verified historical project data. This re-categorization is therefore based upon a combination of historical and recent drilling data. In order to perform this re-categorization, an extensive evaluation of Centennial Project resources was undertaken. The first step in this evaluation process was the GT contouring of all identified resources. The next step involved a strict application of criteria and definitions presented in the **CIM Definition Standards for Mineral Resources and Mineral Reserves**, dated November 22, 2005 to these identified resource areas to establish resource categories.

#### 16.1 GT Contouring

For the ISR industry, GT contour mapping is the accepted method of resource calculation, as well as for well field design and lay-out. GT is a summary of mineralization, based on the grade X thickness of a mineralized intercept. After extensive subsurface correlation of mineralized sand units to determine geologic continuity, a listing of all mineralized intercepts for individual sand units was developed. For each resource area, these intercepts (to include elevation, depth, thickness, grade and GT) were plotted on drill hole maps.

Mineralized intercepts that met or exceeded a GT of 0.2 were placed on drill hole maps. In cases where two or more mineralized zones were present in the same sand unit, if the separation of these mineralized intercepts was ten feet or less, the GTs were summed. If this separation of mineralized intercepts was greater than ten feet, only one GT value was used. Hand-drawn contouring of the GT values was then performed. Standard extrapolation techniques were used in the contouring process, along with the incorporation of some geologic interpretation. This interpretation took the physical characteristics of a roll-front uranium deposit into consideration, allowing for the projection of contour lines along the trend of the observed oxidation/reduction boundary. Individual contour lines

were drawn for GTs of 0.20, 0.50, 1.0, 2.0, etc. The resulting GT contour map provides an excellent representation of the distribution of uranium grades and delineates the roll-front within each resource area. Figure 10 is a GT contour map of the Section 11 Resource Area and a representative example of the detailed GT contour maps prepared for this resource re-categorization project.

For each resource area, the first step in estimating resources was to calculate areas ( $ft^2$ ) between each GT contour line. AutoCAD® mapping software was used for this purpose. Resources were calculated by multiplying the area of each interval enclosed by the GT contours by the average GT of that interval. That number was then divided by the tonnage factor of 16.75 cu ft/ton. The mathematical formula is abbreviated as follows:

(Avg. GT x Area in Sq ft x 20)/16.75 cu ft/ton = lbs  $U_3O_8$ 

All individual interval resources were summed to determine a total for each resource area. Spreadsheets for these calculations were maintained.

#### 16.2 CIM Definition Standards

To categorize these GT contoured-resources, criteria from the CIM Definition Standards were applied to each resource area. The GT contour maps (and the drill hole data from which they were prepared) were the primary focus of the resource reclassification effort. The CIM Definition Standards state that a mineral resource is known, estimated or interpreted from specific geological evidence and knowledge. A resource is further sub-divided into categories based on increasing geological confidence, such that inferred resources have a lower level of confidence than that applied to an indicated resource. An indicated resource has a higher level of confidence than inferred resources but has a lower level of confidence than a measured resource. CIM resource definitions are as follows:

**Inferred Mineral Resource** - An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

**Indicated Mineral Resource** - An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered

through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

**Measured Mineral Resource** - A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

As previously discussed in **Section 13.0 - Data Verification**, the author believes that the exploration techniques used by RME and Powertech to delineate these resources were reliable, accurate and appropriate. To complete the categorization process, the results of the historic and confirmation drilling was examined to verify that the uranium mineralization at Centennial fit an accepted uranium deposit model and that the mineralized sands could be fit into an accepted depositional environment model. As previously discussed in this report, uranium mineralization within the project area fits a sandstone roll-front uranium model and the host sands were deposited in a marginal marine depositional system. Based on industry knowledge of these models, site-specific criteria were applied to the GT contoured-resources in order to establish a level of confidence for resource areas. These criteria apply to the geological and grade continuity of the resource areas, as well as the drill hole spacing within individual resource areas.

<u>Geologic Continuity</u> – Specific geologic data were reviewed for each resource area (GT contour map) to confirm that the mineralization is consistent with a sandstone roll-front deposit model within marginal marine sands. Sufficient drill hole electric and geologic lithology logs were reviewed for each area to determine the presence of a consistent mineralized oxidation/reduction (redox) boundary in the subsurface. At the same time, drill hole data within the project were reviewed to gain an understanding of the identification and correlation of stratigraphic units in the subsurface. Cross sections were developed and reviewed, along with a review of existing isopach maps, to demonstrate the presence of individual, mappable continuous host sandstones. Laboratory results of core analyses indicate sufficient permeability and porosity of host sandstones for movement of mineralized solutions. Results showing physical parameters of low vertical permeabilities for confining clay units above and below the host sandstones are ideal for control of ISR solutions. Preliminary laboratory analyses on the leachability of uranium within the resource areas were also reviewed. These analyses support the interpretation of roll front

uranium as opposed to refractory mineralization. All data reviewed confirmed the presence of uranium mineralization within a geologic environment that is continuous throughout the project area.

<u>Grade Continuity</u> – Again, the confirmation that Centennial mineralization is associated with sandstone roll front deposits is an important factor in establishing grade continuity of the resources. In a roll front deposit, the continuity of the grade of a deposit or resource area is directly related to the mineralized redox boundary. Uranium mineralization in a roll front deposit has a readily identifiable elongated, crescent-shaped configuration. The "points" of the crescent are within the oxidized portion behind the redox boundary. The highest grade portion of the mineralization is found in the center of the crescent at the redox boundary or the "front". The length of a deposit or resource area is roughly parallel to the redox boundary and can have a length of a few hundreds of feet to a few thousands of feet. The width of a resource is at a right-angle to the redox boundary and will measure from a few tens of feet to a few hundreds of feet. Cross sections drawn or reviewed by the author within all resource areas illustrated the presence of roll front uranium and the continuity of uranium mineralization along redox boundaries within sand units. Drill hole data gathered on the Centennial Project demonstrates that the grades of uranium mineralization within these roll front deposits are both continuous and predictable.

<u>Drilling Hole Spacing</u> - It was determined that in order to complete an orderly recategorization of resources, some site-specific clarification of definitions within the CIM Definition Standards was required. With respect to the required drill hole spacing, the following definitions apply:

<u>Drilling Density for Measured Resources</u> – Within the Centennial Project, the uranium deposits are contained within marginal marine sandstones. The scale and the continuity of these host sands are much greater than fluvial channel sands, resulting in resource areas with average widths of 200 feet or greater and lengths exceeding 5000 feet. However, the grades of these marginal marine deposits are lower, averaging 0.10%  $U_3O_8$ . A review of historic RME drilling within resource areas shows that a 100-foot grid pattern was successful in confirming geological and grade continuity. In fact, this was the drill hole spacing RME used to support surface mine planning of the southern resource areas. This density of drilling yields an average Area of Influence per hole of 10,000 sq. ft. Therefore, it was determined, for the purpose of delineating Measured Resources, drill holes within a resource area must be spaced at a sufficient density to yield an average Area of Influence of less than 10,000 sq. ft.

<u>Drilling Density for Indicated Resources</u> - A review of historic RME drilling shows by increasing drill hole spacing to a 200-foot grid pattern, the geological and grade continuity of the resource areas could be reasonably assumed. This density of drilling yields an average Area of Influence per hole of 40,000 sq. ft. Therefore, it was determined, for the purpose of delineating Indicated Resources, drill holes within a resource area must be spaced at a sufficient density to yield an average Area of Influence of between 10,000 - 40,000 sq. ft.

<u>Drilling Density for Inferred Resources</u> - Historic RME drilling shows that widespaced exploration drill holes can identify the redox boundary and encounter higher grade mineralization along this boundary. From this limited drilling, a GT cut-off can be applied to an area and resources can be estimated. However, additional grid drilling is required before the geological and grade continuity of the resource areas can be reasonably assumed. Therefore, for the purpose of delineating Inferred Resources, drill holes within a resource area yielding an Area of Influence of 40,000 sq. ft. - 100,000 sq. ft. can be used.

#### 16.3 Mineral Resource Estimates

As previously stated, the initial Centennial technical report from March 2007 and the updated technical report from June 2009 categorized all uranium resources as Inferred Resources, based solely on historical data. The initial technical report used a 0.20 GT cutoff for all inferred resource calculations, while the 2009 updated report calculated inferred resources using both a 0.20 and a 0.50 GT cut-off. The results of those two reports are summarized in table below:

	Tons	Average Grade	Pounds (U <sub>3</sub> O <sub>8)</sub>
2007 Resources – 0.20 GT	5,175,793	0.094 % U <sub>3</sub> O <sub>8</sub>	9,730,490
2009 Resources – 0.20 GT	6,115,193	0.094 % U <sub>3</sub> O <sub>8</sub>	11,465,500
2009 Resources – 0.50 GT	3,369,455	0.114 % U <sub>3</sub> O <sub>8</sub>	7,692,300

Through acquisition of additional property, Powertech drilling and the continued evaluation of RME historic close-spaced drilling within the project boundaries, Powertech has continued to increase its resource base on the Centennial Project. In this updated technical report, using the above-described evaluation criteria, project resources were calculated and reported for both Inferred Resources and Indicated Resource categories. In the opinion of the author, there was not sufficient drill hole records or density to support the calculation of Measured Resources. In addition, project resources are being reported for both a 0.20 GT and a 0.50 GT cut-off.

All indicated resources were calculated using detailed GT contour mapping (see Figure 7). Resources were calculated by multiplying the area of each interval enclosed by the GT contours by the average GT of that interval. That number was then divided by the tonnage factor of 16.75 cu ft/ton. The mathematical formula is abbreviated as follows:

(Avg. GT x Area in Sq ft x 20)/16.75 cu ft/ton = lbs  $U_3O_8$ 

All individual interval resources were summed to determine a total for each resource area. The author reviewed all GT contour maps, audited drill holes and mineralized intercepts used in the construction of these maps and examined drill hole densities in accordance project-specific criteria. Individual resource areas that met the evaluation criteria were summed to determine total indicated resources for the Centennial Project.

Areas within the Centennial Project where significant uranium mineralization had been encountered, but without sufficient drilling to perform GT contouring were considered for Inferred Resource status. A 0.20 GT outline was drawn around these mineralized areas. This lower cut-off was used to ensure continuity of mineralization along the mineralized trends. If the drill hole spacing within these mapped outlines met the project-specific criteria, they were designated as Inferred Resources. Average GTs from adjacent resource areas were applied to these areas for resource estimation. The results of this resource categorization are listed in the tables below:

	Tons	Average Grade	Pounds (U <sub>3</sub> O <sub>8)</sub>
Indicated Resources	6,873,199	0.09% U <sub>3</sub> O <sub>8</sub>	10,371,571
Inferred Resources	1,364,703	0.09% U <sub>3</sub> O <sub>8</sub>	2,325,514
Total Centennial	8,237,902	0.09% U <sub>3</sub> O <sub>8</sub>	12,697,085

2010 Centennial Resources - 0.20 GT

For mine planning purposes, an additional analysis of the indicated resources was performed using a higher 0.5 GT cut-off. Because the gradational continuity of uranium in roll fronts, the author was able to use the same contour maps employed in the previous calculations. The results of this higher GT cut-off are shown below:

	Tons	Average Grade	Pounds (U <sub>3</sub> O <sub>8)</sub>
Indicated Resources	5,111,154	0.11% U <sub>3</sub> O <sub>8</sub>	8,120,866
Inferred Resources	488,507	0.09% U <sub>3</sub> O <sub>8</sub>	641,470
<b>Total Centennial</b>	5,599,661	0.11% U <sub>3</sub> O <sub>8</sub>	8,762,336

#### 2010 Centennial Resources – 0.50 GT

The above estimate was reviewed by W. Cary Voss, Certified Professional Geologist (Wyoming PG No. 1806). The author, over his twenty-five years experience in the uranium exploration and development industry has performed numerous uranium resource analyses. It is the opinion of the author that the resources identified in this evaluation, based on the density of drilling, the quality of drill hole data and the sound geologic interpretation of that data, clearly meet the category definitions of inferred and indicated resources as defined in the CIM Definition Standards for Mineral Resources and Mineral Reserves.

#### 17.0 OTHER RELEVANT DATA AND INFORMATION

Pertinent data concerning uranium deposits in the Centennial Project area are bound to exist in other data storage or, even within the RME data acquired from Anadarko that will enhance the understanding of this project. In addition to the data already obtained, there are likely university or government reports that deal with groundwater conditions in the project area. Census data and weather data will also aid in the completion of permitting and licensing. These types of data were not necessary to fulfill Powertech's ongoing effort to identify the uranium resource of the Centennial Project. Any additional drill hole or geologic data may increase the confidence level of the resource evaluation but it is not likely that any data exists that could detract from the conclusions presented herein by the author.

#### **18.0 INTERPRETATION AND CONCLUSIONS**

After a careful review of all historical data obtained from RME and all newly-generated data by Powertech used to evaluate the uranium resources of the Centennial Project, it is concluded that the data and reporting were sufficient and accurate. Additional drilling will be necessary to establish the entire potential of undiscovered uranium resources within the regional project area.

The vast majority of geologic and environmental background data collection has been completed for the site. Prior to ISR mining in the southern portion of the project area, the water levels within the mineralized sand units will have to be elevated. This information, along with hydrological characteristics and proposed operational plans for the project area must be assembled into required permit applications and submitted to the appropriate regulatory authorities for review.

#### **19.0 RECOMMENDATIONS**

A two-phased work program is recommended. The first phase is the completion of an economic evaluation to assess the viability of an in-situ recovery (ISR) mining operation at the Centennial Project. This evaluation process should be conducted by independent companies with engineering and financial expertise in the field of ISR operations. If positive results are obtained from this evaluation, a second phase of initiating operational permitting activities with the U.S. EPA and the Colorado DRMS and DPHE should commence.

The cost of an economic evaluation is estimated to be \$500,000 and take up to approximately six months to complete. A second phase program to obtain operational permits could cost \$2.0 million and is anticipated to continue through 2011.

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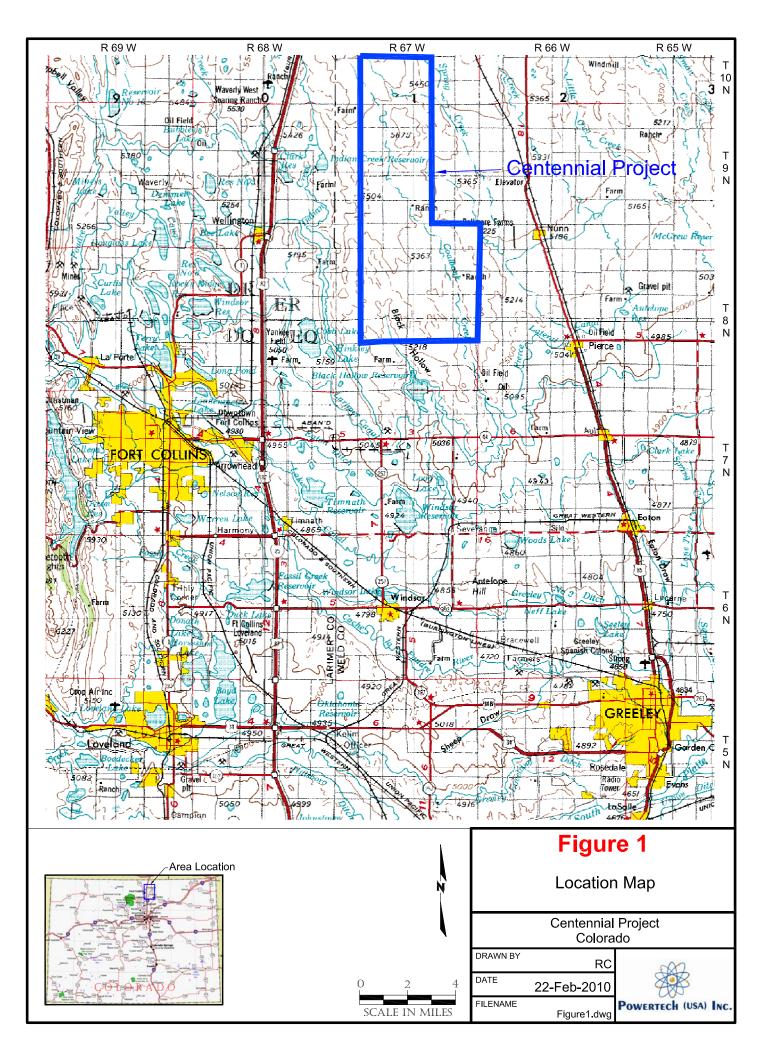
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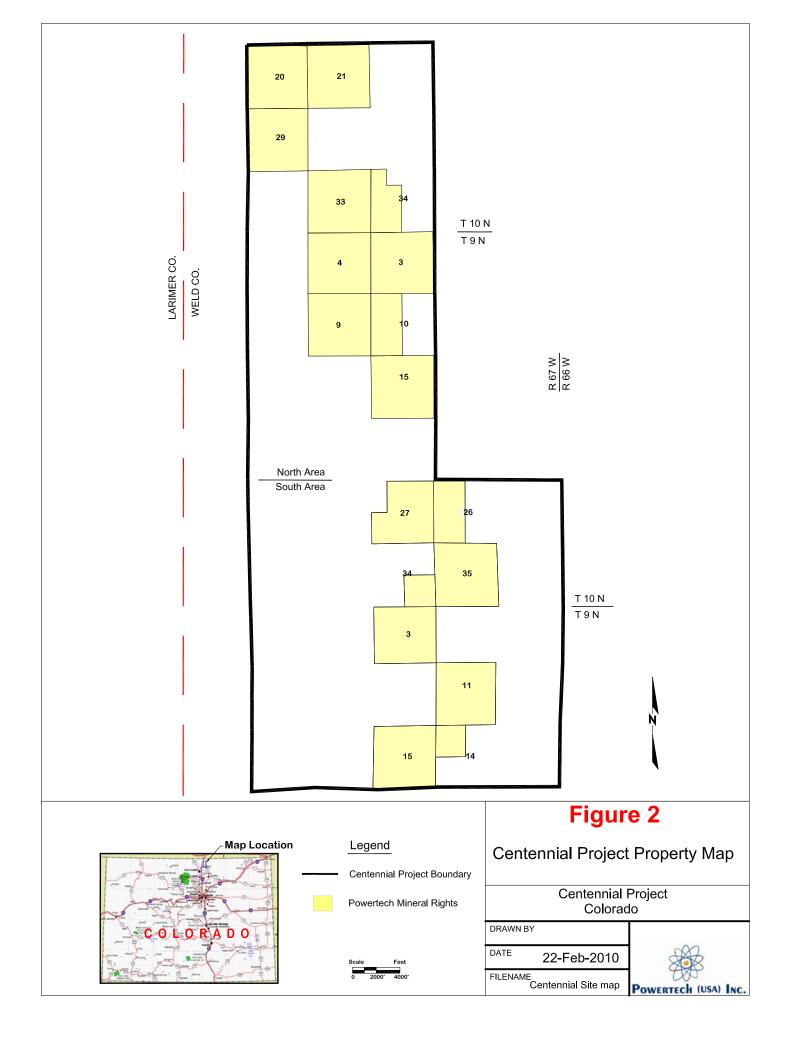
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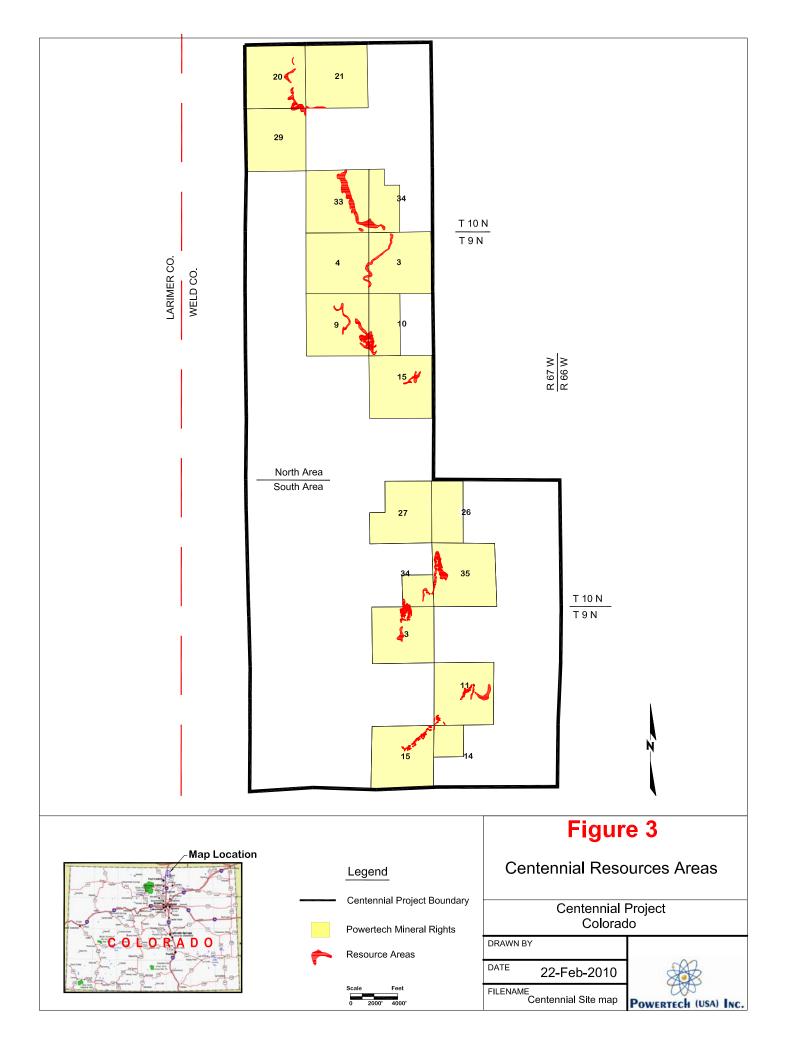
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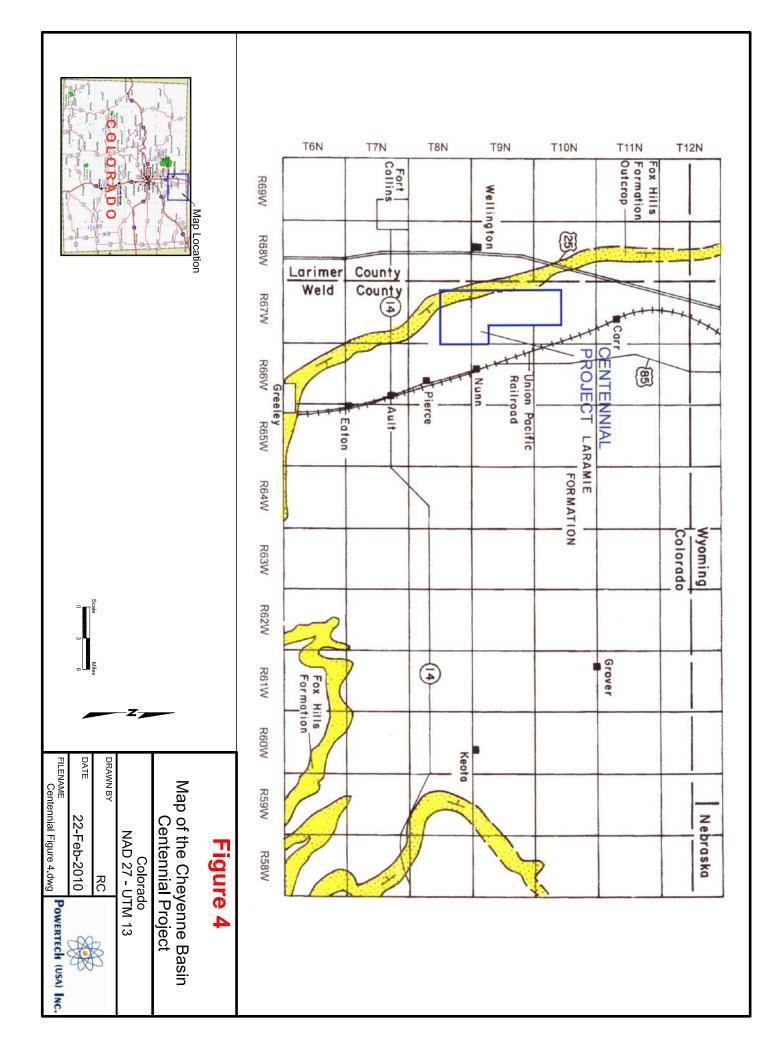
W. Cary Voss - Certified Professional Geologist - Wyoming No. 1806

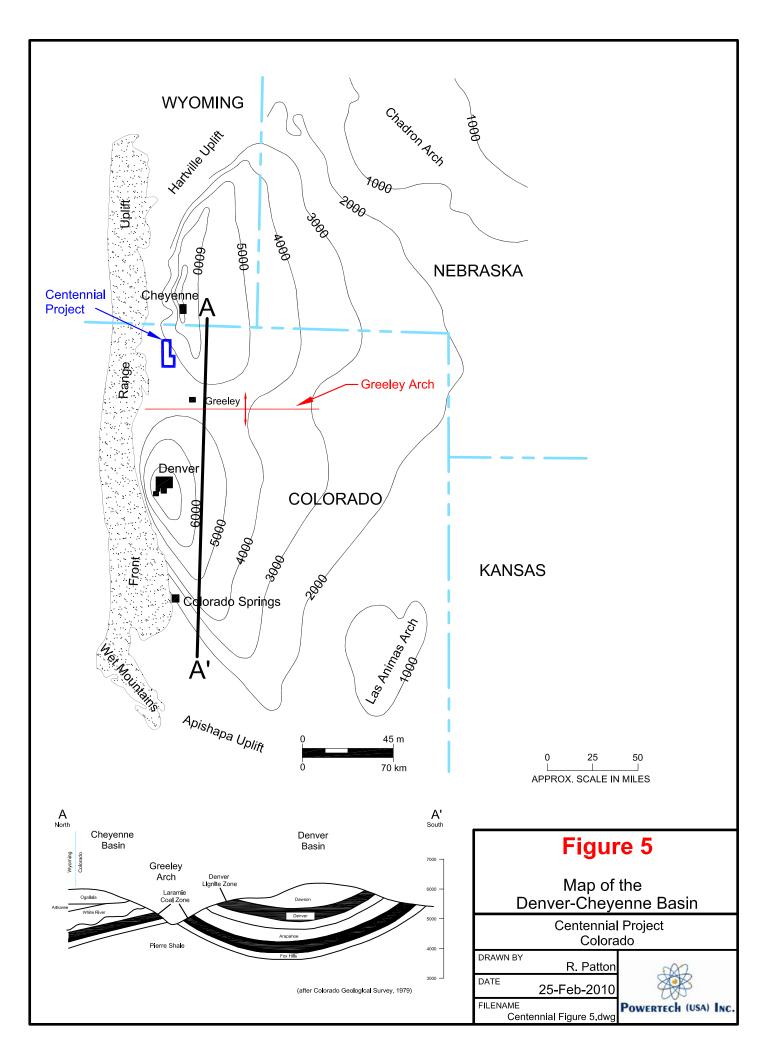






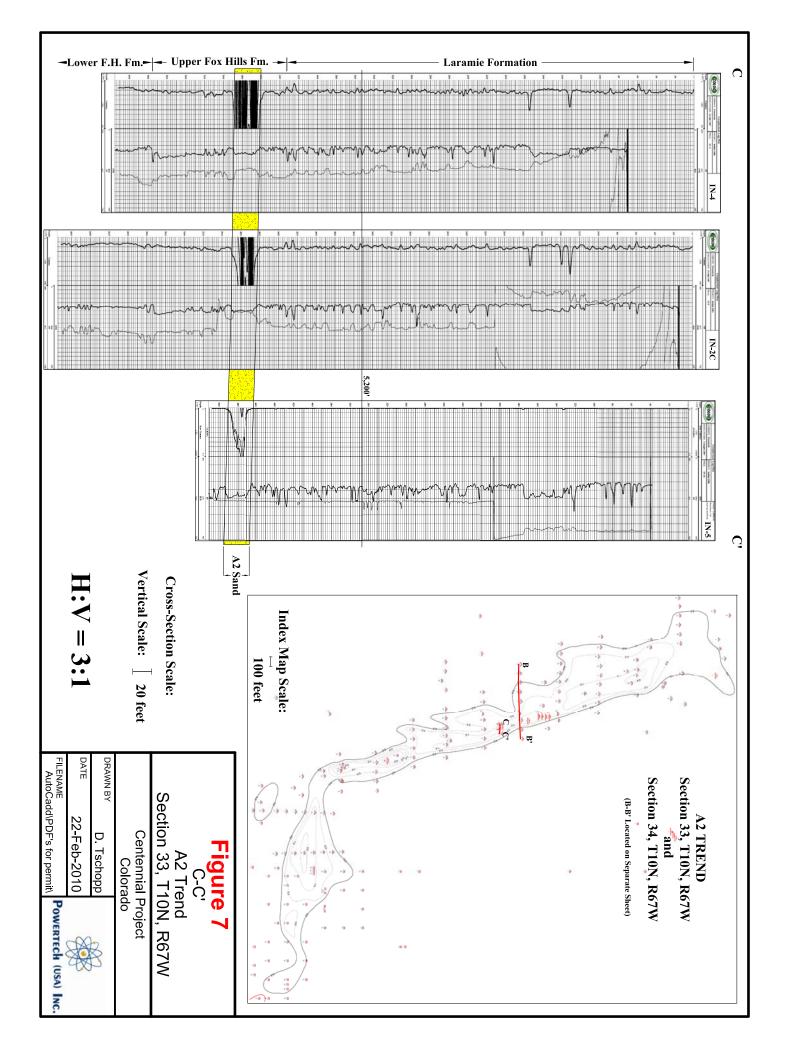


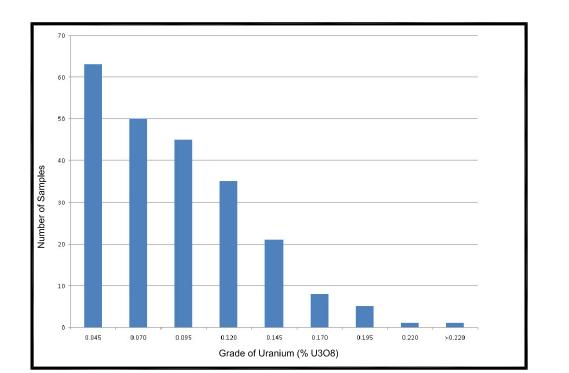




### GENERALIZED STRATIGRAPHIC SECTION

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				Figure	6
			Pierre Sh	ale	
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	_CaCo Com	cretion Zone Transgression			
2		Offshore and Transilional Muds an	d Silts		
3	C Sand, O	ffshore Bar Sand – Localized	Lower Fo	ox Hills Sandston	e
2	1	- Offshore and Transitional Muds and -	1 Silta		
{	B Sand, C	Delta Front Beach Sand			
		Lagoonal Muds			-
{		Barrier Island Beach Sand			_
{	A3 & A4	Sand, Channel and Overwash Sa Lagoonal Muds	nds. Upper Fo A-WE S	ox Hills Sandstone and	e
5		Barrier Island Beach Sand.			
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## **Confirmation Drilling**

