# ASX ANNOUNCEMENT

16 January 2023

## REE Discovery at Hines Hill REE Project

### HIGHLIGHTS

- Maiden aircore drilling program of 49 drill holes has intersected zones up to 1,602ppm TREO (from 8metres in drillhole HHAC38), with mineralisation open in all directions
- Significant results to date include:
  - **25m @ 837ppm TREO** (173ppm MREO) from 6m, including **3m @1602ppm TREO** from 6m (HHC038)
  - **36m @ 639ppm TREO** (131ppm MREO) from surface, including **3m @1126ppm TREO** from 12m (HHC037)
  - **16m @ 693ppm TREO** (inc 144ppm MREO) from 24m (HHC008)
  - **12m @ 637ppm TREO** (inc 148ppm MREO) from 42m (HHC012)
  - **13m @ 604ppm TREO** (inc 111ppm MREO) from 36m, including **4m @ 1182ppm TREO** from 45m (HHC029)
- Addition of contiguous tenement E70/6136 grows the Hines Hill project area to ~576km$^2$
- Geochemical roadside sampling program completed over the remainder of Hines Hill, and E70/6136, are due shortly
- Further drilling is being planned for the quarter, with a full review of technical data to include upcoming results from the geochemical sampling program, and assaying of 1metre samples underway

White Cliff Minerals Limited (**White Cliff** or the **Company**) is pleased to provide an update on the Company's Hines Hill REE project in the Wheatbelt region, WA (**Figure 1**), where maiden air core drilling has discovered mineralised REE clays from surface. The results are extremely positive (**Figure 2**) and further geochemical sampling over the remaining magnetic features has also been completed, to grow the project potential. The Company has also undertaken a maiden geochemical sampling program over E70/6136 an addition to the Hines Hill project area which is contiguous to the west and increases the project size to ~576km$^2$.

Commenting on the progress, White Cliff Technical Director Ed Mead said:

"Our maiden drill program at Hines Hill has been extremely successful in demonstrating the potential of the project with the discovery of shallow mineralisation with intercepts of up to 1,602ppm TREO in clays from surface down through the oxidisation profile, and into the basement. It appears at this early stage that the granitoid basement is highly elevated in REE's and the REE Clays are the weathered granitoid. The Hines Hill project sits on salt affected broad acre farmland, which gives us the ability to work all year round; and with a land access agreement with the landowner, further encouraging results bodes well for progression of the project. We have also increased the scale of the project to ~576km$^2$ "



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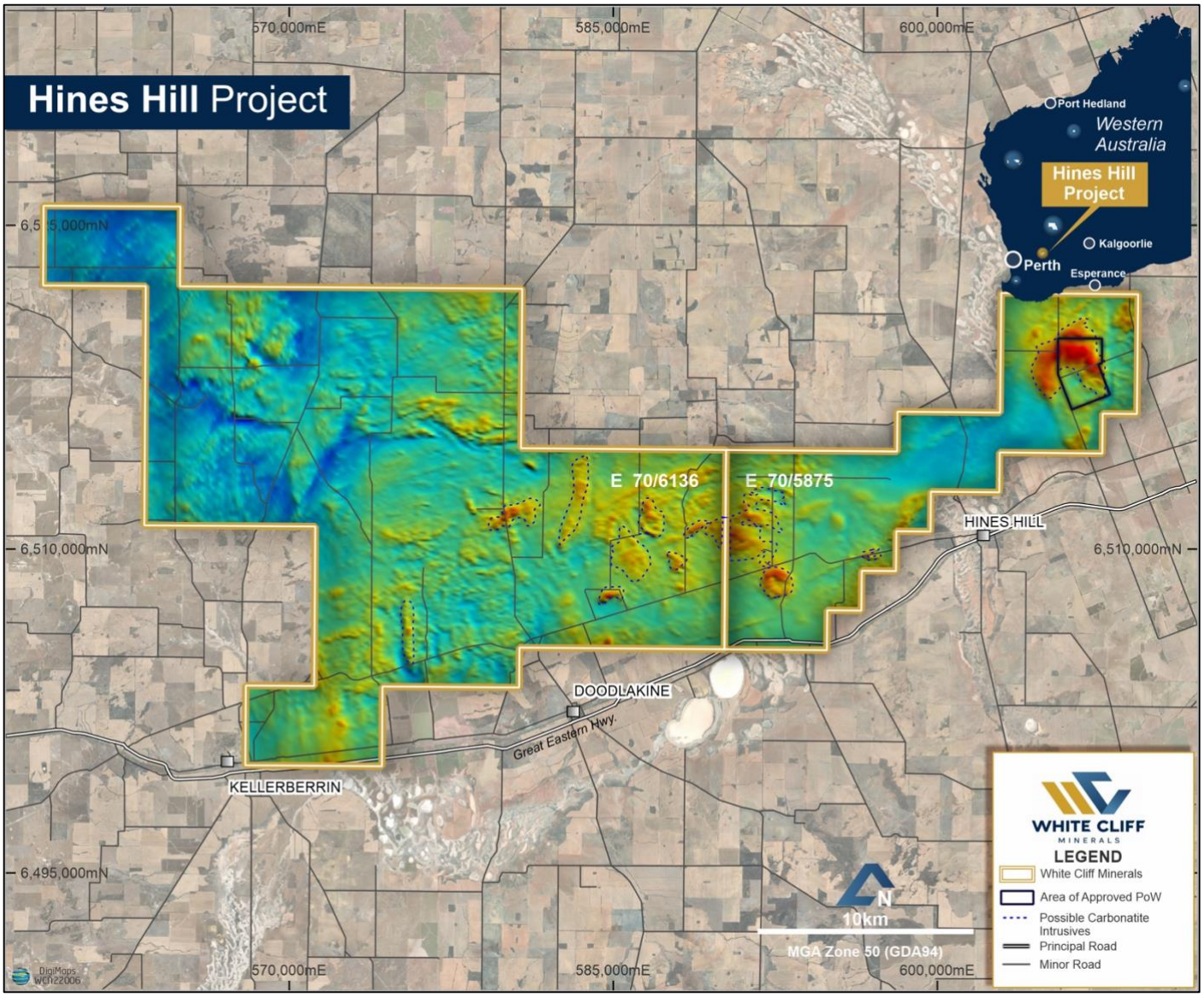


***Figure 1:*** *Hines Hill REE Project location map in Western Australia, with the addition of tenement E70/6136(136 blocks) to original tenement E70/5875 (44 blocks increasing the project to ~576km$^2$* **.**

## Hines Hill - REE Project

The Hines Hill REE project consists of two tenements (**Figure 1**), within the wheatbelt region, located about 200km east of Perth on the Great Eastern Highway. The tenement area of ~576Km$^2$ covers extensive broad acre grain growing properties.

Geochemical sampling by White Cliff has initially targeted two magnetic features tentatively interpreted to be carbonatite intrusions, although they may represent differential non-carbonatite intrusives (granitoids).

Drilling of the most north-eastern magnetic feature (**Figures 1 and 4**), where an approved POW allows drilling has intersected laterite, clays and basement geology (granitoid) with REE assays (**Figures 2 and 3**). The mineralised profile suggests a granitoid with high REE background is weathering and the resulting clays have equivalent or higher REE content due to reduction associated with weathering. Further drilling of the basement rocks will confirm the current interpretation of granitoid basement geology.



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The maiden aircore drilling program totalled 49 drillholes for 1,861 metres (**Table 2**), ranging in depth from 8 metres to 92 metres. 716 (3 metre composite samples) were taken.

The results of the drilling (**Tables 1 and 3**) have returned positive intercepts for REE's with multiple zones of mineralisation intersected. The best and thickest zones of mineralisation appear to be associated with magnetic highs.

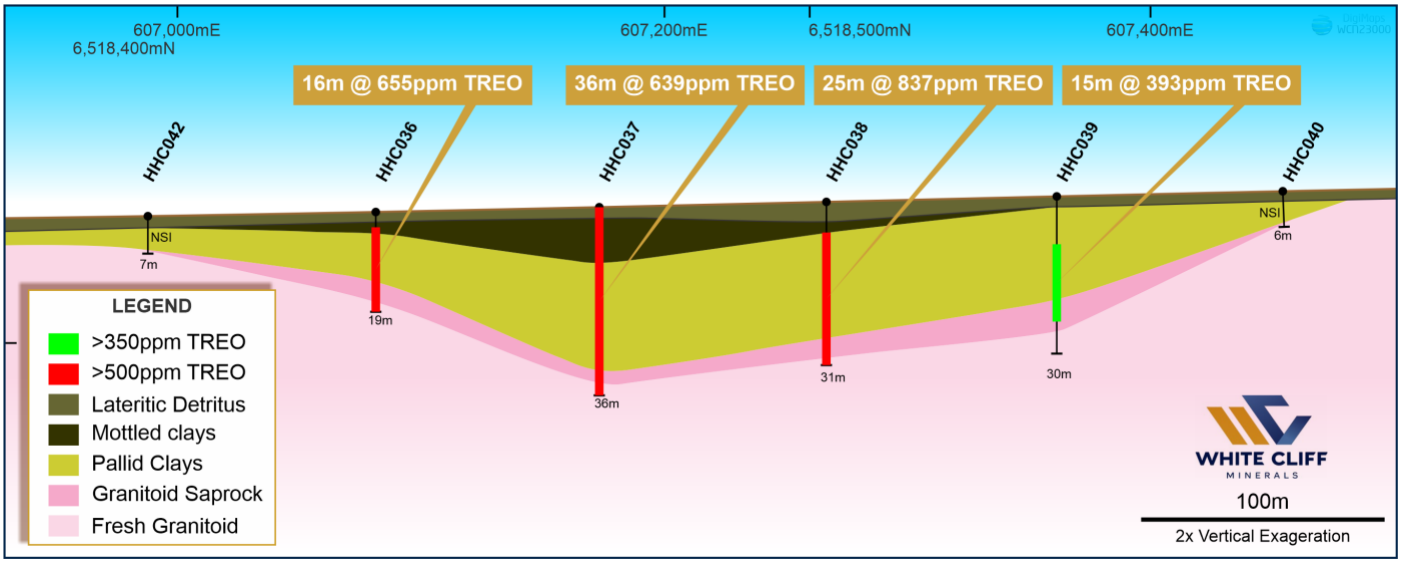


***Figure 2:*** *Hines Hill schematic drill section looking north. Refer Figure 3 for location of section.*

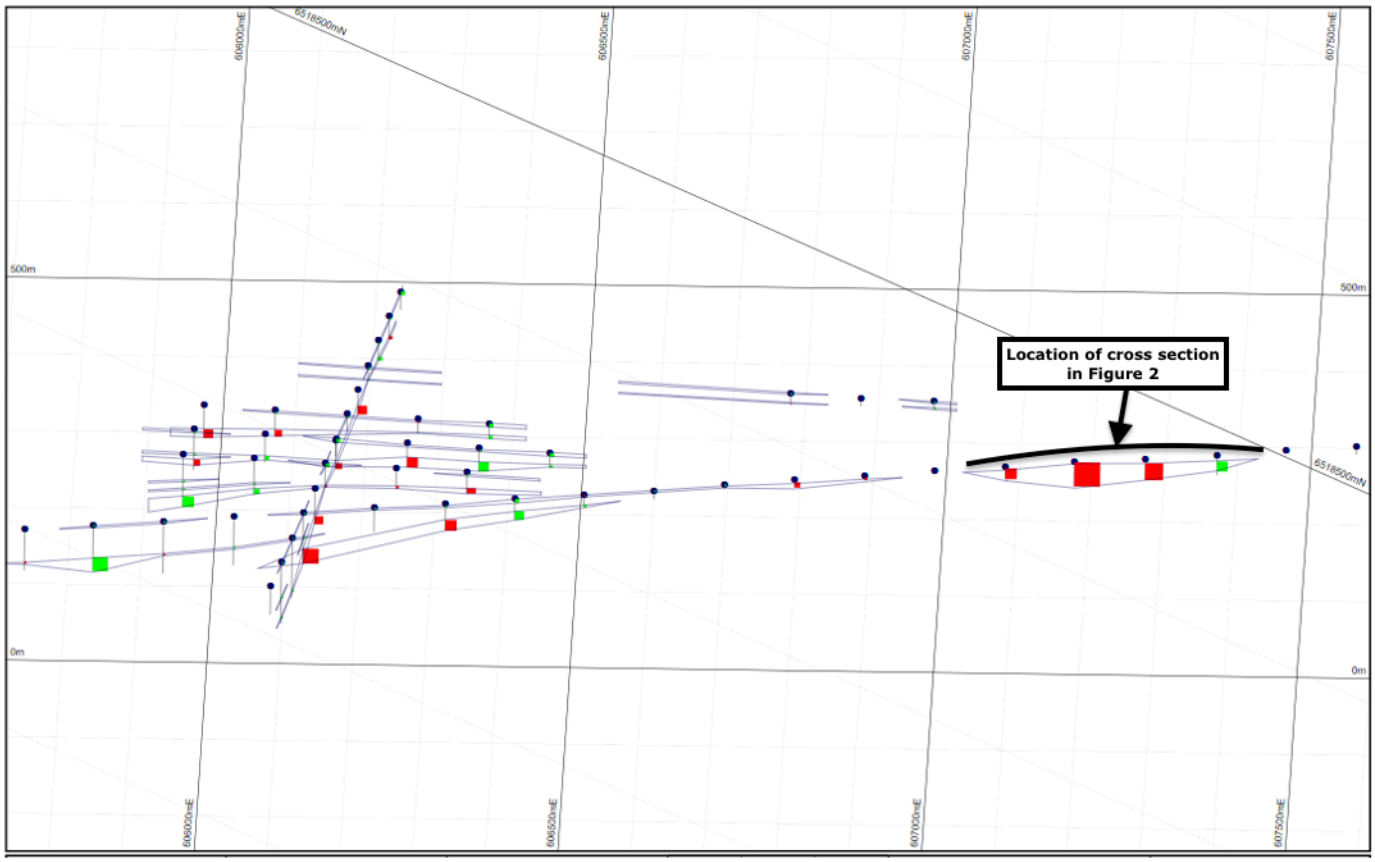


***Figure 3:*** *Hines Hill drill hole locations and REE intercept schematic looking north. Red >500ppm TREO, Green < 500ppm TREO.*



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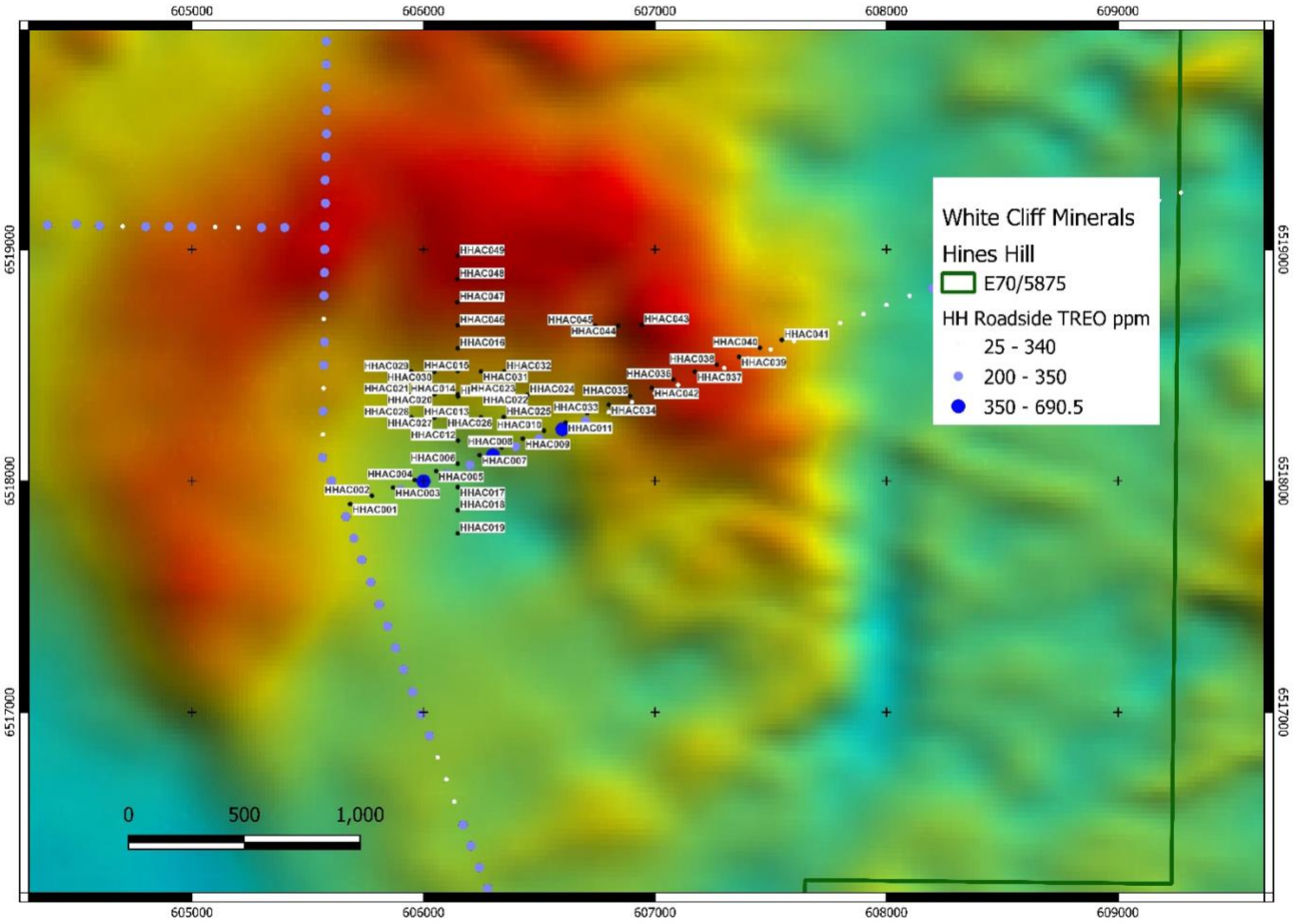


***Figure 4:*** *Hines Hill drill hole location plan from Aircore drill program.*

Further roadside conventional geochemical sampling was completed on E70/5875, with 231 samples on a nominal 200m spacing.

ELA 70/6136 was applied for on 18 May 2022 and is contiguous to the west of Hines Hill. The application covers 136 blocks (~400km$^2$) and is prospective for REE.

A first pass roadside conventional geochemical sampling program has been completed, with 813 samples on a nominal 200m spacing. These results are due shortly.

## Next Steps

The Company will review all technical data, that includes the geochemical samples which are due shortly, to determine the next suitable program which may include work to delineate a maiden resource on the magnetic feature area where drill holes HHC036 to 39 intersected wide zones of shallow REE mineralisation. These drill holes will have the 1 metre samples sent to ALS Laboratories for assay.



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## Table 1: Significant drill intercepts from 3 metre composite samples

| Hole ID | From | To | Width | TREO ppm | MREO ppm | Intercept |
|---|---|---|---|---|---|---|
| HHC002 | 48 | 51 | 3 | 714 | 129 | 3m @ 714ppm TREO |
| HHC003 | 0 | 3 | 3 | 432 | 90 | 3m @ 432ppm TREO |
| HHC003 | 48 | 69 | 21 | 389 | 75 | 21m @ 389ppm TREO |
| HHC004 | 0 | 3 | 3 | 428 | 95 | 3m @ 428ppm TREO |
| HHC004 | 48 | 51 | 3 | 673 | 94 | 3m @ 673ppm TREO |
| HHC005 | 45 | 48 | 3 | 390 | 69 | 3m @ 390ppm TREO |
| HHC006 | 0 | 3 | 3 | 393 | 69 | 3m @ 393ppm TREO |
| HHC006 | 36 | 39 | 3 | 375 | 78 | 3m @ 375ppm TREO |
| HHC006 | 54 | 76 | 22 | 577 | 118 | 22m @ 577ppm TREO |
| HHC007 | 0 | 3 | 3 | 385 | 82 | 3m @ 385ppm TREO |
| HHC008 | 3 | 6 | 3 | 391 | 86 | 3m @ 391ppm TREO |
| HHC008 | 24 | 40 | 16 | 693 | 144 | 16m @ 693ppm TREO |
| HHC009 | 0 | 6 | 6 | 380 | 79 | 6m @ 380ppm TREO |
| HHC009 | 18 | 31 | 13 | 496 | 111 | 13m @ 496ppm TREO |
| HHC010 | 0 | 3 | 3 | 643 | 148 | 3m @ 643ppm TREO |
| HHC010 | 15 | 19 | 4 | 388 | 79 | 4m @ 388ppm TREO |
| HHC011 | 0 | 3 | 3 | 350 | 81 | 3m @ 350ppm TREO |
| HHC012 | 42 | 54 | 12 | 637 | 148 | 12m @ 637ppm TREO |
| HHC013 | 0 | 6 | 6 | 441 | 111 | 6m @ 441ppm TREO |
| HHC013 | 33 | 36 | 3 | 573 | 130 | 3m @ 573ppm TREO |
| HHC014 | 0 | 6 | 6 | 375 | 85 | 3m @ 375ppm TREO |
| HHC014A | 33 | 42 | 9 | 503 | 107 | 9m @ 503ppm TREO |
| HHC015 | 3 | 6 | 3 | 357 | 82 | 3m @ 357ppm TREO |
| HHC016 | 24 | 37 | 13 | 534 | 120 | 13m @ 534ppm TREO |
| HHC017 | 0 | 3 | 3 | 480 | 104 | 3m @ 480ppm TREO |
| HHC017 | 78 | 81 | 3 | 490 | 98 | 3m @ 490ppm TREO |
| HHC018 | 0 | 3 | 3 | 409 | 96 | 3m @ 409ppm TREO |
| HHC018 | 51 | 54 | 3 | 486 | 89 | 3m @ 486ppm TREO |
| HHC018 | 81 | 84 | 3 | 386 | 77 | 3m @ 386ppm TREO |
| HHC020 | 33 | 39 | 6 | 481 | 108 | 6m @ 481ppm TREO |
| HHC021 | 3 | 6 | 3 | 408 | 98 | 3m @ 408ppm TREO |
| HHC021 | 36 | 39 | 3 | 412 | 93 | 3m @ 412ppm TREO |
| HHC021 | 45 | 54 | 9 | 655 | 127 | 9m @ 655ppm TREO |
| HHC022 | 3 | 6 | 3 | 349 | 85 | 3m @ 349ppm TREO |
| HHC022 | 21 | 36 | 15 | 518 | 110 | 15m @ 518ppm TREO |
| HHC023 | 3 | 6 | 3 | 427 | 107 | 3m @ 427ppm TREO |
| HHC023 | 21 | 35 | 14 | 492 | 99 | 14m @ 492ppm TREO |
| HHC024 | 0 | 6 | 6 | 350 | 79 | 6m @ 350ppm TREO |
| HHC024 | 18 | 22 | 4 | 459 | 98 | 4m @ 459ppm TREO |
| HHC025 | 3 | 6 | 3 | 473 | 103 | 3m @ 473ppm TREO |
| HHC025 | 24 | 37 | 13 | 587 | 131 | 13m @ 587ppm TREO |
| HHC026 | 27 | 31 | 4 | 600 | 125 | 4m @ 600ppm TREO |
| HHC027 | 36 | 39 | 3 | 372 | 93 | 3m @ 372ppm TREO |
| HHC027 | 45 | 53 | 8 | 472 | 100 | 8m @ 472ppm TREO |
| HHC028 | 39 | 42 | 3 | 436 | 90 | 3m @ 436ppm TREO |
| HHC028 | 51 | 54 | 3 | 472 | 96 | 3m @ 472ppm TREO |
| HHC028 | 63 | 79 | 16 | 441 | 100 | 16m @ 441ppm TREO |
| HHC029 | 36 | 49 | 13 | 604 | 111 | 13m @ 604ppm TREO |
| | | | | | | Incl 4m @ 1182ppm TREO from 45m |
| HHC030 | 3 | 6 | 3 | 463 | 103 | 3m @ 463ppm TREO |
| HHC030 | 30 | 40 | 10 | 726 | 161 | 10m @ 726ppm TREO |
| | | | | | | Incl 3m @ 1045ppm TREO from 30m |
| HHC031 | 3 | 6 | 3 | 621 | 183 | 3m @ 621ppm TREO |
| HHC031 | 21 | 22 | 1 | 471 | 117 | 1m @ 471ppm TREO |
| HHC032 | 0 | 6 | 6 | 395 | 89 | 6m @ 395ppm TREO |
| HHC032 | 18 | 23 | 5 | 398 | 81 | 5m @ 398ppm TREO |
| HHC033 | 0 | 3 | 3 | 478 | 98 | 3m @ 478ppm TREO |



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| Hole ID | From | To | Width | TREO ppm | MREO ppm | Intercept |
|---|---|---|---|---|---|---|
| HHC034 | 3 | 11 | 8 | 642 | 149 | 8m @ 642ppm TREO |
| HHC035 | 3 | 7 | 4 | 855 | 205 | 4m @ 855ppm TREO |
| HHC036 | 3 | 19 | 16 | 655 | 143 | 16m @ 655ppm TREO |
| HHC037 | 0 | 36 | 36 | 639 | 131 | 36m @ 639ppm TREO |
| | | | | | | Incl 3m @ 1126ppm TREO from 12m |
| HHC038 | 6 | 31 | 25 | 837 | 173 | 25m @ 837ppm TREO |
| | | | | | | Incl 3m @ 1602ppm TREO from 6m |
| HHC039 | 9 | 24 | 15 | 393 | 75 | 15m @ 393ppm TREO |
| HHC043 | 0 | 3 | 3 | 364 | 72 | 3m @ 364ppm TREO |
| HHC043 | 9 | 12 | 3 | 390 | 81 | 3m @ 390ppm TREO |
| HHC045 | 0 | 3 | 3 | 400 | 82 | 3m @ 400ppm TREO |
| HHC045 | 15 | 17 | 2 | 612 | 126 | 2m @ 612ppm TREO |
| HHC046 | 3 | 6 | 3 | 395 | 88 | 3m @ 395ppm TREO |
| HHC046 | 21 | 23 | 2 | 478 | 118 | 2m @ 478ppm TREO |
| HHC047 | 3 | 6 | 3 | 442 | 109 | 3m @ 442ppm TREO |
| HHC047 | 24 | 30 | 6 | 393 | 78 | 6m @ 393ppm TREO |
| HHC048 | 3 | 6 | 3 | 418 | 105 | 3m @ 418ppm TREO |
| HHC048 | 30 | 35 | 5 | 701 | 142 | 5m @ 701ppm TREO |
| HHC049 | 0 | 6 | 6 | 357 | 79 | 6m @ 357ppm TREO |

## UPCOMING NEWSFLOW

**January**: Hines Hill geochemical sampling results

**January**: High-resolution magnetics/radiometrics survey at Yinnetharra. Preliminary targets provided by SGC

**January**: Completion of AEM interpretation by SGC for Yinnetharra, Diemals, Hines Hill and North Kellerberrin, and Lake Tay

**January**: High-resolution magnetics/radiometrics survey at Yinnetharra, Final interpretation and targets provided by SGC

**January**: Diemals geochemical sampling results

**February:** Reconnaissance field trip at Lake Tay REE project

**February**: Planning for further drill program at Hines Hill

**ENDS**

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*This announcement has been approved by the Board of White Cliff Minerals Limited.*

**Competent Persons Statement**

The Information in this report that relates to exploration results, mineral resources or ore reserves is based on information compiled by Mr Allan Younger, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Younger is an employee of the company. Mr Younger has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the `Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Younger consents to the inclusion of this information in the form and context in which it appears in this report.

**Forward looking statements**

This announcement contains certain forward-looking statements and comments about future events, including the Company's expectations about the proposed transaction, the proposed tenements and the performance of its businesses. Forward looking statements can generally be identified by the use of forward-looking words such as 'expect', 'anticipate', 'likely', 'intend', 'should', 'could', 'may', 'predict', 'plan', 'propose', 'will', 'believe', 'forecast', 'estimate', 'target' and other similar expressions within the meaning of securities laws of applicable jurisdictions. Indications of, and guidance on, future earnings or financial position or performance are also forward-looking statements.

Forward looking statements involve inherent risks and uncertainties, both general and specific, and there is a risk that such predictions, forecasts, projections and other forward-looking statements will not be achieved. Forward looking statements are provided as a general guide only and should not be relied on as an indication or guarantee of future performance. Forward looking statements involve known and unknown risks, uncertainty and other factors which can cause the Company's actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements and many of these factors are outside the control of the Company. As such, undue reliance should not be placed on any forward-looking statement. Past performance is not necessarily a guide to future performance and no representation or warranty is made by any person as to the likelihood of achievement or reasonableness of any forward-looking statements, forecast financial information or other forecast. Nothing contained in this announcement nor any information made available to you is, or shall be relied upon as, a promise, representation, warranty or guarantee as to the past, present or the future performance of the Company.

Except as required by law or the ASX Listing Rules, the Company assumes no obligation to provide any additional or updated information or to update any forward-looking statements, whether as a result of new information, future events or results, or otherwise.



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## Table 2: Drilling Collars

| Hole ID | EAST | NORTH | RL | DEPTH M | Dip | Azimuth |
|---|---|---|---|---|---|---|
| HHAC001 | 605683 | 6517900 | 260 | 58 | -90 | 0 |
| HHAC002 | 605777 | 6517936 | 261 | 62 | -90 | 0 |
| HHAC003 | 605868 | 6517971 | 262 | 69 | -90 | 0 |
| HHAC004 | 605962 | 6518004 | 263 | 78 | -90 | 0 |
| HHAC005 | 606055 | 6518042 | 264 | 74 | -90 | 0 |
| HHAC006 | 606148 | 6518074 | 265 | 76 | -90 | 0 |
| HHAC007 | 606242 | 6518111 | 266 | 37 | -90 | 0 |
| HHAC008 | 606337 | 6518145 | 267 | 40 | -90 | 0 |
| HHAC009 | 606429 | 6518182 | 268 | 31 | -90 | 0 |
| HHAC010 | 606521 | 6518217 | 269 | 19 | -90 | 0 |
| HHAC011 | 606614 | 6518252 | 270 | 13 | -90 | 0 |
| HHAC012 | 606149 | 6518174 | 265 | 54 | -90 | 0 |
| HHAC013 | 606148 | 6518274 | 265 | 36 | -90 | 0 |
| HHAC014 | 606148 | 6518374 | 265 | 27 | -90 | 0 |
| HHAC014A | 606149 | 6518365 | 265 | 42 | -90 | 0 |
| HHAC015 | 606148 | 6518474 | 265 | 26 | -90 | 0 |
| HHAC016 | 606148 | 6518573 | 265 | 37 | -90 | 0 |
| HHAC017 | 606148 | 6517973 | 265 | 90 | -90 | 0 |
| HHAC018 | 606148 | 6517873 | 265 | 92 | -90 | 0 |
| HHAC019 | 606148 | 6517773 | 265 | 42 | -90 | 0 |
| HHAC020 | 606048 | 6518374 | 265 | 43 | -90 | 0 |
| HHAC021 | 605948 | 6518374 | 265 | 61 | -90 | 0 |
| HHAC022 | 606248 | 6518374 | 265 | 36 | -90 | 0 |
| HHAC023 | 606349 | 6518374 | 265 | 35 | -90 | 0 |
| HHAC024 | 606449 | 6518372 | 265 | 22 | -90 | 0 |
| HHAC025 | 606347 | 6518276 | 265 | 32 | -90 | 0 |
| HHAC026 | 606248 | 6518274 | 265 | 31 | -90 | 0 |
| HHAC027 | 606048 | 6518274 | 265 | 55 | -90 | 0 |
| HHAC028 | 605948 | 6518274 | 265 | 79 | -90 | 0 |
| HHAC029 | 605947 | 6518472 | 265 | 49 | -90 | 0 |
| HHAC030 | 606047 | 6518472 | 265 | 40 | -90 | 0 |
| HHAC031 | 606248 | 6518473 | 265 | 22 | -90 | 0 |
| HHAC032 | 606348 | 6518473 | 271 | 23 | -90 | 0 |
| HHAC033 | 606707 | 6518293 | 272 | 8 | -90 | 0 |
| HHAC034 | 606800 | 6518329 | 273 | 11 | -90 | 0 |
| HHAC035 | 606893 | 6518366 | 274 | 7 | -90 | 0 |
| HHAC036 | 607080 | 6518438 | 275 | 19 | -90 | 0 |
| HHAC037 | 607172 | 6518472 | 276 | 36 | -90 | 0 |
| HHAC038 | 607267 | 6518502 | 277 | 31 | -90 | 0 |
| HHAC039 | 607363 | 6518536 | 278 | 30 | -90 | 0 |
| HHAC040 | 607454 | 6518575 | 279 | 6 | -90 | 0 |
| HHAC041 | 607548 | 6518609 | 280 | 13 | -90 | 0 |
| HHAC042 | 606986 | 6518402 | 266 | 7 | -90 | 0 |
| HHAC043 | 606943 | 6518675 | 266 | 12 | -90 | 0 |
| HHAC044 | 606841 | 6518671 | 266 | 13 | -90 | 0 |
| HHAC045 | 606742 | 6518671 | 266 | 17 | -90 | 0 |
| HHAC046 | 606147 | 6518672 | 266 | 23 | -90 | 0 |
| HHAC047 | 606146 | 6518772 | 266 | 30 | -90 | 0 |
| HHAC048 | 606146 | 6518872 | 266 | 35 | -90 | 0 |
| HHAC049 | 606147 | 6518972 | 266 | 28 | -90 | 0 |



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## Table 3: Assay Data

| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC001 | 0 | 3 | 74.07 | 35.54 | 2.33 | 1.49 | 0.85 | 3.25 | 0.53 | 0.18 | 24.96 | 7.88 | 4.58 | 0.47 | 0.13 | 1.31 | 15.49 | 173.05 | 35.64 |
| HHC001 | 3 | 6 | 26.66 | 16.30 | 0.98 | 0.75 | 0.36 | 1.13 | 0.23 | 0.11 | 8.75 | 2.79 | 1.51 | 0.16 | 0.08 | 0.80 | 6.48 | 67.08 | 12.68 |
| HHC001 | 6 | 9 | 23.83 | 15.83 | 0.77 | 0.56 | 0.25 | 0.76 | 0.16 | 0.09 | 6.65 | 2.21 | 1.19 | 0.13 | 0.08 | 0.67 | 4.95 | 58.15 | 9.76 |
| HHC001 | 9 | 12 | 26.04 | 15.25 | 0.79 | 0.45 | 0.23 | 0.92 | 0.22 | 0.14 | 7.81 | 2.84 | 1.15 | 0.12 | 0.07 | 0.68 | 5.46 | 62.17 | 11.56 |
| HHC001 | 12 | 15 | 19.90 | 12.43 | 0.63 | 0.49 | 0.17 | 0.68 | 0.16 | 0.10 | 5.72 | 2.11 | 1.02 | 0.13 | 0.11 | 0.55 | 4.83 | 49.04 | 8.59 |
| HHC001 | 15 | 18 | 20.64 | 12.43 | 0.79 | 0.50 | 0.15 | 0.85 | 0.17 | 0.09 | 5.95 | 1.93 | 0.74 | 0.14 | 0.11 | 0.64 | 5.08 | 50.23 | 8.81 |
| HHC001 | 18 | 21 | 21.62 | 14.07 | 0.86 | 0.48 | 0.14 | 0.78 | 0.16 | 0.08 | 6.30 | 2.02 | 1.01 | 0.12 | 0.02 | 0.60 | 5.33 | 53.60 | 9.29 |
| HHC001 | 21 | 24 | 27.39 | 16.07 | 0.76 | 0.48 | 0.22 | 0.86 | 0.16 | 0.09 | 8.05 | 2.74 | 1.30 | 0.15 | 0.01 | 0.57 | 4.83 | 63.68 | 11.70 |
| HHC001 | 24 | 27 | 29.36 | 16.77 | 0.65 | 0.54 | 0.19 | 0.80 | 0.17 | 0.10 | 8.16 | 2.96 | 1.03 | 0.15 | 0.01 | 0.66 | 5.33 | 66.89 | 11.93 |
| HHC001 | 27 | 30 | 52.94 | 29.91 | 0.95 | 0.55 | 0.30 | 1.41 | 0.19 | 0.11 | 14.93 | 5.27 | 2.02 | 0.20 | 0.01 | 0.64 | 6.10 | 115.53 | 21.35 |
| HHC001 | 30 | 33 | 23.83 | 15.25 | 0.61 | 0.47 | 0.25 | 0.86 | 0.18 | 0.08 | 7.46 | 2.33 | 1.00 | 0.11 | 0.01 | 0.55 | 4.06 | 57.06 | 10.51 |
| HHC001 | 33 | 36 | 22.85 | 14.66 | 0.69 | 0.47 | 0.25 | 0.71 | 0.15 | 0.10 | 6.88 | 2.34 | 1.07 | 0.12 | 0.02 | 0.51 | 4.83 | 55.66 | 10.03 |
| HHC001 | 36 | 39 | 18.67 | 11.26 | 0.55 | 0.41 | 0.19 | 0.66 | 0.11 | 0.08 | 5.37 | 1.91 | 0.96 | 0.12 | 0.02 | 0.52 | 3.94 | 44.77 | 7.94 |
| HHC001 | 39 | 42 | 16.71 | 10.44 | 0.39 | 0.32 | 0.19 | 0.54 | 0.11 | 0.07 | 4.90 | 1.62 | 0.66 | 0.07 | 0.01 | 0.36 | 3.30 | 39.69 | 6.98 |
| HHC001 | 42 | 45 | 31.45 | 17.24 | 0.70 | 0.46 | 0.20 | 0.93 | 0.16 | 0.10 | 9.21 | 2.84 | 1.70 | 0.15 | 0.06 | 0.61 | 4.57 | 70.39 | 12.91 |
| HHC001 | 45 | 48 | 42.87 | 19.47 | 0.76 | 0.45 | 0.28 | 0.95 | 0.19 | 0.09 | 10.96 | 3.53 | 1.60 | 0.18 | 0.03 | 0.63 | 5.08 | 87.06 | 15.43 |
| HHC001 | 48 | 51 | 88.81 | 44.33 | 1.40 | 0.83 | 0.53 | 2.11 | 0.30 | 0.15 | 21.93 | 7.50 | 3.33 | 0.26 | 0.07 | 0.73 | 8.13 | 180.41 | 31.09 |
| HHC001 | 51 | 54 | 75.55 | 46.33 | 1.26 | 0.72 | 0.69 | 1.68 | 0.27 | 0.14 | 22.74 | 8.11 | 3.18 | 0.24 | 0.05 | 0.85 | 7.62 | 169.43 | 32.35 |
| HHC001 | 54 | 58 | 148.64 | 75.29 | 2.27 | 1.26 | 1.01 | 3.61 | 0.45 | 0.17 | 39.77 | 13.47 | 5.39 | 0.48 | 0.13 | 1.33 | 14.22 | 307.49 | 56.00 |
| HHC002 | 0 | 3 | 122.47 | 68.73 | 4.05 | 1.97 | 1.38 | 5.23 | 0.82 | 0.28 | 48.64 | 14.92 | 7.68 | 0.72 | 0.30 | 1.88 | 24.13 | 303.19 | 68.33 |
| HHC002 | 3 | 6 | 36.11 | 23.10 | 1.06 | 0.81 | 0.42 | 1.36 | 0.29 | 0.13 | 11.66 | 3.66 | 1.88 | 0.18 | 0.10 | 0.75 | 7.87 | 89.38 | 16.56 |
| HHC002 | 6 | 9 | 28.99 | 17.12 | 0.77 | 0.72 | 0.27 | 0.83 | 0.19 | 0.10 | 8.75 | 2.79 | 1.50 | 0.15 | 0.10 | 0.74 | 5.84 | 68.87 | 12.46 |
| HHC002 | 9 | 12 | 20.64 | 12.55 | 0.67 | 0.56 | 0.22 | 0.65 | 0.17 | 0.09 | 6.18 | 1.99 | 0.89 | 0.13 | 0.08 | 0.55 | 4.70 | 50.06 | 8.97 |
| HHC002 | 12 | 15 | 22.48 | 14.78 | 0.92 | 0.67 | 0.17 | 0.86 | 0.21 | 0.10 | 7.00 | 2.05 | 1.23 | 0.14 | 0.07 | 0.68 | 6.35 | 57.72 | 10.11 |
| HHC002 | 15 | 18 | 20.39 | 11.61 | 0.69 | 0.47 | 0.19 | 0.67 | 0.17 | 0.08 | 5.83 | 1.79 | 0.88 | 0.11 | 0.11 | 0.56 | 5.21 | 48.75 | 8.41 |
| HHC002 | 18 | 21 | 20.15 | 12.20 | 0.52 | 0.35 | 0.08 | 0.60 | 0.09 | 0.07 | 5.48 | 1.96 | 1.06 | 0.12 | 0.07 | 0.47 | 3.43 | 46.63 | 8.07 |
| HHC002 | 21 | 24 | 21.62 | 12.43 | 0.67 | 0.40 | 0.27 | 0.68 | 0.14 | 0.09 | 6.18 | 2.14 | 1.08 | 0.11 | 0.01 | 0.60 | 4.19 | 50.60 | 9.09 |
| HHC002 | 24 | 27 | 41.15 | 22.99 | 0.91 | 0.53 | 0.34 | 1.23 | 0.19 | 0.11 | 12.60 | 3.93 | 1.73 | 0.18 | 0.02 | 0.63 | 5.21 | 91.73 | 17.61 |
| HHC002 | 27 | 30 | 48.40 | 28.85 | 1.07 | 0.62 | 0.28 | 1.24 | 0.22 | 0.14 | 14.00 | 4.89 | 2.32 | 0.21 | 0.03 | 0.79 | 7.11 | 110.16 | 20.17 |
| HHC002 | 30 | 33 | 29.24 | 19.59 | 0.72 | 0.49 | 0.29 | 1.01 | 0.17 | 0.08 | 10.61 | 3.43 | 1.55 | 0.12 | 0.10 | 0.63 | 4.95 | 72.99 | 14.89 |
| HHC002 | 33 | 36 | 20.39 | 12.43 | 0.56 | 0.38 | 0.15 | 0.71 | 0.14 | 0.08 | 6.30 | 2.11 | 1.07 | 0.09 | 0.11 | 0.43 | 3.68 | 48.65 | 9.07 |
| HHC002 | 36 | 39 | 16.95 | 10.44 | 0.55 | 0.47 | 0.16 | 0.65 | 0.15 | 0.09 | 5.25 | 1.84 | 0.74 | 0.09 | 0.06 | 0.51 | 4.32 | 42.27 | 7.73 |
| HHC002 | 39 | 42 | 19.90 | 10.44 | 0.64 | 0.53 | 0.16 | 0.63 | 0.17 | 0.13 | 6.42 | 1.97 | 0.89 | 0.11 | 0.08 | 0.74 | 4.83 | 47.63 | 9.13 |
| HHC002 | 42 | 45 | 28.99 | 14.78 | 0.75 | 0.43 | 0.23 | 0.82 | 0.15 | 0.08 | 8.16 | 2.61 | 1.35 | 0.13 | 0.01 | 0.51 | 4.44 | 63.44 | 11.65 |
| HHC002 | 45 | 48 | 83.04 | 38.47 | 1.15 | 0.71 | 0.53 | 1.73 | 0.23 | 0.13 | 20.30 | 6.37 | 3.04 | 0.25 | 0.06 | 0.74 | 7.75 | 164.47 | 28.06 |
| HHC002 | 48 | 51 | 362.38 | 164.19 | 5.30 | 2.63 | 2.28 | 8.26 | 0.96 | 0.34 | 93.66 | 29.48 | 12.12 | 1.09 | 0.34 | 2.27 | 28.83 | 714.14 | 129.54 |
| HHC002 | 51 | 54 | 157.24 | 73.42 | 2.34 | 1.03 | 1.16 | 3.48 | 0.33 | 0.17 | 45.84 | 14.26 | 6.67 | 0.44 | 0.08 | 1.00 | 11.94 | 319.38 | 62.87 |
| HHC002 | 54 | 57 | 133.90 | 76.11 | 2.02 | 0.95 | 1.02 | 3.28 | 0.39 | 0.19 | 43.39 | 13.59 | 5.95 | 0.41 | 0.15 | 1.04 | 11.05 | 293.44 | 59.41 |
| HHC002 | 57 | 60 | 119.03 | 61.69 | 2.09 | 1.14 | 0.94 | 3.00 | 0.39 | 0.22 | 35.69 | 11.18 | 4.71 | 0.42 | 0.13 | 1.10 | 11.68 | 253.41 | 49.38 |
| HHC002 | 60 | 62 | 122.59 | 55.94 | 1.86 | 0.87 | 0.71 | 2.60 | 0.33 | 0.17 | 29.86 | 9.36 | 4.02 | 0.34 | 0.08 | 1.01 | 10.67 | 240.43 | 41.42 |
| HHC003 | 0 | 3 | 200.23 | 83.74 | 5.68 | 2.84 | 1.76 | 6.86 | 1.04 | 0.36 | 63.80 | 19.15 | 10.29 | 1.09 | 0.37 | 2.44 | 32.38 | 432.02 | 89.73 |
| HHC003 | 3 | 6 | 66.46 | 34.13 | 1.71 | 1.14 | 0.54 | 1.89 | 0.39 | 0.23 | 16.45 | 5.10 | 2.25 | 0.31 | 0.16 | 1.49 | 13.84 | 146.08 | 23.56 |
| HHC003 | 6 | 9 | 28.62 | 17.01 | 0.86 | 0.70 | 0.35 | 1.03 | 0.22 | 0.14 | 8.40 | 2.63 | 1.16 | 0.15 | 0.03 | 0.74 | 6.73 | 68.76 | 12.05 |
| HHC003 | 9 | 12 | 25.06 | 14.54 | 0.98 | 0.63 | 0.21 | 0.92 | 0.16 | 0.13 | 7.00 | 2.27 | 1.31 | 0.16 | 0.03 | 0.80 | 6.60 | 60.80 | 10.41 |
| HHC003 | 12 | 15 | 21.13 | 12.90 | 0.80 | 0.58 | 0.23 | 0.84 | 0.21 | 0.11 | 6.18 | 1.99 | 0.97 | 0.15 | 0.10 | 0.67 | 6.48 | 53.36 | 9.13 |
| HHC003 | 15 | 18 | 31.57 | 15.36 | 1.03 | 0.57 | 0.25 | 1.29 | 0.22 | 0.08 | 8.51 | 2.63 | 1.35 | 0.18 | 0.08 | 0.73 | 7.62 | 71.48 | 12.36 |
| HHC003 | 18 | 21 | 21.50 | 14.07 | 0.65 | 0.35 | 0.15 | 0.80 | 0.11 | 0.10 | 6.53 | 2.27 | 0.81 | 0.14 | 0.05 | 0.44 | 4.95 | 52.94 | 9.60 |
| HHC003 | 21 | 24 | 28.74 | 16.07 | 0.71 | 0.37 | 0.21 | 0.93 | 0.15 | 0.08 | 8.51 | 2.80 | 1.39 | 0.12 | 0.01 | 0.60 | 4.70 | 65.40 | 12.15 |
| HHC003 | 24 | 27 | 26.04 | 14.89 | 0.65 | 0.53 | 0.24 | 0.80 | 0.18 | 0.10 | 7.46 | 2.33 | 1.41 | 0.13 | 0.03 | 0.59 | 4.83 | 60.23 | 10.58 |
| HHC003 | 27 | 30 | 27.15 | 17.01 | 0.68 | 0.38 | 0.32 | 0.88 | 0.17 | 0.10 | 8.98 | 2.75 | 1.37 | 0.12 | 0.02 | 0.65 | 4.83 | 65.40 | 12.53 |
| HHC003 | 30 | 33 | 21.99 | 12.78 | 0.56 | 0.40 | 0.25 | 0.68 | 0.15 | 0.09 | 6.53 | 1.95 | 1.04 | 0.12 | 0.03 | 0.63 | 4.19 | 51.40 | 9.16 |
| HHC003 | 33 | 36 | 20.39 | 11.96 | 0.50 | 0.48 | 0.17 | 0.63 | 0.11 | 0.09 | 6.07 | 1.98 | 0.99 | 0.12 | 0.03 | 0.56 | 4.19 | 48.29 | 8.67 |
| HHC003 | 36 | 39 | 34.15 | 22.28 | 0.87 | 0.53 | 0.29 | 1.24 | 0.19 | 0.14 | 12.48 | 3.95 | 1.75 | 0.16 | 0.11 | 0.56 | 5.59 | 84.30 | 17.47 |
| HHC003 | 39 | 42 | 87.95 | 64.97 | 1.41 | 0.65 | 0.73 | 2.44 | 0.27 | 0.11 | 35.69 | 11.54 | 4.79 | 0.29 | 0.13 | 0.96 | 9.52 | 221.47 | 48.94 |
| HHC003 | 42 | 45 | 84.51 | 58.29 | 1.42 | 0.69 | 0.60 | 2.31 | 0.25 | 0.11 | 30.79 | 9.61 | 4.04 | 0.32 | 0.08 | 0.79 | 8.38 | 202.18 | 42.14 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC003 | 45 | 48 | 119.52 | 75.18 | 1.86 | 0.74 | 0.90 | 3.07 | 0.33 | 0.15 | 40.82 | 12.93 | 5.65 | 0.39 | 0.09 | 0.95 | 10.29 | 272.86 | 56.00 |
| HHC003 | 48 | 51 | 165.22 | 111.89 | 2.18 | 0.88 | 1.41 | 4.46 | 0.39 | 0.15 | 65.20 | 20.90 | 8.07 | 0.46 | 0.15 | 0.88 | 11.18 | 393.41 | 88.74 |
| HHC003 | 51 | 54 | 227.87 | 127.25 | 2.16 | 0.93 | 1.70 | 4.58 | 0.37 | 0.14 | 74.77 | 24.65 | 9.95 | 0.54 | 0.17 | 1.04 | 11.94 | 488.03 | 102.11 |
| HHC003 | 54 | 57 | 170.13 | 61.22 | 2.11 | 1.15 | 1.02 | 3.14 | 0.36 | 0.18 | 36.51 | 11.56 | 5.30 | 0.34 | 0.15 | 1.06 | 11.94 | 306.17 | 50.52 |
| HHC003 | 57 | 60 | 318.16 | 150.70 | 4.35 | 1.92 | 2.11 | 7.28 | 0.71 | 0.24 | 90.98 | 28.39 | 12.00 | 0.84 | 0.25 | 1.58 | 22.86 | 642.37 | 124.56 |
| HHC003 | 60 | 63 | 181.19 | 80.45 | 2.42 | 1.19 | 1.07 | 4.01 | 0.46 | 0.19 | 48.64 | 14.92 | 6.74 | 0.46 | 0.15 | 1.29 | 13.33 | 356.51 | 66.44 |
| HHC003 | 63 | 66 | 86.23 | 53.01 | 1.35 | 0.80 | 0.52 | 1.94 | 0.27 | 0.14 | 23.79 | 8.16 | 2.64 | 0.26 | 0.16 | 0.87 | 8.00 | 188.15 | 33.56 |
| HHC003 | 66 | 69 | 170.75 | 88.66 | 2.25 | 1.05 | 1.01 | 3.33 | 0.41 | 0.19 | 46.07 | 14.68 | 6.02 | 0.45 | 0.15 | 1.08 | 12.06 | 348.17 | 63.45 |
| HHC004 | 0 | 3 | 186.72 | 82.10 | 6.63 | 3.24 | 1.99 | 7.75 | 1.20 | 0.45 | 67.18 | 20.06 | 10.61 | 1.14 | 0.55 | 3.40 | 35.30 | 428.33 | 95.02 |
| HHC004 | 3 | 6 | 72.23 | 24.86 | 1.81 | 1.12 | 0.45 | 1.76 | 0.37 | 0.23 | 14.23 | 4.26 | 2.11 | 0.25 | 0.17 | 1.37 | 10.29 | 135.51 | 20.56 |
| HHC004 | 6 | 9 | 26.78 | 15.83 | 0.76 | 0.51 | 0.21 | 0.91 | 0.15 | 0.10 | 7.93 | 2.53 | 1.28 | 0.14 | 0.08 | 0.65 | 5.21 | 63.06 | 11.36 |
| HHC004 | 9 | 12 | 30.22 | 16.89 | 1.08 | 0.58 | 0.25 | 0.84 | 0.21 | 0.15 | 9.10 | 3.04 | 1.44 | 0.16 | 0.08 | 0.80 | 6.10 | 70.94 | 13.39 |
| HHC004 | 12 | 15 | 19.29 | 10.79 | 0.63 | 0.45 | 0.13 | 0.62 | 0.13 | 0.11 | 5.60 | 1.64 | 0.94 | 0.11 | 0.03 | 0.71 | 4.44 | 45.61 | 7.98 |
| HHC004 | 15 | 18 | 20.15 | 11.61 | 0.76 | 0.46 | 0.23 | 0.69 | 0.16 | 0.11 | 6.07 | 1.90 | 0.85 | 0.14 | 0.05 | 0.64 | 4.57 | 48.37 | 8.86 |
| HHC004 | 18 | 21 | 20.39 | 11.38 | 0.63 | 0.41 | 0.20 | 0.73 | 0.14 | 0.10 | 6.18 | 1.99 | 0.67 | 0.14 | 0.05 | 0.54 | 4.32 | 47.86 | 8.95 |
| HHC004 | 21 | 24 | 25.55 | 15.01 | 0.93 | 0.55 | 0.27 | 0.83 | 0.16 | 0.13 | 7.46 | 2.53 | 1.23 | 0.13 | 0.08 | 0.76 | 4.95 | 60.57 | 11.05 |
| HHC004 | 24 | 27 | 26.04 | 15.13 | 0.81 | 0.57 | 0.21 | 0.74 | 0.15 | 0.07 | 7.35 | 2.42 | 0.87 | 0.13 | 0.07 | 0.60 | 4.06 | 59.22 | 10.71 |
| HHC004 | 27 | 30 | 20.15 | 13.72 | 0.71 | 0.38 | 0.25 | 0.56 | 0.16 | 0.09 | 6.77 | 2.30 | 1.03 | 0.11 | 0.07 | 0.56 | 3.94 | 50.79 | 9.88 |
| HHC004 | 30 | 33 | 33.54 | 22.40 | 0.75 | 0.45 | 0.30 | 1.12 | 0.15 | 0.08 | 11.78 | 3.73 | 1.25 | 0.12 | 0.07 | 0.57 | 4.32 | 80.61 | 16.38 |
| HHC004 | 33 | 36 | 17.93 | 7.15 | 0.61 | 0.40 | 0.16 | 0.51 | 0.11 | 0.06 | 3.62 | 1.30 | 0.41 | 0.07 | 0.09 | 0.51 | 3.81 | 36.75 | 5.60 |
| HHC004 | 36 | 39 | 122.72 | 107.19 | 2.17 | 0.87 | 1.44 | 3.99 | 0.61 | 0.13 | 58.90 | 18.85 | 7.33 | 0.45 | 0.11 | 1.08 | 11.43 | 337.26 | 80.37 |
| HHC004 | 39 | 42 | 99.13 | 63.21 | 1.69 | 0.85 | 1.01 | 3.11 | 0.34 | 0.14 | 39.42 | 12.20 | 4.65 | 0.38 | 0.14 | 0.90 | 9.65 | 236.82 | 53.69 |
| HHC004 | 42 | 45 | 54.17 | 30.49 | 1.01 | 0.47 | 0.56 | 1.52 | 0.19 | 0.09 | 19.13 | 6.22 | 2.61 | 0.18 | 0.10 | 0.67 | 5.21 | 122.62 | 26.54 |
| HHC004 | 45 | 48 | 113.75 | 62.98 | 1.82 | 0.95 | 0.98 | 2.99 | 0.29 | 0.23 | 39.07 | 12.20 | 5.53 | 0.34 | 0.15 | 1.17 | 9.65 | 252.11 | 53.44 |
| HHC004 | 48 | 51 | 421.34 | 129.59 | 2.26 | 1.17 | 1.34 | 4.37 | 0.38 | 0.15 | 68.47 | 22.77 | 7.48 | 0.51 | 0.18 | 1.02 | 12.32 | 673.35 | 94.01 |
| HHC004 | 51 | 54 | 117.68 | 52.31 | 1.39 | 0.65 | 0.69 | 1.99 | 0.24 | 0.14 | 28.11 | 8.52 | 3.44 | 0.24 | 0.11 | 0.87 | 7.24 | 223.62 | 38.25 |
| HHC004 | 54 | 57 | 125.30 | 62.51 | 1.47 | 0.71 | 0.73 | 2.16 | 0.24 | 0.13 | 32.31 | 10.80 | 3.56 | 0.32 | 0.09 | 0.88 | 7.87 | 249.07 | 44.90 |
| HHC004 | 57 | 60 | 67.44 | 35.54 | 1.10 | 0.71 | 0.46 | 1.73 | 0.23 | 0.10 | 16.68 | 5.38 | 2.30 | 0.22 | 0.11 | 0.95 | 6.48 | 139.42 | 23.38 |
| HHC004 | 60 | 63 | 43.85 | 25.57 | 0.90 | 0.54 | 0.36 | 1.04 | 0.21 | 0.10 | 11.20 | 3.82 | 1.53 | 0.14 | 0.10 | 0.67 | 5.46 | 95.48 | 16.05 |
| HHC004 | 63 | 66 | 51.96 | 30.02 | 0.81 | 0.57 | 0.37 | 1.08 | 0.16 | 0.11 | 14.00 | 4.71 | 1.80 | 0.15 | 0.13 | 0.68 | 5.33 | 111.90 | 19.68 |
| HHC004 | 66 | 69 | 183.03 | 81.86 | 1.40 | 0.69 | 0.96 | 2.19 | 0.26 | 0.10 | 41.06 | 13.35 | 4.37 | 0.33 | 0.09 | 0.72 | 7.87 | 338.29 | 56.14 |
| HHC004 | 69 | 72 | 84.27 | 47.62 | 0.93 | 0.57 | 0.57 | 1.53 | 0.21 | 0.11 | 22.86 | 7.95 | 2.83 | 0.21 | 0.09 | 0.73 | 6.73 | 177.21 | 31.95 |
| HHC004 | 72 | 75 | 83.65 | 48.44 | 1.25 | 0.62 | 0.51 | 1.65 | 0.18 | 0.09 | 24.14 | 7.83 | 3.17 | 0.22 | 0.09 | 0.76 | 6.60 | 179.21 | 33.45 |
| HHC004 | 75 | 78 | 105.27 | 56.88 | 0.98 | 0.57 | 0.72 | 1.72 | 0.18 | 0.11 | 29.28 | 9.38 | 3.20 | 0.25 | 0.08 | 0.74 | 5.84 | 215.20 | 39.87 |
| HHC005 | 0 | 3 | 130.82 | 69.66 | 4.14 | 2.52 | 1.54 | 5.79 | 0.86 | 0.35 | 53.07 | 15.40 | 8.34 | 0.76 | 0.31 | 2.29 | 29.97 | 325.83 | 73.38 |
| HHC005 | 3 | 6 | 111.66 | 57.47 | 3.33 | 1.70 | 1.13 | 3.83 | 0.49 | 0.16 | 39.77 | 11.73 | 5.69 | 0.51 | 0.33 | 1.67 | 17.78 | 257.26 | 55.34 |
| HHC005 | 6 | 9 | 26.16 | 16.30 | 1.01 | 0.64 | 0.37 | 0.98 | 0.17 | 0.07 | 8.86 | 2.69 | 1.04 | 0.11 | 0.16 | 0.68 | 5.46 | 64.72 | 12.67 |
| HHC005 | 9 | 12 | 21.62 | 12.43 | 0.95 | 0.41 | 0.30 | 0.54 | 0.15 | 0.10 | 5.83 | 2.03 | 1.28 | 0.08 | 0.10 | 0.68 | 4.70 | 51.21 | 8.90 |
| HHC005 | 12 | 15 | 20.88 | 12.43 | 1.08 | 0.65 | 0.23 | 0.74 | 0.16 | 0.14 | 6.42 | 1.97 | 0.95 | 0.15 | 0.13 | 0.76 | 5.59 | 52.28 | 9.62 |
| HHC005 | 15 | 18 | 19.78 | 12.20 | 0.80 | 0.46 | 0.20 | 0.53 | 0.13 | 0.09 | 5.60 | 1.97 | 1.04 | 0.08 | 0.09 | 0.52 | 4.44 | 47.93 | 8.45 |
| HHC005 | 18 | 21 | 27.88 | 15.83 | 0.79 | 0.46 | 0.23 | 0.80 | 0.13 | 0.10 | 8.16 | 2.43 | 1.22 | 0.08 | 0.07 | 0.58 | 4.44 | 63.21 | 11.47 |
| HHC005 | 21 | 24 | 18.67 | 13.84 | 0.50 | 0.39 | 0.21 | 0.66 | 0.08 | 0.05 | 6.53 | 1.99 | 0.85 | 0.06 | 0.09 | 0.51 | 3.56 | 47.99 | 9.09 |
| HHC005 | 24 | 27 | 34.64 | 23.57 | 0.63 | 0.49 | 0.25 | 0.85 | 0.11 | 0.11 | 9.91 | 3.42 | 1.08 | 0.08 | 0.09 | 0.38 | 4.19 | 79.83 | 14.05 |
| HHC005 | 27 | 30 | 20.51 | 16.07 | 0.60 | 0.46 | 0.22 | 0.62 | 0.14 | 0.10 | 7.12 | 2.32 | 1.01 | 0.11 | 0.11 | 0.68 | 4.57 | 54.64 | 10.14 |
| HHC005 | 30 | 33 | 7.74 | 5.39 | 0.34 | 0.32 | 0.15 | 0.32 | 0.08 | 0.05 | 2.45 | 0.79 | 0.67 | 0.04 | 0.05 | 0.38 | 3.05 | 21.81 | 3.61 |
| HHC005 | 33 | 36 | 14.25 | 8.44 | 0.53 | 0.30 | 0.22 | 0.50 | 0.11 | 0.07 | 4.08 | 1.30 | 0.78 | 0.08 | 0.10 | 0.63 | 3.43 | 34.82 | 6.00 |
| HHC005 | 36 | 39 | 75.06 | 28.85 | 1.14 | 0.55 | 0.44 | 1.34 | 0.16 | 0.15 | 15.40 | 5.10 | 2.28 | 0.16 | 0.15 | 0.81 | 6.22 | 137.80 | 21.80 |
| HHC005 | 39 | 42 | 64.12 | 28.38 | 1.17 | 0.40 | 0.72 | 1.66 | 0.19 | 0.14 | 18.66 | 5.59 | 2.68 | 0.18 | 0.17 | 0.81 | 6.48 | 131.35 | 25.60 |
| HHC005 | 42 | 45 | 66.95 | 29.09 | 1.30 | 0.75 | 0.51 | 1.49 | 0.19 | 0.14 | 17.50 | 5.20 | 2.52 | 0.27 | 0.14 | 0.74 | 6.98 | 133.75 | 24.26 |
| HHC005 | 45 | 48 | 174.43 | 120.80 | 1.85 | 1.11 | 1.23 | 3.52 | 0.32 | 0.15 | 49.81 | 17.16 | 6.22 | 0.35 | 0.14 | 0.80 | 12.19 | 390.05 | 69.16 |
| HHC005 | 48 | 51 | 105.89 | 65.44 | 1.35 | 1.03 | 0.83 | 2.56 | 0.26 | 0.22 | 31.73 | 10.12 | 4.30 | 0.26 | 0.21 | 0.90 | 9.40 | 234.50 | 43.46 |
| HHC005 | 51 | 54 | 86.23 | 53.71 | 1.25 | 0.77 | 0.69 | 1.91 | 0.26 | 0.20 | 26.13 | 8.38 | 4.05 | 0.20 | 0.15 | 0.92 | 9.14 | 194.01 | 35.96 |
| HHC005 | 54 | 57 | 46.68 | 27.91 | 0.83 | 0.53 | 0.38 | 1.23 | 0.17 | 0.13 | 13.06 | 4.72 | 1.99 | 0.12 | 0.14 | 0.68 | 6.10 | 104.67 | 18.73 |
| HHC005 | 57 | 60 | 38.20 | 26.27 | 0.68 | 0.54 | 0.32 | 0.83 | 0.15 | 0.07 | 10.61 | 3.65 | 1.68 | 0.09 | 0.14 | 0.76 | 5.33 | 89.33 | 15.03 |
| HHC005 | 60 | 63 | 51.59 | 28.97 | 0.70 | 0.71 | 0.34 | 1.21 | 0.16 | 0.14 | 14.23 | 4.55 | 1.87 | 0.14 | 0.17 | 0.65 | 5.59 | 111.01 | 19.63 |
| HHC005 | 63 | 66 | 51.84 | 32.72 | 0.99 | 0.48 | 0.61 | 1.12 | 0.18 | 0.17 | 13.76 | 5.16 | 2.38 | 0.13 | 0.15 | 0.77 | 5.08 | 115.54 | 20.04 |
| HHC005 | 66 | 69 | 94.59 | 70.49 | 1.14 | 0.59 | 0.98 | 1.90 | 0.18 | 0.13 | 34.76 | 11.22 | 4.79 | 0.22 | 0.18 | 0.71 | 6.35 | 228.23 | 47.34 |
| HHC005 | 69 | 72 | 82.92 | 60.16 | 0.94 | 0.48 | 0.60 | 2.02 | 0.16 | 0.09 | 29.51 | 10.10 | 3.83 | 0.18 | 0.11 | 0.60 | 5.59 | 197.29 | 40.73 |
| HHC005 | 72 | 74 | 120.14 | 66.62 | 1.37 | 0.50 | 0.96 | 2.04 | 0.18 | 0.08 | 34.53 | 11.92 | 4.75 | 0.20 | 0.21 | 0.72 | 5.59 | 249.80 | 48.02 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC006 | 0 | 3 | 162.76 | 86.67 | 5.05 | 2.53 | 1.53 | 6.30 | 0.90 | 0.40 | 61.82 | 19.09 | 10.10 | 0.87 | 0.42 | 2.40 | 32.26 | 393.11 | 86.83 |
| HHC006 | 3 | 6 | 55.28 | 25.33 | 1.58 | 1.20 | 0.37 | 1.61 | 0.26 | 0.16 | 14.00 | 4.42 | 2.02 | 0.21 | 0.25 | 1.15 | 11.30 | 119.15 | 20.21 |
| HHC006 | 6 | 9 | 32.55 | 21.34 | 1.21 | 0.74 | 0.36 | 0.98 | 0.22 | 0.10 | 10.85 | 3.47 | 1.61 | 0.20 | 0.14 | 0.71 | 7.87 | 82.35 | 15.72 |
| HHC006 | 9 | 12 | 23.09 | 14.54 | 0.71 | 0.56 | 0.31 | 0.95 | 0.17 | 0.09 | 6.88 | 2.49 | 1.23 | 0.14 | 0.11 | 0.66 | 5.08 | 57.02 | 10.22 |
| HHC006 | 12 | 15 | 15.97 | 9.97 | 0.63 | 0.46 | 0.24 | 0.53 | 0.13 | 0.13 | 5.02 | 1.62 | 1.00 | 0.11 | 0.11 | 0.47 | 3.56 | 39.93 | 7.37 |
| HHC006 | 15 | 18 | 21.37 | 13.49 | 0.93 | 0.56 | 0.28 | 0.91 | 0.21 | 0.07 | 7.00 | 2.13 | 0.87 | 0.14 | 0.06 | 0.58 | 5.59 | 54.18 | 10.20 |
| HHC006 | 18 | 21 | 21.87 | 13.02 | 0.70 | 0.39 | 0.25 | 0.76 | 0.17 | 0.08 | 7.00 | 2.30 | 0.92 | 0.13 | 0.06 | 0.69 | 4.19 | 52.52 | 10.12 |
| HHC006 | 21 | 24 | 18.18 | 14.07 | 0.68 | 0.42 | 0.20 | 0.55 | 0.11 | 0.09 | 6.42 | 1.88 | 0.96 | 0.11 | 0.07 | 0.61 | 3.56 | 47.92 | 9.08 |
| HHC006 | 24 | 27 | 19.78 | 13.25 | 0.69 | 0.63 | 0.22 | 0.88 | 0.19 | 0.10 | 6.18 | 2.20 | 1.10 | 0.12 | 0.06 | 0.54 | 5.46 | 51.39 | 9.19 |
| HHC006 | 27 | 30 | 14.25 | 7.74 | 0.39 | 0.34 | 0.15 | 0.41 | 0.09 | 0.06 | 4.08 | 1.41 | 0.72 | 0.08 | 0.01 | 0.43 | 2.79 | 32.97 | 5.97 |
| HHC006 | 30 | 33 | 26.04 | 10.56 | 0.52 | 0.39 | 0.30 | 0.70 | 0.13 | 0.07 | 6.88 | 2.02 | 1.06 | 0.09 | 0.01 | 0.50 | 3.94 | 53.19 | 9.51 |
| HHC006 | 33 | 36 | 47.42 | 20.64 | 1.00 | 0.43 | 0.47 | 1.08 | 0.14 | 0.11 | 12.83 | 4.13 | 2.09 | 0.15 | 0.02 | 0.48 | 4.83 | 95.83 | 18.11 |
| HHC006 | 36 | 39 | 150.48 | 117.87 | 2.48 | 0.97 | 1.24 | 4.17 | 0.46 | 0.14 | 55.17 | 19.63 | 6.74 | 0.46 | 0.17 | 1.28 | 13.97 | 375.22 | 77.74 |
| HHC006 | 39 | 42 | 104.78 | 65.79 | 1.89 | 0.99 | 0.94 | 2.50 | 0.31 | 0.18 | 33.36 | 10.52 | 4.72 | 0.34 | 0.08 | 1.10 | 9.14 | 236.67 | 46.12 |
| HHC006 | 42 | 45 | 97.53 | 51.02 | 1.48 | 0.77 | 0.76 | 1.99 | 0.26 | 0.15 | 26.71 | 8.61 | 3.40 | 0.26 | 0.05 | 0.91 | 6.60 | 200.51 | 37.06 |
| HHC006 | 45 | 48 | 73.46 | 40.81 | 1.32 | 0.65 | 0.63 | 1.96 | 0.29 | 0.17 | 24.61 | 7.53 | 3.08 | 0.22 | 0.08 | 0.92 | 6.48 | 162.21 | 33.68 |
| HHC006 | 48 | 51 | 34.40 | 21.58 | 0.96 | 0.48 | 0.43 | 1.20 | 0.23 | 0.14 | 11.90 | 3.43 | 1.35 | 0.19 | 0.14 | 0.87 | 5.59 | 82.86 | 16.48 |
| HHC006 | 51 | 54 | 41.27 | 18.53 | 0.91 | 0.64 | 0.32 | 0.76 | 0.14 | 0.13 | 9.56 | 2.97 | 1.61 | 0.14 | 0.10 | 0.80 | 5.33 | 83.22 | 13.58 |
| HHC006 | 54 | 57 | 187.95 | 86.67 | 1.86 | 0.93 | 1.16 | 3.93 | 0.39 | 0.16 | 49.46 | 16.01 | 6.31 | 0.41 | 0.16 | 0.97 | 10.92 | 367.27 | 67.73 |
| HHC006 | 57 | 60 | 261.65 | 144.84 | 4.26 | 1.88 | 2.92 | 7.73 | 0.82 | 0.31 | 96.69 | 30.45 | 13.28 | 0.82 | 0.27 | 1.96 | 23.49 | 591.37 | 132.22 |
| HHC006 | 60 | 63 | 287.45 | 161.26 | 3.94 | 1.97 | 2.43 | 7.24 | 0.79 | 0.31 | 96.46 | 29.84 | 13.10 | 0.82 | 0.29 | 1.74 | 25.78 | 633.41 | 131.06 |
| HHC006 | 63 | 66 | 316.93 | 182.37 | 5.31 | 2.81 | 2.52 | 9.12 | 0.96 | 0.45 | 99.96 | 32.14 | 13.39 | 0.95 | 0.42 | 2.58 | 37.97 | 707.90 | 138.37 |
| HHC006 | 66 | 69 | 287.45 | 168.30 | 5.62 | 3.28 | 2.34 | 9.08 | 1.15 | 0.41 | 100.43 | 30.21 | 13.97 | 1.11 | 0.40 | 3.21 | 40.89 | 667.84 | 137.36 |
| HHC006 | 69 | 72 | 260.42 | 149.53 | 4.67 | 2.20 | 2.04 | 7.23 | 0.86 | 0.28 | 87.60 | 28.03 | 11.41 | 0.86 | 0.34 | 1.96 | 27.56 | 584.98 | 121.16 |
| HHC006 | 72 | 76 | 230.94 | 131.94 | 3.44 | 1.76 | 2.01 | 5.88 | 0.64 | 0.17 | 77.22 | 22.96 | 10.56 | 0.67 | 0.25 | 1.30 | 18.79 | 508.54 | 104.29 |
| HHC007 | 0 | 3 | 163.99 | 83.15 | 5.20 | 2.50 | 1.77 | 6.96 | 1.03 | 0.36 | 57.62 | 17.88 | 10.01 | 0.86 | 0.37 | 2.47 | 31.37 | 385.54 | 81.56 |
| HHC007 | 3 | 6 | 152.94 | 55.00 | 3.81 | 1.88 | 1.03 | 4.39 | 0.68 | 0.23 | 37.32 | 11.41 | 6.25 | 0.64 | 0.30 | 1.62 | 21.84 | 299.32 | 53.18 |
| HHC007 | 6 | 9 | 42.38 | 24.98 | 1.14 | 0.72 | 0.41 | 1.43 | 0.26 | 0.10 | 13.30 | 4.51 | 1.70 | 0.20 | 0.15 | 0.87 | 7.75 | 99.89 | 19.14 |
| HHC007 | 9 | 12 | 20.88 | 12.90 | 0.81 | 0.47 | 0.21 | 0.62 | 0.14 | 0.07 | 6.65 | 1.95 | 1.07 | 0.14 | 0.13 | 0.54 | 4.95 | 51.52 | 9.55 |
| HHC007 | 12 | 15 | 29.85 | 17.71 | 1.19 | 0.69 | 0.24 | 1.03 | 0.26 | 0.14 | 9.68 | 2.97 | 1.15 | 0.20 | 0.10 | 0.76 | 8.00 | 73.98 | 14.05 |
| HHC007 | 15 | 18 | 16.95 | 11.02 | 0.61 | 0.55 | 0.17 | 0.62 | 0.16 | 0.10 | 5.95 | 1.84 | 1.15 | 0.13 | 0.15 | 0.58 | 4.44 | 44.43 | 8.52 |
| HHC007 | 18 | 21 | 17.07 | 11.61 | 0.78 | 0.42 | 0.24 | 0.62 | 0.13 | 0.10 | 5.83 | 1.69 | 0.81 | 0.09 | 0.09 | 0.54 | 4.19 | 44.23 | 8.40 |
| HHC007 | 21 | 24 | 19.65 | 14.19 | 0.73 | 0.42 | 0.23 | 0.74 | 0.15 | 0.09 | 6.42 | 2.02 | 0.86 | 0.12 | 0.11 | 0.68 | 5.46 | 51.88 | 9.29 |
| HHC007 | 24 | 27 | 24.69 | 13.37 | 0.69 | 0.53 | 0.27 | 0.84 | 0.16 | 0.08 | 8.40 | 2.32 | 1.16 | 0.11 | 0.09 | 0.72 | 4.19 | 57.61 | 11.51 |
| HHC007 | 27 | 30 | 37.34 | 14.89 | 0.71 | 0.50 | 0.28 | 0.96 | 0.11 | 0.11 | 9.68 | 3.09 | 1.28 | 0.13 | 0.08 | 0.61 | 4.44 | 74.23 | 13.62 |
| HHC007 | 30 | 33 | 57.61 | 40.93 | 1.40 | 0.91 | 0.76 | 2.50 | 0.29 | 0.11 | 30.21 | 8.80 | 4.34 | 0.29 | 0.08 | 0.93 | 8.76 | 157.94 | 40.70 |
| HHC007 | 33 | 37 | 114.73 | 81.51 | 2.44 | 1.17 | 1.24 | 4.00 | 0.38 | 0.18 | 51.32 | 15.28 | 7.06 | 0.35 | 0.21 | 1.24 | 12.45 | 293.56 | 69.40 |
| HHC008 | 0 | 3 | 142.49 | 66.97 | 4.84 | 2.74 | 1.61 | 6.69 | 0.89 | 0.31 | 54.00 | 14.44 | 9.14 | 0.80 | 0.40 | 2.33 | 28.32 | 335.98 | 74.09 |
| HHC008 | 3 | 6 | 167.68 | 80.57 | 5.67 | 2.89 | 1.68 | 7.07 | 1.03 | 0.33 | 62.40 | 17.22 | 11.65 | 1.04 | 0.42 | 2.51 | 28.95 | 391.11 | 86.32 |
| HHC008 | 6 | 9 | 32.80 | 19.47 | 1.03 | 0.71 | 0.29 | 1.21 | 0.17 | 0.09 | 10.85 | 3.46 | 1.74 | 0.15 | 0.15 | 0.68 | 5.84 | 78.64 | 15.49 |
| HHC008 | 9 | 12 | 25.43 | 15.36 | 0.81 | 0.57 | 0.39 | 0.89 | 0.17 | 0.09 | 7.81 | 2.43 | 1.70 | 0.12 | 0.18 | 0.61 | 5.59 | 62.17 | 11.18 |
| HHC008 | 12 | 15 | 24.94 | 14.89 | 0.88 | 0.87 | 0.23 | 0.93 | 0.22 | 0.13 | 8.16 | 2.42 | 1.30 | 0.16 | 0.11 | 0.71 | 5.84 | 61.80 | 11.63 |
| HHC008 | 15 | 18 | 18.18 | 11.26 | 0.80 | 0.73 | 0.23 | 0.62 | 0.18 | 0.14 | 5.83 | 1.88 | 0.92 | 0.14 | 0.21 | 0.65 | 5.71 | 47.49 | 8.66 |
| HHC008 | 18 | 21 | 24.20 | 17.59 | 0.57 | 0.37 | 0.22 | 0.81 | 0.17 | 0.10 | 9.10 | 2.68 | 1.37 | 0.13 | 0.16 | 0.68 | 4.06 | 62.22 | 12.48 |
| HHC008 | 21 | 24 | 12.28 | 7.74 | 0.54 | 0.41 | 0.20 | 0.36 | 0.14 | 0.08 | 4.55 | 1.23 | 0.75 | 0.08 | 0.05 | 0.44 | 3.43 | 32.28 | 6.40 |
| HHC008 | 24 | 27 | 189.17 | 96.29 | 2.65 | 1.42 | 1.22 | 4.54 | 0.46 | 0.18 | 51.55 | 15.59 | 6.83 | 0.61 | 0.19 | 1.21 | 11.05 | 382.96 | 70.40 |
| HHC008 | 27 | 30 | 395.54 | 224.00 | 6.07 | 2.56 | 2.98 | 10.22 | 0.97 | 0.30 | 128.30 | 37.45 | 16.29 | 1.18 | 0.38 | 2.20 | 27.05 | 855.50 | 173.01 |
| HHC008 | 30 | 33 | 428.71 | 235.73 | 7.00 | 3.74 | 3.93 | 13.25 | 1.17 | 0.36 | 160.38 | 44.46 | 22.67 | 1.42 | 0.45 | 2.82 | 34.80 | 960.90 | 213.27 |
| HHC008 | 33 | 36 | 323.07 | 190.58 | 5.10 | 2.61 | 2.59 | 9.58 | 0.93 | 0.26 | 109.64 | 33.59 | 13.63 | 1.12 | 0.40 | 1.82 | 28.19 | 723.10 | 149.44 |
| HHC008 | 36 | 40 | 264.11 | 150.70 | 4.18 | 1.83 | 2.07 | 7.04 | 0.69 | 0.27 | 89.23 | 26.58 | 10.37 | 0.86 | 0.25 | 1.59 | 22.10 | 581.87 | 120.85 |
| HHC009 | 0 | 3 | 182.42 | 92.89 | 4.82 | 2.58 | 1.75 | 6.54 | 0.88 | 0.39 | 64.62 | 18.55 | 10.39 | 0.82 | 0.43 | 2.08 | 27.43 | 416.59 | 88.81 |
| HHC009 | 3 | 6 | 162.15 | 70.02 | 3.93 | 1.80 | 1.35 | 4.89 | 0.64 | 0.24 | 49.81 | 14.56 | 7.91 | 0.76 | 0.37 | 1.91 | 22.73 | 343.05 | 69.05 |
| HHC009 | 6 | 9 | 33.04 | 19.94 | 1.02 | 0.65 | 0.37 | 0.95 | 0.21 | 0.11 | 11.20 | 3.25 | 1.91 | 0.16 | 0.17 | 0.77 | 6.73 | 80.49 | 15.63 |
| HHC009 | 9 | 12 | 42.75 | 30.02 | 1.43 | 0.95 | 0.34 | 1.44 | 0.29 | 0.16 | 15.28 | 4.65 | 2.06 | 0.22 | 0.21 | 0.82 | 9.27 | 109.89 | 21.59 |
| HHC009 | 12 | 15 | 36.11 | 22.17 | 1.45 | 0.78 | 0.25 | 1.33 | 0.25 | 0.17 | 10.50 | 3.54 | 1.92 | 0.20 | 0.13 | 0.66 | 8.00 | 87.46 | 15.68 |
| HHC009 | 15 | 18 | 40.91 | 21.58 | 1.19 | 0.74 | 0.36 | 1.36 | 0.26 | 0.13 | 12.60 | 4.04 | 1.72 | 0.18 | 0.16 | 0.69 | 6.22 | 92.13 | 18.00 |
| HHC009 | 18 | 21 | 289.90 | 187.65 | 4.87 | 2.36 | 2.91 | 9.08 | 0.86 | 0.26 | 125.97 | 39.15 | 17.10 | 1.04 | 0.29 | 1.71 | 22.10 | 705.23 | 171.02 |
| HHC009 | 21 | 24 | 234.01 | 134.29 | 3.60 | 1.98 | 2.13 | 6.40 | 0.72 | 0.25 | 84.80 | 26.34 | 11.07 | 0.73 | 0.27 | 1.51 | 21.72 | 529.82 | 115.47 |
| HHC009 | 24 | 27 | 214.36 | 121.38 | 3.11 | 1.32 | 1.82 | 5.49 | 0.50 | 0.15 | 77.68 | 21.93 | 9.61 | 0.62 | 0.23 | 0.99 | 17.27 | 476.46 | 103.34 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC009 | 27 | 31 | 144.95 | 79.05 | 2.98 | 1.88 | 0.89 | 3.90 | 0.56 | 0.48 | 48.64 | 15.46 | 6.84 | 0.49 | 0.31 | 2.54 | 20.06 | 329.04 | 67.58 |
| HHC010 | 0 | 3 | 262.88 | 143.08 | 8.16 | 4.49 | 3.11 | 11.48 | 1.67 | 0.55 | 106.84 | 31.53 | 17.68 | 1.47 | 0.49 | 3.69 | 45.59 | 642.73 | 148.01 |
| HHC010 | 3 | 6 | 48.40 | 27.33 | 1.66 | 0.90 | 0.46 | 1.49 | 0.34 | 0.13 | 14.11 | 4.92 | 2.13 | 0.20 | 0.17 | 0.81 | 9.78 | 112.83 | 20.89 |
| HHC010 | 6 | 9 | 29.11 | 17.24 | 0.86 | 0.55 | 0.31 | 1.07 | 0.17 | 0.13 | 8.86 | 2.79 | 1.36 | 0.13 | 0.03 | 0.73 | 5.46 | 68.81 | 12.65 |
| HHC010 | 9 | 12 | 32.18 | 19.23 | 1.00 | 0.77 | 0.14 | 1.23 | 0.19 | 0.14 | 9.45 | 3.12 | 1.75 | 0.16 | 0.07 | 0.66 | 6.98 | 77.08 | 13.73 |
| HHC010 | 12 | 15 | 31.45 | 22.75 | 1.18 | 0.63 | 0.46 | 1.23 | 0.27 | 0.22 | 12.83 | 4.25 | 1.84 | 0.19 | 0.16 | 0.91 | 7.11 | 85.50 | 18.45 |
| HHC010 | 15 | 19 | 173.20 | 105.90 | 2.71 | 1.26 | 1.44 | 4.67 | 0.46 | 0.17 | 57.04 | 18.55 | 6.48 | 0.59 | 0.11 | 1.01 | 13.97 | 387.56 | 78.88 |
| HHC011 | 0 | 3 | 139.42 | 77.64 | 5.08 | 2.78 | 1.78 | 6.64 | 0.84 | 0.38 | 57.97 | 16.91 | 9.03 | 0.87 | 0.24 | 2.52 | 28.19 | 350.30 | 80.84 |
| HHC011 | 3 | 6 | 41.15 | 26.04 | 1.31 | 0.81 | 0.39 | 1.57 | 0.25 | 0.19 | 12.83 | 4.25 | 2.06 | 0.22 | 0.14 | 0.95 | 9.27 | 101.44 | 18.62 |
| HHC011 | 6 | 9 | 32.18 | 19.82 | 0.77 | 0.54 | 0.29 | 1.12 | 0.11 | 0.09 | 10.61 | 3.55 | 1.60 | 0.12 | 0.21 | 0.72 | 4.06 | 75.79 | 15.05 |
| HHC011 | 9 | 13 | 26.29 | 17.01 | 1.14 | 0.59 | 0.22 | 0.82 | 0.17 | 0.15 | 8.05 | 2.54 | 1.18 | 0.16 | 0.16 | 0.76 | 6.10 | 65.33 | 11.89 |
| HHC012 | 0 | 3 | 109.57 | 53.71 | 4.27 | 2.50 | 1.23 | 5.39 | 0.66 | 0.32 | 38.72 | 11.51 | 6.78 | 0.67 | 0.39 | 2.06 | 23.37 | 261.17 | 55.18 |
| HHC012 | 3 | 6 | 133.28 | 67.55 | 4.57 | 2.04 | 1.44 | 5.30 | 0.86 | 0.26 | 46.07 | 13.95 | 8.26 | 0.72 | 0.30 | 2.06 | 25.52 | 312.18 | 65.31 |
| HHC012 | 6 | 9 | 28.01 | 17.59 | 1.38 | 0.77 | 0.35 | 1.26 | 0.26 | 0.11 | 8.75 | 2.67 | 1.23 | 0.19 | 0.13 | 0.72 | 7.24 | 70.64 | 12.98 |
| HHC012 | 9 | 12 | 24.08 | 15.25 | 1.07 | 0.86 | 0.29 | 1.12 | 0.18 | 0.14 | 7.23 | 2.48 | 1.30 | 0.11 | 0.15 | 0.80 | 6.60 | 61.64 | 10.88 |
| HHC012 | 12 | 15 | 20.51 | 12.90 | 1.11 | 0.64 | 0.28 | 0.84 | 0.18 | 0.13 | 6.30 | 1.86 | 1.00 | 0.15 | 0.09 | 0.67 | 5.71 | 52.38 | 9.43 |
| HHC012 | 15 | 18 | 18.30 | 11.49 | 0.81 | 0.43 | 0.15 | 0.67 | 0.17 | 0.10 | 5.25 | 1.58 | 0.80 | 0.13 | 0.02 | 0.50 | 5.08 | 45.50 | 7.78 |
| HHC012 | 18 | 21 | 21.74 | 13.49 | 0.84 | 0.62 | 0.28 | 1.05 | 0.14 | 0.09 | 7.46 | 2.40 | 0.83 | 0.12 | 0.06 | 0.67 | 5.08 | 54.87 | 10.82 |
| HHC012 | 21 | 24 | 20.27 | 15.36 | 0.78 | 0.57 | 0.23 | 0.70 | 0.17 | 0.11 | 6.65 | 2.26 | 1.10 | 0.12 | 0.02 | 0.68 | 4.57 | 53.61 | 9.81 |
| HHC012 | 24 | 27 | 13.02 | 9.73 | 0.71 | 0.49 | 0.23 | 0.48 | 0.09 | 0.09 | 4.32 | 1.52 | 0.65 | 0.06 | 0.05 | 0.42 | 3.43 | 35.30 | 6.61 |
| HHC012 | 27 | 30 | 21.62 | 8.33 | 0.57 | 0.41 | 0.21 | 0.66 | 0.10 | 0.09 | 6.18 | 1.70 | 0.92 | 0.09 | 0.01 | 0.46 | 3.17 | 44.53 | 8.55 |
| HHC012 | 30 | 33 | 43.61 | 19.59 | 1.02 | 0.63 | 0.46 | 1.21 | 0.15 | 0.15 | 11.78 | 3.32 | 1.72 | 0.18 | 0.17 | 0.91 | 4.19 | 89.08 | 16.30 |
| HHC012 | 33 | 36 | 41.03 | 20.99 | 1.06 | 0.74 | 0.44 | 1.29 | 0.22 | 0.10 | 11.90 | 3.87 | 2.23 | 0.16 | 0.11 | 0.82 | 5.46 | 90.42 | 16.98 |
| HHC012 | 36 | 39 | 120.87 | 61.57 | 1.89 | 0.95 | 0.80 | 2.85 | 0.26 | 0.17 | 37.91 | 11.62 | 5.01 | 0.35 | 0.13 | 0.95 | 9.14 | 254.48 | 51.78 |
| HHC012 | 39 | 42 | 105.03 | 72.95 | 1.88 | 0.85 | 1.01 | 2.97 | 0.36 | 0.17 | 42.92 | 13.41 | 5.76 | 0.38 | 0.15 | 1.04 | 10.41 | 259.28 | 58.59 |
| HHC012 | 42 | 45 | 242.61 | 118.45 | 5.50 | 2.33 | 2.81 | 9.22 | 0.89 | 0.36 | 102.76 | 30.57 | 14.73 | 1.00 | 0.43 | 2.36 | 28.57 | 562.60 | 139.82 |
| HHC012 | 45 | 48 | 196.54 | 91.48 | 5.31 | 2.22 | 2.62 | 8.39 | 0.78 | 0.35 | 90.28 | 25.37 | 14.26 | 0.96 | 0.34 | 2.13 | 25.02 | 466.06 | 121.93 |
| HHC012 | 48 | 51 | 316.93 | 205.83 | 5.78 | 2.33 | 2.88 | 9.67 | 0.89 | 0.35 | 127.72 | 39.51 | 16.76 | 1.16 | 0.33 | 2.22 | 27.18 | 759.55 | 174.18 |
| HHC012 | 51 | 54 | 339.04 | 212.86 | 4.65 | 2.14 | 2.70 | 8.09 | 0.72 | 0.33 | 111.27 | 37.82 | 14.67 | 0.95 | 0.35 | 1.95 | 21.33 | 758.88 | 154.69 |
| HHC013 | 0 | 3 | 152.32 | 77.17 | 4.71 | 2.15 | 1.46 | 6.33 | 0.86 | 0.27 | 53.89 | 16.49 | 8.19 | 0.84 | 0.37 | 2.22 | 26.03 | 353.29 | 75.92 |
| HHC013 | 3 | 6 | 160.31 | 149.53 | 6.84 | 3.54 | 2.69 | 10.12 | 1.07 | 0.38 | 105.09 | 33.71 | 15.94 | 1.26 | 0.41 | 2.92 | 34.92 | 528.72 | 146.90 |
| HHC013 | 6 | 9 | 38.33 | 24.28 | 1.19 | 0.83 | 0.45 | 1.48 | 0.22 | 0.11 | 14.46 | 4.33 | 2.20 | 0.20 | 0.11 | 0.98 | 8.38 | 97.56 | 20.18 |
| HHC013 | 9 | 12 | 27.02 | 16.54 | 1.25 | 0.89 | 0.30 | 0.82 | 0.24 | 0.11 | 8.75 | 2.49 | 1.07 | 0.18 | 0.14 | 0.74 | 7.37 | 67.90 | 12.66 |
| HHC013 | 12 | 15 | 29.36 | 18.88 | 1.17 | 0.59 | 0.34 | 1.15 | 0.26 | 0.17 | 11.55 | 3.17 | 1.83 | 0.18 | 0.13 | 0.80 | 6.73 | 76.30 | 16.06 |
| HHC013 | 15 | 18 | 19.04 | 11.61 | 0.80 | 0.61 | 0.10 | 0.75 | 0.21 | 0.14 | 5.83 | 1.75 | 1.07 | 0.12 | 0.09 | 0.83 | 4.95 | 47.90 | 8.50 |
| HHC013 | 18 | 21 | 24.69 | 15.95 | 0.72 | 0.64 | 0.21 | 0.48 | 0.16 | 0.10 | 8.05 | 2.28 | 1.18 | 0.13 | 0.08 | 0.63 | 4.44 | 59.75 | 11.18 |
| HHC013 | 21 | 24 | 23.34 | 18.30 | 0.65 | 0.47 | 0.29 | 0.80 | 0.17 | 0.16 | 8.40 | 2.50 | 1.28 | 0.14 | 0.10 | 0.83 | 4.70 | 62.12 | 11.69 |
| HHC013 | 24 | 27 | 16.09 | 11.49 | 0.62 | 0.47 | 0.28 | 0.65 | 0.10 | 0.03 | 6.30 | 1.95 | 0.86 | 0.12 | 0.03 | 0.65 | 3.68 | 43.32 | 8.98 |
| HHC013 | 27 | 30 | 32.06 | 21.58 | 1.04 | 0.54 | 0.46 | 0.90 | 0.18 | 0.09 | 13.30 | 3.64 | 2.05 | 0.12 | 0.08 | 0.58 | 4.57 | 81.20 | 18.10 |
| HHC013 | 30 | 33 | 83.90 | 63.21 | 1.33 | 0.64 | 0.76 | 2.47 | 0.22 | 0.14 | 31.96 | 10.25 | 4.00 | 0.29 | 0.09 | 0.84 | 7.11 | 207.22 | 43.83 |
| HHC013 | 33 | 36 | 228.48 | 166.54 | 4.07 | 2.46 | 2.04 | 6.57 | 0.77 | 0.27 | 97.28 | 27.43 | 11.65 | 0.84 | 0.29 | 1.86 | 22.48 | 573.01 | 129.61 |
| HHC014 | 0 | 3 | 153.55 | 88.66 | 4.57 | 2.34 | 1.63 | 6.11 | 0.72 | 0.31 | 61.59 | 18.12 | 9.82 | 0.75 | 0.15 | 2.05 | 25.91 | 376.28 | 85.03 |
| HHC014 | 3 | 6 | 149.86 | 87.14 | 5.49 | 2.79 | 1.47 | 6.50 | 0.82 | 0.31 | 60.07 | 17.64 | 8.78 | 0.85 | 0.21 | 2.17 | 29.08 | 373.18 | 84.04 |
| HHC014 | 6 | 9 | 27.15 | 16.89 | 0.88 | 0.65 | 0.31 | 0.98 | 0.17 | 0.14 | 9.10 | 2.78 | 1.17 | 0.12 | 0.01 | 0.63 | 6.22 | 67.19 | 12.88 |
| HHC014 | 9 | 12 | 23.34 | 15.01 | 0.86 | 0.66 | 0.23 | 0.74 | 0.16 | 0.10 | 7.93 | 2.05 | 1.21 | 0.12 | 0.01 | 0.59 | 6.10 | 59.11 | 10.96 |
| HHC014 | 12 | 15 | 24.57 | 14.54 | 0.79 | 0.50 | 0.21 | 0.82 | 0.16 | 0.08 | 7.35 | 2.30 | 1.19 | 0.12 | 0.06 | 0.64 | 4.70 | 58.02 | 10.55 |
| HHC014 | 15 | 18 | 21.99 | 12.31 | 0.57 | 0.45 | 0.10 | 0.82 | 0.13 | 0.10 | 5.95 | 1.97 | 0.94 | 0.12 | 0.01 | 0.52 | 4.44 | 50.42 | 8.61 |
| HHC014 | 18 | 21 | 26.41 | 15.48 | 0.76 | 0.59 | 0.23 | 0.82 | 0.14 | 0.14 | 7.70 | 2.49 | 1.37 | 0.13 | 0.01 | 0.73 | 4.95 | 61.95 | 11.07 |
| HHC014 | 21 | 24 | 27.02 | 19.00 | 0.69 | 0.49 | 0.22 | 0.81 | 0.14 | 0.10 | 8.75 | 2.89 | 1.47 | 0.12 | 0.01 | 0.44 | 4.57 | 66.72 | 12.44 |
| HHC014 | 24 | 27 | 32.43 | 20.52 | 0.99 | 0.58 | 0.29 | 1.13 | 0.19 | 0.14 | 12.60 | 3.64 | 1.88 | 0.15 | 0.05 | 0.79 | 5.84 | 81.21 | 17.37 |
| HHC014A | 0 | 3 | 107.49 | 49.14 | 3.45 | 1.77 | 1.08 | 4.59 | 0.61 | 0.26 | 38.84 | 11.02 | 6.68 | 0.69 | 0.29 | 1.89 | 19.94 | 247.73 | 54.01 |
| HHC014A | 3 | 6 | 110.43 | 51.96 | 2.82 | 1.43 | 0.85 | 3.70 | 0.53 | 0.25 | 34.18 | 10.58 | 6.02 | 0.52 | 0.27 | 1.49 | 16.89 | 241.91 | 48.10 |
| HHC014A | 6 | 9 | 28.50 | 17.12 | 0.87 | 0.63 | 0.37 | 1.15 | 0.24 | 0.14 | 9.21 | 2.61 | 1.41 | 0.21 | 0.14 | 0.71 | 6.98 | 70.30 | 12.91 |
| HHC014A | 9 | 12 | 24.45 | 13.60 | 0.79 | 0.62 | 0.28 | 0.88 | 0.18 | 0.13 | 8.40 | 2.27 | 1.37 | 0.14 | 0.14 | 0.73 | 5.71 | 59.68 | 11.60 |
| HHC014A | 12 | 15 | 21.62 | 12.90 | 0.79 | 0.57 | 0.20 | 0.86 | 0.16 | 0.09 | 7.35 | 1.81 | 1.24 | 0.13 | 0.10 | 0.51 | 4.95 | 53.30 | 10.08 |
| HHC014A | 15 | 18 | 27.27 | 13.96 | 0.85 | 0.55 | 0.21 | 0.97 | 0.16 | 0.10 | 8.16 | 2.32 | 1.37 | 0.15 | 0.07 | 0.76 | 4.44 | 61.35 | 11.49 |
| HHC014A | 18 | 21 | 25.55 | 15.25 | 0.87 | 0.48 | 0.17 | 0.74 | 0.13 | 0.14 | 7.35 | 2.14 | 1.51 | 0.16 | 0.14 | 0.59 | 5.21 | 60.42 | 10.52 |
| HHC014A | 21 | 24 | 20.39 | 15.72 | 0.65 | 0.41 | 0.23 | 0.66 | 0.08 | 0.08 | 7.00 | 2.05 | 1.03 | 0.14 | 0.13 | 0.58 | 3.94 | 53.09 | 9.85 |
| HHC014A | 24 | 27 | 37.59 | 26.04 | 0.99 | 0.56 | 0.35 | 1.29 | 0.18 | 0.13 | 15.28 | 4.34 | 1.69 | 0.16 | 0.11 | 0.60 | 5.21 | 94.52 | 20.77 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC014A | 27 | 30 | 138.81 | 71.54 | 2.36 | 1.23 | 1.10 | 4.00 | 0.36 | 0.13 | 45.26 | 13.11 | 6.60 | 0.44 | 0.19 | 1.23 | 12.32 | 298.67 | 61.16 |
| HHC014A | 30 | 33 | 25.18 | 13.84 | 0.50 | 0.51 | 0.16 | 0.62 | 0.11 | 0.15 | 7.58 | 2.45 | 1.00 | 0.07 | 0.10 | 0.66 | 5.08 | 58.03 | 10.61 |
| HHC014A | 33 | 36 | 227.25 | 115.76 | 3.65 | 1.84 | 1.84 | 6.36 | 0.58 | 0.25 | 75.58 | 21.63 | 10.58 | 0.71 | 0.23 | 1.51 | 19.56 | 487.33 | 101.56 |
| HHC014A | 36 | 39 | 240.77 | 120.21 | 4.14 | 1.90 | 2.11 | 6.70 | 0.65 | 0.19 | 81.53 | 23.80 | 11.05 | 0.76 | 0.33 | 1.54 | 21.33 | 517.02 | 110.24 |
| HHC014A | 39 | 42 | 235.85 | 112.47 | 3.97 | 1.75 | 1.92 | 6.96 | 0.66 | 0.22 | 80.25 | 23.50 | 11.24 | 0.84 | 0.30 | 1.58 | 22.60 | 504.11 | 108.55 |
| HHC015 | 0 | 3 | 83.04 | 57.82 | 3.41 | 1.76 | 1.08 | 4.63 | 0.62 | 0.16 | 42.92 | 11.08 | 6.83 | 0.61 | 0.33 | 1.58 | 22.60 | 238.48 | 58.02 |
| HHC015 | 3 | 6 | 140.65 | 84.68 | 4.97 | 2.42 | 1.67 | 6.30 | 0.90 | 0.35 | 60.19 | 15.95 | 8.88 | 0.84 | 0.38 | 2.00 | 27.18 | 357.36 | 81.94 |
| HHC015 | 6 | 9 | 47.54 | 29.20 | 1.12 | 0.77 | 0.46 | 1.86 | 0.24 | 0.15 | 16.68 | 4.81 | 2.41 | 0.21 | 0.11 | 1.05 | 8.64 | 115.25 | 22.82 |
| HHC015 | 9 | 12 | 18.30 | 11.26 | 0.54 | 0.37 | 0.25 | 0.56 | 0.11 | 0.09 | 6.77 | 1.68 | 0.79 | 0.09 | 0.05 | 0.56 | 4.19 | 45.61 | 9.08 |
| HHC015 | 12 | 15 | 24.94 | 15.13 | 0.76 | 0.64 | 0.20 | 1.18 | 0.16 | 0.13 | 8.05 | 2.43 | 1.51 | 0.14 | 0.06 | 0.67 | 6.10 | 62.07 | 11.38 |
| HHC015 | 15 | 18 | 28.38 | 20.29 | 0.91 | 0.67 | 0.17 | 1.06 | 0.23 | 0.08 | 10.73 | 2.73 | 1.16 | 0.16 | 0.03 | 0.68 | 6.48 | 73.77 | 14.53 |
| HHC015 | 18 | 21 | 26.90 | 18.53 | 0.76 | 0.50 | 0.29 | 0.78 | 0.19 | 0.10 | 10.03 | 2.82 | 1.51 | 0.18 | 0.09 | 0.77 | 4.95 | 68.41 | 13.78 |
| HHC015 | 21 | 24 | 29.24 | 21.11 | 0.87 | 0.40 | 0.32 | 0.90 | 0.14 | 0.13 | 10.26 | 3.11 | 1.41 | 0.16 | 0.21 | 0.55 | 5.08 | 73.89 | 14.41 |
| HHC015 | 24 | 26 | 65.47 | 43.39 | 1.06 | 0.58 | 0.53 | 1.71 | 0.25 | 0.13 | 24.96 | 7.48 | 2.54 | 0.21 | 0.23 | 0.96 | 7.11 | 156.61 | 33.71 |
| HHC016 | 0 | 3 | 80.71 | 44.92 | 3.08 | 1.58 | 0.80 | 3.41 | 0.47 | 0.23 | 33.13 | 8.82 | 5.09 | 0.48 | 0.23 | 1.40 | 17.27 | 201.60 | 45.50 |
| HHC016 | 3 | 6 | 105.64 | 65.44 | 3.94 | 2.37 | 1.19 | 5.33 | 0.79 | 0.38 | 47.59 | 12.50 | 7.28 | 0.69 | 0.39 | 1.71 | 25.02 | 280.26 | 64.72 |
| HHC016 | 6 | 9 | 31.69 | 20.05 | 1.17 | 0.90 | 0.30 | 1.45 | 0.25 | 0.14 | 10.61 | 3.06 | 1.52 | 0.16 | 0.14 | 0.98 | 7.62 | 80.05 | 15.01 |
| HHC016 | 9 | 12 | 29.11 | 21.70 | 1.30 | 0.94 | 0.28 | 1.19 | 0.27 | 0.15 | 8.40 | 2.78 | 1.32 | 0.22 | 0.10 | 0.73 | 8.00 | 76.49 | 12.70 |
| HHC016 | 12 | 15 | 20.15 | 12.43 | 0.99 | 0.55 | 0.19 | 0.75 | 0.16 | 0.11 | 6.30 | 2.02 | 0.82 | 0.12 | 0.07 | 0.64 | 5.33 | 50.62 | 9.42 |
| HHC016 | 15 | 18 | 24.94 | 15.48 | 1.06 | 0.71 | 0.22 | 0.91 | 0.15 | 0.09 | 7.81 | 2.25 | 1.22 | 0.13 | 0.21 | 0.98 | 5.46 | 61.61 | 11.25 |
| HHC016 | 18 | 21 | 71.62 | 44.92 | 1.57 | 0.98 | 0.64 | 2.42 | 0.36 | 0.19 | 26.13 | 8.08 | 3.54 | 0.36 | 0.13 | 1.21 | 11.81 | 173.95 | 36.15 |
| HHC016 | 21 | 24 | 51.59 | 25.92 | 1.01 | 0.63 | 0.43 | 1.49 | 0.16 | 0.13 | 13.76 | 4.19 | 1.76 | 0.19 | 0.08 | 0.64 | 5.46 | 107.44 | 19.15 |
| HHC016 | 24 | 27 | 192.24 | 131.94 | 3.55 | 1.57 | 1.67 | 5.64 | 0.63 | 0.26 | 79.90 | 23.86 | 10.77 | 0.78 | 0.27 | 1.94 | 19.94 | 474.95 | 108.08 |
| HHC016 | 27 | 30 | 272.70 | 194.10 | 6.45 | 3.10 | 3.07 | 10.04 | 1.08 | 0.41 | 130.64 | 37.09 | 18.96 | 1.32 | 0.50 | 2.79 | 35.43 | 717.67 | 175.50 |
| HHC016 | 30 | 33 | 243.84 | 146.60 | 4.01 | 2.20 | 2.06 | 6.39 | 0.70 | 0.28 | 86.31 | 26.22 | 11.04 | 0.74 | 0.32 | 1.92 | 22.35 | 554.97 | 117.28 |
| HHC016 | 33 | 37 | 188.56 | 102.50 | 3.51 | 1.92 | 1.48 | 5.39 | 0.71 | 0.35 | 67.30 | 19.27 | 9.23 | 0.80 | 0.26 | 2.20 | 22.10 | 425.59 | 90.88 |
| HHC017 | 0 | 3 | 213.74 | 99.34 | 6.28 | 3.38 | 1.89 | 8.45 | 1.21 | 0.44 | 75.82 | 21.32 | 11.09 | 1.09 | 0.43 | 2.41 | 33.27 | 480.17 | 104.51 |
| HHC017 | 3 | 6 | 51.96 | 29.55 | 1.66 | 1.11 | 0.52 | 1.98 | 0.30 | 0.14 | 17.03 | 4.91 | 2.49 | 0.26 | 0.18 | 0.99 | 10.03 | 123.12 | 23.86 |
| HHC017 | 6 | 9 | 28.62 | 17.12 | 1.18 | 0.86 | 0.31 | 1.13 | 0.23 | 0.14 | 9.45 | 2.71 | 1.84 | 0.22 | 0.18 | 0.82 | 8.25 | 73.07 | 13.56 |
| HHC017 | 9 | 12 | 25.67 | 15.25 | 1.01 | 0.64 | 0.25 | 1.06 | 0.22 | 0.14 | 8.40 | 2.28 | 1.73 | 0.11 | 0.10 | 0.88 | 6.73 | 64.46 | 11.80 |
| HHC017 | 12 | 15 | 17.32 | 10.20 | 0.72 | 0.48 | 0.17 | 0.67 | 0.16 | 0.09 | 4.90 | 1.61 | 0.92 | 0.14 | 0.08 | 0.55 | 4.32 | 42.33 | 7.37 |
| HHC017 | 15 | 18 | 20.15 | 12.43 | 1.10 | 0.72 | 0.21 | 0.98 | 0.17 | 0.10 | 5.48 | 1.80 | 0.94 | 0.15 | 0.09 | 0.81 | 5.59 | 50.72 | 8.54 |
| HHC017 | 18 | 21 | 22.73 | 16.77 | 1.21 | 0.74 | 0.21 | 0.91 | 0.23 | 0.08 | 7.81 | 2.07 | 1.04 | 0.14 | 0.15 | 0.71 | 6.86 | 61.65 | 11.23 |
| HHC017 | 21 | 24 | 26.16 | 25.22 | 0.91 | 0.61 | 0.29 | 0.97 | 0.23 | 0.11 | 13.53 | 4.01 | 1.53 | 0.14 | 0.10 | 0.71 | 4.95 | 79.47 | 18.59 |
| HHC017 | 24 | 27 | 24.45 | 17.71 | 0.52 | 0.34 | 0.27 | 0.78 | 0.11 | 0.08 | 10.38 | 2.60 | 1.12 | 0.13 | 0.08 | 0.42 | 3.17 | 62.17 | 13.62 |
| HHC017 | 27 | 30 | 16.46 | 10.91 | 0.39 | 0.31 | 0.21 | 0.63 | 0.10 | 0.08 | 6.77 | 1.85 | 0.95 | 0.09 | 0.15 | 0.51 | 3.68 | 43.09 | 9.10 |
| HHC017 | 30 | 33 | 58.72 | 32.13 | 1.09 | 0.50 | 0.54 | 1.72 | 0.15 | 0.08 | 18.66 | 5.69 | 2.60 | 0.20 | 0.05 | 0.60 | 5.33 | 128.07 | 25.64 |
| HHC017 | 33 | 36 | 54.79 | 20.64 | 1.00 | 0.45 | 0.32 | 1.41 | 0.15 | 0.09 | 14.11 | 3.76 | 1.95 | 0.12 | 0.05 | 0.58 | 3.81 | 103.22 | 18.99 |
| HHC017 | 36 | 39 | 60.44 | 26.04 | 1.09 | 0.61 | 0.36 | 1.29 | 0.21 | 0.11 | 17.96 | 5.01 | 2.27 | 0.22 | 0.09 | 0.69 | 5.84 | 122.24 | 24.29 |
| HHC017 | 39 | 42 | 84.02 | 36.00 | 0.91 | 0.46 | 0.66 | 1.60 | 0.18 | 0.13 | 22.86 | 6.37 | 2.73 | 0.18 | 0.15 | 0.80 | 5.71 | 162.75 | 30.31 |
| HHC017 | 42 | 45 | 88.57 | 53.71 | 1.47 | 0.82 | 0.86 | 2.17 | 0.26 | 0.11 | 27.53 | 8.77 | 3.84 | 0.28 | 0.09 | 0.74 | 7.87 | 197.10 | 38.05 |
| HHC017 | 45 | 48 | 74.07 | 51.13 | 1.63 | 0.72 | 0.63 | 2.52 | 0.26 | 0.11 | 26.13 | 7.53 | 2.82 | 0.24 | 0.13 | 0.72 | 9.02 | 177.65 | 35.52 |
| HHC017 | 48 | 51 | 97.29 | 48.44 | 1.27 | 0.88 | 0.65 | 1.74 | 0.22 | 0.11 | 26.24 | 8.07 | 3.40 | 0.22 | 0.18 | 0.59 | 7.24 | 196.55 | 35.81 |
| HHC017 | 51 | 54 | 55.52 | 26.04 | 0.99 | 0.59 | 0.42 | 1.24 | 0.16 | 0.10 | 14.46 | 4.08 | 2.11 | 0.14 | 0.03 | 0.59 | 4.70 | 111.19 | 19.68 |
| HHC017 | 54 | 57 | 42.01 | 20.41 | 1.16 | 0.77 | 0.30 | 1.09 | 0.19 | 0.16 | 11.90 | 3.41 | 1.69 | 0.16 | 0.07 | 0.91 | 5.21 | 89.44 | 16.63 |
| HHC017 | 57 | 60 | 35.62 | 19.12 | 0.98 | 0.67 | 0.25 | 1.20 | 0.24 | 0.14 | 10.26 | 3.03 | 1.40 | 0.12 | 0.11 | 0.84 | 6.86 | 80.85 | 14.39 |
| HHC017 | 60 | 63 | 46.31 | 24.04 | 1.23 | 0.67 | 0.41 | 1.21 | 0.19 | 0.14 | 12.48 | 4.01 | 1.90 | 0.16 | 0.17 | 0.75 | 6.10 | 99.78 | 17.88 |
| HHC017 | 63 | 66 | 93.73 | 37.30 | 1.29 | 0.61 | 0.58 | 1.84 | 0.18 | 0.14 | 21.93 | 6.51 | 2.75 | 0.19 | 0.16 | 0.76 | 6.73 | 174.69 | 29.91 |
| HHC017 | 66 | 69 | 108.96 | 47.15 | 1.78 | 0.88 | 0.73 | 2.46 | 0.27 | 0.17 | 25.78 | 7.87 | 3.97 | 0.33 | 0.15 | 1.33 | 8.13 | 209.94 | 35.75 |
| HHC017 | 69 | 72 | 97.29 | 40.34 | 1.31 | 0.81 | 0.64 | 2.11 | 0.21 | 0.10 | 24.84 | 7.04 | 3.79 | 0.26 | 0.15 | 0.83 | 7.49 | 187.22 | 33.46 |
| HHC017 | 72 | 75 | 122.59 | 54.18 | 1.64 | 0.86 | 0.80 | 2.88 | 0.32 | 0.20 | 34.29 | 10.51 | 4.01 | 0.34 | 0.13 | 0.82 | 8.25 | 241.84 | 46.79 |
| HHC017 | 75 | 78 | 113.01 | 74.59 | 1.47 | 0.80 | 0.93 | 2.93 | 0.27 | 0.14 | 42.81 | 12.87 | 5.36 | 0.26 | 0.09 | 0.81 | 8.64 | 264.96 | 57.40 |
| HHC017 | 78 | 81 | 235.85 | 124.90 | 2.81 | 1.20 | 1.56 | 4.54 | 0.39 | 0.16 | 73.25 | 21.87 | 9.14 | 0.46 | 0.22 | 1.31 | 12.57 | 490.23 | 98.39 |
| HHC017 | 81 | 84 | 113.50 | 60.40 | 2.02 | 1.30 | 0.69 | 2.77 | 0.37 | 0.25 | 34.88 | 10.10 | 4.42 | 0.41 | 0.15 | 1.34 | 12.06 | 244.67 | 47.41 |
| HHC017 | 84 | 87 | 83.04 | 47.62 | 2.28 | 1.32 | 0.66 | 2.73 | 0.42 | 0.20 | 25.31 | 7.76 | 4.24 | 0.34 | 0.17 | 1.31 | 13.08 | 190.49 | 35.69 |
| HHC017 | 87 | 90 | 84.88 | 44.10 | 3.52 | 2.44 | 0.80 | 3.91 | 0.62 | 0.39 | 27.88 | 8.16 | 4.85 | 0.61 | 0.30 | 2.31 | 20.70 | 205.45 | 40.17 |
| HHC018 | 0 | 3 | 164.61 | 87.96 | 5.45 | 3.09 | 1.85 | 7.48 | 1.04 | 0.43 | 69.63 | 19.81 | 10.58 | 1.01 | 0.56 | 2.43 | 32.76 | 408.70 | 95.91 |
| HHC018 | 3 | 6 | 67.19 | 33.78 | 2.26 | 1.41 | 0.74 | 2.66 | 0.48 | 0.23 | 22.04 | 6.36 | 3.83 | 0.45 | 0.19 | 1.48 | 12.70 | 155.80 | 31.11 |
| HHC018 | 6 | 9 | 24.20 | 16.77 | 1.03 | 0.65 | 0.32 | 1.01 | 0.19 | 0.11 | 8.16 | 2.32 | 1.26 | 0.18 | 0.08 | 0.73 | 6.73 | 63.77 | 11.69 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC018 | 9 | 12 | 18.30 | 10.91 | 0.70 | 0.48 | 0.24 | 0.59 | 0.07 | 0.07 | 5.25 | 1.74 | 0.90 | 0.09 | 0.01 | 0.56 | 3.94 | 43.85 | 7.78 |
| HHC018 | 12 | 15 | 19.53 | 11.61 | 0.87 | 0.67 | 0.22 | 0.78 | 0.17 | 0.16 | 6.42 | 1.93 | 1.03 | 0.16 | 0.13 | 0.84 | 4.95 | 49.49 | 9.39 |
| HHC018 | 15 | 18 | 15.48 | 9.15 | 0.65 | 0.54 | 0.20 | 0.55 | 0.09 | 0.07 | 4.90 | 1.43 | 0.85 | 0.06 | 0.05 | 0.59 | 4.57 | 39.17 | 7.04 |
| HHC018 | 18 | 21 | 18.55 | 10.67 | 0.76 | 0.50 | 0.20 | 0.62 | 0.09 | 0.07 | 5.83 | 1.66 | 0.89 | 0.07 | 0.06 | 0.44 | 4.06 | 44.48 | 8.32 |
| HHC018 | 21 | 24 | 25.18 | 16.07 | 0.94 | 0.62 | 0.24 | 0.84 | 0.14 | 0.10 | 7.58 | 2.25 | 1.15 | 0.11 | 0.09 | 0.71 | 4.83 | 60.84 | 10.88 |
| HHC018 | 24 | 27 | 18.30 | 9.97 | 0.67 | 0.41 | 0.23 | 0.68 | 0.06 | 0.11 | 5.48 | 1.23 | 0.75 | 0.06 | 0.07 | 0.56 | 3.56 | 42.14 | 7.44 |
| HHC018 | 27 | 30 | 9.09 | 6.22 | 0.39 | 0.23 | 0.13 | 0.29 | 0.06 | 0.05 | 3.62 | 1.01 | 0.48 | 0.05 | 0.02 | 0.40 | 2.54 | 24.56 | 5.07 |
| HHC018 | 30 | 33 | 17.44 | 12.08 | 0.72 | 0.46 | 0.19 | 0.63 | 0.11 | 0.10 | 6.77 | 2.10 | 0.97 | 0.08 | 0.06 | 0.55 | 3.94 | 46.20 | 9.67 |
| HHC018 | 33 | 36 | 21.13 | 10.67 | 0.59 | 0.34 | 0.27 | 0.61 | 0.07 | 0.07 | 7.46 | 2.10 | 1.01 | 0.07 | 0.06 | 0.44 | 3.30 | 48.19 | 10.22 |
| HHC018 | 36 | 39 | 52.94 | 33.89 | 1.17 | 0.62 | 0.63 | 1.87 | 0.16 | 0.11 | 22.04 | 6.62 | 3.35 | 0.20 | 0.10 | 0.64 | 5.84 | 130.19 | 30.04 |
| HHC018 | 39 | 42 | 66.58 | 55.47 | 1.79 | 0.74 | 0.95 | 2.95 | 0.24 | 0.14 | 45.84 | 12.50 | 5.96 | 0.35 | 0.15 | 0.90 | 8.38 | 202.95 | 60.49 |
| HHC018 | 42 | 45 | 84.64 | 62.39 | 1.66 | 0.61 | 1.02 | 2.79 | 0.25 | 0.13 | 45.14 | 13.05 | 6.31 | 0.31 | 0.14 | 0.96 | 8.13 | 227.51 | 60.16 |
| HHC018 | 45 | 48 | 59.45 | 39.64 | 1.00 | 0.63 | 0.54 | 1.54 | 0.14 | 0.13 | 21.81 | 6.42 | 2.96 | 0.20 | 0.17 | 0.66 | 5.46 | 140.75 | 29.43 |
| HHC018 | 48 | 51 | 127.75 | 66.26 | 1.50 | 0.79 | 1.03 | 2.89 | 0.25 | 0.14 | 40.12 | 11.76 | 5.66 | 0.36 | 0.15 | 0.89 | 8.00 | 267.56 | 53.75 |
| HHC018 | 51 | 54 | 249.37 | 117.87 | 2.44 | 1.22 | 1.53 | 4.25 | 0.38 | 0.15 | 66.48 | 19.69 | 9.38 | 0.46 | 0.18 | 0.93 | 11.43 | 485.77 | 89.08 |
| HHC018 | 54 | 57 | 44.47 | 23.34 | 0.67 | 0.39 | 0.31 | 0.92 | 0.11 | 0.11 | 14.35 | 4.26 | 2.08 | 0.13 | 0.05 | 0.57 | 3.17 | 94.93 | 19.41 |
| HHC018 | 57 | 60 | 138.20 | 65.32 | 1.65 | 0.88 | 0.80 | 2.70 | 0.32 | 0.11 | 37.32 | 11.36 | 5.09 | 0.26 | 0.21 | 0.95 | 8.38 | 273.55 | 50.59 |
| HHC018 | 60 | 63 | 77.51 | 42.69 | 1.04 | 0.74 | 0.49 | 1.48 | 0.21 | 0.13 | 21.81 | 6.51 | 2.49 | 0.18 | 0.11 | 0.85 | 6.60 | 162.85 | 29.54 |
| HHC018 | 63 | 66 | 35.01 | 22.28 | 0.91 | 0.58 | 0.38 | 0.89 | 0.15 | 0.11 | 11.43 | 3.20 | 1.73 | 0.12 | 0.10 | 0.65 | 5.33 | 82.88 | 15.66 |
| HHC018 | 66 | 69 | 35.87 | 21.23 | 0.95 | 0.53 | 0.32 | 0.98 | 0.16 | 0.10 | 11.31 | 3.42 | 1.73 | 0.13 | 0.11 | 0.60 | 5.71 | 83.16 | 15.82 |
| HHC018 | 69 | 72 | 43.98 | 25.68 | 0.96 | 0.57 | 0.36 | 1.12 | 0.14 | 0.08 | 14.35 | 4.19 | 1.91 | 0.15 | 0.14 | 0.57 | 5.21 | 99.41 | 19.66 |
| HHC018 | 72 | 75 | 93.36 | 58.29 | 1.40 | 0.59 | 0.52 | 1.96 | 0.16 | 0.11 | 28.11 | 8.78 | 3.66 | 0.20 | 0.18 | 0.61 | 7.11 | 205.06 | 38.49 |
| HHC018 | 75 | 78 | 96.80 | 62.04 | 1.40 | 0.63 | 0.78 | 2.05 | 0.21 | 0.08 | 31.73 | 9.99 | 3.85 | 0.21 | 0.11 | 0.79 | 6.60 | 217.26 | 43.33 |
| HHC018 | 78 | 81 | 135.12 | 81.51 | 1.80 | 0.78 | 0.89 | 2.82 | 0.25 | 0.14 | 41.64 | 12.57 | 5.50 | 0.34 | 0.14 | 0.74 | 8.51 | 292.75 | 56.35 |
| HHC018 | 81 | 84 | 175.66 | 107.55 | 2.07 | 1.10 | 1.15 | 3.63 | 0.34 | 0.14 | 56.92 | 17.22 | 8.05 | 0.46 | 0.16 | 0.83 | 11.18 | 386.44 | 76.66 |
| HHC018 | 84 | 87 | 93.48 | 58.17 | 1.50 | 0.66 | 0.67 | 2.31 | 0.22 | 0.14 | 31.84 | 9.91 | 5.07 | 0.22 | 0.14 | 0.80 | 7.49 | 212.62 | 43.48 |
| HHC018 | 87 | 90 | 43.24 | 23.69 | 1.18 | 0.54 | 0.38 | 1.50 | 0.18 | 0.08 | 15.40 | 4.60 | 2.06 | 0.19 | 0.14 | 0.58 | 6.35 | 100.11 | 21.37 |
| HHC018 | 90 | 92 | 47.78 | 29.55 | 0.98 | 0.59 | 0.36 | 1.43 | 0.18 | 0.10 | 16.68 | 4.64 | 2.28 | 0.16 | 0.10 | 0.75 | 5.46 | 111.07 | 22.46 |
| HHC019 | 0 | 3 | 103.80 | 43.51 | 2.63 | 1.66 | 0.90 | 3.16 | 0.46 | 0.25 | 30.91 | 9.17 | 5.52 | 0.47 | 0.25 | 1.70 | 15.87 | 220.26 | 43.18 |
| HHC019 | 3 | 6 | 35.87 | 20.17 | 1.47 | 0.93 | 0.36 | 1.34 | 0.22 | 0.17 | 11.78 | 3.14 | 1.83 | 0.21 | 0.24 | 0.98 | 7.75 | 86.45 | 16.60 |
| HHC019 | 6 | 9 | 31.08 | 19.47 | 0.98 | 0.77 | 0.30 | 1.00 | 0.19 | 0.11 | 10.61 | 2.95 | 1.58 | 0.16 | 0.19 | 0.72 | 6.86 | 76.97 | 14.70 |
| HHC019 | 9 | 12 | 28.13 | 18.06 | 0.91 | 0.50 | 0.34 | 0.71 | 0.16 | 0.08 | 8.98 | 2.49 | 1.25 | 0.13 | 0.17 | 0.65 | 5.08 | 67.64 | 12.51 |
| HHC019 | 12 | 15 | 21.37 | 12.90 | 0.85 | 0.48 | 0.25 | 0.66 | 0.13 | 0.09 | 6.77 | 1.98 | 0.88 | 0.12 | 0.14 | 0.63 | 3.68 | 50.92 | 9.71 |
| HHC019 | 15 | 18 | 12.90 | 7.62 | 0.40 | 0.27 | 0.08 | 0.52 | 0.11 | 0.05 | 3.97 | 1.22 | 0.60 | 0.08 | 0.09 | 0.39 | 2.92 | 31.23 | 5.67 |
| HHC019 | 18 | 21 | 17.20 | 10.67 | 0.61 | 0.34 | 0.20 | 0.58 | 0.14 | 0.06 | 4.32 | 1.61 | 0.96 | 0.08 | 0.10 | 0.60 | 4.19 | 41.65 | 6.61 |
| HHC019 | 21 | 24 | 22.23 | 14.19 | 0.60 | 0.38 | 0.23 | 0.63 | 0.10 | 0.08 | 6.42 | 2.19 | 0.88 | 0.09 | 0.15 | 0.52 | 3.43 | 52.13 | 9.29 |
| HHC019 | 24 | 27 | 23.71 | 15.36 | 0.57 | 0.50 | 0.16 | 0.74 | 0.13 | 0.11 | 8.40 | 2.54 | 1.12 | 0.12 | 0.15 | 0.44 | 4.70 | 58.76 | 11.63 |
| HHC019 | 27 | 30 | 18.30 | 11.14 | 0.41 | 0.35 | 0.23 | 0.56 | 0.08 | 0.09 | 5.95 | 1.82 | 0.75 | 0.09 | 0.15 | 0.54 | 2.67 | 43.15 | 8.28 |
| HHC019 | 30 | 33 | 17.44 | 12.08 | 0.44 | 0.40 | 0.20 | 0.62 | 0.13 | 0.09 | 6.07 | 1.72 | 0.86 | 0.11 | 0.16 | 0.54 | 3.68 | 44.52 | 8.32 |
| HHC019 | 33 | 36 | 9.34 | 6.57 | 0.37 | 0.16 | 0.15 | 0.28 | 0.07 | 0.07 | 3.50 | 1.05 | 0.46 | 0.08 | 0.10 | 0.43 | 2.79 | 25.42 | 5.00 |
| HHC019 | 36 | 39 | 25.43 | 13.84 | 0.70 | 0.51 | 0.21 | 0.99 | 0.11 | 0.09 | 7.81 | 2.84 | 1.81 | 0.08 | 0.07 | 0.52 | 3.81 | 58.83 | 11.44 |
| HHC019 | 39 | 42 | 41.27 | 28.85 | 1.09 | 0.61 | 0.53 | 1.76 | 0.19 | 0.08 | 19.01 | 5.71 | 2.84 | 0.26 | 0.14 | 0.73 | 5.71 | 108.80 | 26.08 |
| HHC020 | 0 | 3 | 111.54 | 58.52 | 3.64 | 1.74 | 1.30 | 4.58 | 0.70 | 0.24 | 42.11 | 11.97 | 6.34 | 0.65 | 0.33 | 1.65 | 22.48 | 267.78 | 58.37 |
| HHC020 | 3 | 6 | 106.38 | 69.78 | 3.62 | 1.53 | 1.12 | 4.58 | 0.62 | 0.19 | 46.31 | 13.47 | 7.29 | 0.59 | 0.21 | 1.48 | 17.14 | 274.31 | 63.98 |
| HHC020 | 6 | 9 | 26.16 | 16.54 | 1.16 | 0.74 | 0.31 | 0.97 | 0.19 | 0.13 | 8.16 | 2.61 | 1.16 | 0.15 | 0.10 | 0.77 | 6.73 | 65.90 | 12.09 |
| HHC020 | 9 | 12 | 19.65 | 12.67 | 0.87 | 0.62 | 0.31 | 0.85 | 0.13 | 0.10 | 6.42 | 1.84 | 1.03 | 0.14 | 0.06 | 0.58 | 5.59 | 50.85 | 9.27 |
| HHC020 | 12 | 15 | 18.79 | 12.43 | 0.77 | 0.49 | 0.20 | 0.67 | 0.15 | 0.06 | 6.30 | 1.80 | 0.65 | 0.12 | 0.07 | 0.50 | 4.70 | 47.69 | 8.99 |
| HHC020 | 15 | 18 | 26.90 | 15.72 | 0.67 | 0.38 | 0.16 | 0.85 | 0.16 | 0.07 | 8.86 | 2.49 | 1.12 | 0.08 | 0.09 | 0.50 | 4.19 | 62.25 | 12.10 |
| HHC020 | 18 | 21 | 27.39 | 17.12 | 0.72 | 0.64 | 0.21 | 0.82 | 0.17 | 0.09 | 8.05 | 2.51 | 1.18 | 0.13 | 0.05 | 0.65 | 5.21 | 64.94 | 11.41 |
| HHC020 | 21 | 24 | 35.13 | 24.16 | 0.79 | 0.50 | 0.25 | 1.18 | 0.18 | 0.10 | 10.61 | 3.49 | 1.30 | 0.13 | 0.07 | 0.72 | 4.83 | 83.45 | 15.03 |
| HHC020 | 24 | 27 | 16.95 | 13.25 | 0.56 | 0.31 | 0.22 | 0.62 | 0.11 | 0.10 | 6.07 | 1.93 | 1.18 | 0.07 | 0.11 | 0.46 | 3.05 | 45.00 | 8.63 |
| HHC020 | 27 | 30 | 68.42 | 61.57 | 1.78 | 0.86 | 0.93 | 2.70 | 0.38 | 0.19 | 33.83 | 9.69 | 4.43 | 0.33 | 0.21 | 1.14 | 12.57 | 199.02 | 45.62 |
| HHC020 | 30 | 33 | 80.83 | 48.91 | 1.40 | 0.71 | 0.81 | 2.33 | 0.27 | 0.10 | 29.04 | 8.63 | 3.68 | 0.31 | 0.14 | 0.93 | 7.24 | 185.32 | 39.38 |
| HHC020 | 33 | 36 | 214.97 | 160.09 | 4.69 | 2.13 | 2.32 | 7.92 | 0.77 | 0.28 | 98.56 | 29.84 | 13.57 | 0.86 | 0.33 | 1.87 | 24.13 | 562.32 | 133.96 |
| HHC020 | 36 | 39 | 180.57 | 106.84 | 2.75 | 1.15 | 1.35 | 4.39 | 0.41 | 0.11 | 59.49 | 18.61 | 7.93 | 0.54 | 0.22 | 0.98 | 14.35 | 399.71 | 81.39 |
| HHC020 | 39 | 43 | 143.72 | 85.85 | 2.44 | 1.29 | 1.20 | 3.82 | 0.46 | 0.16 | 46.07 | 14.74 | 6.09 | 0.44 | 0.24 | 0.87 | 13.84 | 321.23 | 63.69 |
| HHC021 | 0 | 3 | 97.29 | 52.42 | 3.50 | 1.97 | 1.23 | 4.60 | 0.65 | 0.25 | 38.96 | 10.73 | 5.74 | 0.65 | 0.30 | 1.53 | 19.56 | 239.36 | 53.83 |
| HHC021 | 3 | 6 | 156.01 | 102.15 | 5.07 | 2.42 | 1.78 | 6.86 | 1.00 | 0.35 | 70.80 | 20.84 | 10.41 | 0.93 | 0.26 | 1.73 | 27.43 | 408.05 | 97.64 |
| HHC021 | 6 | 9 | 25.80 | 16.42 | 1.19 | 0.64 | 0.29 | 0.97 | 0.29 | 0.13 | 8.16 | 2.46 | 1.51 | 0.18 | 0.17 | 0.81 | 7.87 | 66.89 | 12.00 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC021 | 9 | 12 | 19.78 | 12.78 | 1.02 | 0.56 | 0.28 | 0.88 | 0.14 | 0.07 | 5.48 | 1.85 | 0.96 | 0.13 | 0.08 | 0.76 | 6.22 | 50.99 | 8.48 |
| HHC021 | 12 | 15 | 20.76 | 12.78 | 1.11 | 0.58 | 0.17 | 0.78 | 0.17 | 0.08 | 6.53 | 2.07 | 0.66 | 0.14 | 0.13 | 0.52 | 5.21 | 51.70 | 9.85 |
| HHC021 | 15 | 18 | 23.22 | 17.01 | 0.65 | 0.56 | 0.19 | 0.78 | 0.15 | 0.07 | 7.12 | 2.14 | 1.44 | 0.14 | 0.09 | 0.56 | 5.46 | 59.57 | 10.05 |
| HHC021 | 18 | 21 | 20.39 | 12.43 | 0.61 | 0.51 | 0.23 | 0.71 | 0.14 | 0.08 | 5.72 | 1.97 | 1.08 | 0.09 | 0.08 | 0.40 | 3.94 | 48.38 | 8.39 |
| HHC021 | 21 | 24 | 27.76 | 18.06 | 0.81 | 0.49 | 0.29 | 0.82 | 0.18 | 0.08 | 8.98 | 3.08 | 1.38 | 0.13 | 0.09 | 0.55 | 5.21 | 67.92 | 13.01 |
| HHC021 | 24 | 27 | 67.32 | 41.40 | 1.12 | 0.55 | 0.46 | 1.84 | 0.25 | 0.14 | 22.16 | 6.91 | 2.99 | 0.20 | 0.11 | 0.81 | 8.00 | 154.27 | 30.40 |
| HHC021 | 27 | 30 | 50.73 | 45.04 | 1.02 | 0.53 | 0.44 | 1.66 | 0.19 | 0.14 | 19.13 | 6.19 | 2.18 | 0.22 | 0.07 | 0.77 | 6.35 | 134.66 | 26.56 |
| HHC021 | 30 | 33 | 17.69 | 11.49 | 0.54 | 0.29 | 0.16 | 0.48 | 0.10 | 0.09 | 6.18 | 1.72 | 0.95 | 0.06 | 0.06 | 0.34 | 3.43 | 43.58 | 8.50 |
| HHC021 | 33 | 36 | 41.77 | 20.29 | 1.01 | 0.61 | 0.28 | 1.09 | 0.18 | 0.13 | 11.08 | 3.43 | 1.65 | 0.19 | 0.14 | 0.55 | 5.97 | 88.35 | 15.71 |
| HHC021 | 36 | 39 | 162.15 | 112.35 | 3.53 | 1.93 | 1.68 | 5.42 | 0.64 | 0.27 | 69.40 | 19.75 | 9.04 | 0.65 | 0.31 | 1.80 | 22.73 | 411.67 | 93.34 |
| HHC021 | 39 | 42 | NS | | | | | | | | | | | | | | | | |
| HHC021 | 42 | 45 | 99.62 | 64.39 | 1.76 | 1.18 | 0.95 | 3.22 | 0.33 | 0.19 | 42.11 | 12.93 | 5.10 | 0.35 | 0.13 | 1.48 | 11.18 | 244.91 | 57.14 |
| HHC021 | 45 | 48 | 195.93 | 110.48 | 1.87 | 0.89 | 1.17 | 3.18 | 0.32 | 0.11 | 60.30 | 19.09 | 6.97 | 0.35 | 0.15 | 0.79 | 8.76 | 410.37 | 81.62 |
| HHC021 | 48 | 51 | 355.01 | 192.93 | 1.95 | 0.93 | 1.49 | 3.71 | 0.30 | 0.10 | 89.11 | 31.78 | 9.43 | 0.41 | 0.18 | 0.72 | 8.51 | 696.55 | 123.25 |
| HHC021 | 51 | 54 | 438.54 | 208.76 | 2.65 | 0.86 | 2.51 | 5.49 | 0.36 | 0.10 | 128.89 | 44.10 | 15.13 | 0.61 | 0.18 | 0.84 | 8.76 | 857.78 | 176.25 |
| HHC021 | 54 | 57 | 75.79 | 35.30 | 1.39 | 1.18 | 0.59 | 1.89 | 0.29 | 0.28 | 24.38 | 7.52 | 3.72 | 0.27 | 0.18 | 1.21 | 11.05 | 165.04 | 33.55 |
| HHC021 | 57 | 60 | 80.09 | 42.92 | 1.46 | 0.71 | 0.49 | 2.09 | 0.33 | 0.20 | 26.36 | 8.28 | 3.62 | 0.28 | 0.15 | 0.97 | 10.54 | 178.49 | 36.38 |
| HHC022 | 0 | 3 | 120.75 | 60.05 | 3.70 | 2.15 | 1.27 | 4.60 | 0.69 | 0.26 | 41.64 | 12.44 | 6.81 | 0.69 | 0.31 | 1.84 | 22.99 | 280.19 | 58.47 |
| HHC022 | 3 | 6 | 126.53 | 81.86 | 5.21 | 2.66 | 1.84 | 7.11 | 0.95 | 0.34 | 61.59 | 16.85 | 9.06 | 0.85 | 0.45 | 2.39 | 31.24 | 348.93 | 84.50 |
| HHC022 | 6 | 9 | 38.82 | 22.75 | 1.31 | 0.88 | 0.35 | 1.39 | 0.25 | 0.09 | 11.66 | 3.54 | 1.77 | 0.19 | 0.09 | 0.81 | 7.87 | 91.78 | 16.70 |
| HHC022 | 9 | 12 | 26.66 | 16.18 | 1.01 | 0.82 | 0.35 | 1.05 | 0.22 | 0.15 | 8.63 | 2.40 | 1.12 | 0.12 | 0.10 | 0.72 | 7.37 | 66.90 | 12.16 |
| HHC022 | 12 | 15 | 24.94 | 15.13 | 0.99 | 0.61 | 0.25 | 0.88 | 0.15 | 0.14 | 7.58 | 2.51 | 1.03 | 0.15 | 0.16 | 0.75 | 6.10 | 61.36 | 11.23 |
| HHC022 | 15 | 18 | 22.73 | 12.67 | 0.94 | 0.70 | 0.16 | 0.71 | 0.18 | 0.14 | 7.00 | 2.13 | 1.29 | 0.14 | 0.10 | 0.79 | 5.71 | 55.38 | 10.21 |
| HHC022 | 18 | 21 | 26.41 | 17.59 | 0.81 | 0.62 | 0.29 | 0.77 | 0.15 | 0.07 | 8.86 | 2.54 | 1.19 | 0.12 | 0.14 | 0.71 | 4.70 | 64.97 | 12.33 |
| HHC022 | 21 | 24 | 155.39 | 121.97 | 2.64 | 1.26 | 1.44 | 4.81 | 0.47 | 0.13 | 67.88 | 19.03 | 8.59 | 0.58 | 0.21 | 1.00 | 14.73 | 400.12 | 90.13 |
| HHC022 | 24 | 27 | 238.92 | 136.63 | 4.05 | 1.98 | 2.13 | 7.30 | 0.76 | 0.30 | 83.40 | 24.53 | 11.89 | 0.79 | 0.33 | 1.98 | 25.65 | 540.63 | 112.76 |
| HHC022 | 27 | 30 | 249.37 | 141.32 | 4.05 | 1.90 | 2.20 | 6.39 | 0.64 | 0.26 | 80.48 | 24.41 | 10.01 | 0.76 | 0.22 | 1.75 | 21.33 | 545.09 | 109.70 |
| HHC022 | 30 | 33 | 244.45 | 131.35 | 3.96 | 1.49 | 2.67 | 7.84 | 0.70 | 0.23 | 89.93 | 25.37 | 12.23 | 0.89 | 0.29 | 1.48 | 21.59 | 544.47 | 120.16 |
| HHC022 | 33 | 36 | 254.28 | 135.46 | 3.88 | 1.94 | 2.22 | 7.10 | 0.71 | 0.19 | 89.81 | 25.37 | 12.00 | 0.80 | 0.24 | 1.46 | 22.10 | 557.57 | 119.86 |
| HHC023 | 0 | 3 | 117.56 | 59.46 | 4.24 | 2.20 | 1.26 | 4.83 | 0.85 | 0.24 | 46.31 | 12.99 | 7.60 | 0.71 | 0.37 | 1.89 | 24.64 | 285.11 | 64.23 |
| HHC023 | 3 | 6 | 146.79 | 105.67 | 5.98 | 3.34 | 2.05 | 8.32 | 1.05 | 0.31 | 78.97 | 20.72 | 12.87 | 1.04 | 0.45 | 2.36 | 36.70 | 426.61 | 106.70 |
| HHC023 | 6 | 9 | 41.64 | 19.59 | 1.31 | 0.69 | 0.44 | 1.24 | 0.24 | 0.13 | 10.73 | 3.37 | 1.58 | 0.18 | 0.15 | 0.98 | 7.24 | 89.49 | 15.59 |
| HHC023 | 9 | 12 | 23.59 | 13.84 | 1.01 | 0.73 | 0.30 | 1.03 | 0.22 | 0.11 | 7.12 | 2.17 | 1.22 | 0.16 | 0.17 | 0.67 | 6.10 | 58.44 | 10.46 |
| HHC023 | 12 | 15 | 25.31 | 15.25 | 1.17 | 0.69 | 0.29 | 1.12 | 0.23 | 0.10 | 7.93 | 2.45 | 1.08 | 0.16 | 0.14 | 0.68 | 6.48 | 63.07 | 11.72 |
| HHC023 | 15 | 18 | 20.51 | 12.43 | 0.72 | 0.49 | 0.17 | 0.59 | 0.17 | 0.10 | 5.60 | 1.88 | 0.77 | 0.13 | 0.11 | 0.65 | 4.83 | 49.16 | 8.34 |
| HHC023 | 18 | 21 | 34.52 | 26.15 | 0.72 | 0.53 | 0.45 | 1.03 | 0.13 | 0.08 | 13.76 | 3.89 | 1.76 | 0.16 | 0.21 | 0.60 | 5.33 | 89.33 | 18.54 |
| HHC023 | 21 | 24 | 205.14 | 120.80 | 3.99 | 1.98 | 1.69 | 6.35 | 0.71 | 0.28 | 69.87 | 21.08 | 10.39 | 0.80 | 0.35 | 2.07 | 23.75 | 469.26 | 95.74 |
| HHC023 | 24 | 27 | 200.84 | 114.23 | 3.12 | 1.59 | 1.56 | 5.69 | 0.53 | 0.19 | 68.12 | 19.75 | 8.49 | 0.68 | 0.31 | 1.64 | 20.45 | 447.20 | 91.68 |
| HHC023 | 27 | 30 | 246.91 | 138.98 | 3.81 | 1.89 | 1.76 | 6.55 | 0.62 | 0.19 | 80.02 | 24.77 | 11.83 | 0.69 | 0.34 | 1.41 | 21.21 | 540.97 | 109.29 |
| HHC023 | 30 | 33 | 230.33 | 130.77 | 3.35 | 1.40 | 1.91 | 5.69 | 0.62 | 0.19 | 76.05 | 22.77 | 10.01 | 0.67 | 0.26 | 1.33 | 19.30 | 504.65 | 102.85 |
| HHC023 | 33 | 35 | 230.94 | 132.53 | 3.23 | 1.59 | 1.69 | 6.07 | 0.57 | 0.24 | 70.45 | 21.14 | 8.60 | 0.67 | 0.35 | 1.32 | 18.29 | 497.69 | 95.49 |
| HHC024 | 0 | 3 | 152.94 | 76.11 | 5.14 | 2.81 | 1.57 | 6.89 | 0.89 | 0.28 | 56.69 | 16.13 | 9.23 | 0.95 | 0.46 | 2.40 | 27.81 | 360.32 | 78.91 |
| HHC024 | 3 | 6 | 126.53 | 79.16 | 5.05 | 2.66 | 1.55 | 6.64 | 0.96 | 0.31 | 57.15 | 16.73 | 9.58 | 0.86 | 0.47 | 2.14 | 28.83 | 338.62 | 79.80 |
| HHC024 | 6 | 9 | 28.13 | 17.94 | 1.11 | 0.82 | 0.28 | 1.03 | 0.24 | 0.10 | 9.21 | 2.61 | 1.48 | 0.14 | 0.19 | 0.90 | 6.73 | 70.93 | 13.08 |
| HHC024 | 9 | 12 | 54.30 | 31.31 | 1.21 | 0.80 | 0.34 | 1.58 | 0.27 | 0.14 | 17.38 | 5.32 | 2.26 | 0.16 | 0.18 | 0.87 | 7.87 | 123.98 | 24.07 |
| HHC024 | 12 | 15 | 25.92 | 15.72 | 0.95 | 0.69 | 0.23 | 0.75 | 0.17 | 0.09 | 8.40 | 2.73 | 1.39 | 0.16 | 0.17 | 0.69 | 6.48 | 64.54 | 12.25 |
| HHC024 | 15 | 18 | 89.55 | 64.50 | 1.56 | 0.99 | 0.65 | 2.16 | 0.25 | 0.16 | 29.74 | 9.29 | 3.55 | 0.26 | 0.21 | 1.08 | 9.02 | 212.97 | 40.85 |
| HHC024 | 18 | 22 | 207.60 | 114.70 | 3.47 | 1.53 | 1.68 | 5.54 | 0.57 | 0.17 | 72.78 | 21.02 | 10.17 | 0.60 | 0.27 | 1.49 | 17.65 | 459.26 | 97.87 |
| HHC025 | 0 | 3 | 138.20 | 68.26 | 4.28 | 2.28 | 1.38 | 6.03 | 0.84 | 0.28 | 51.79 | 15.22 | 8.79 | 0.86 | 0.32 | 2.05 | 25.02 | 325.58 | 72.15 |
| HHC025 | 3 | 6 | 213.13 | 92.18 | 6.32 | 3.20 | 2.28 | 8.28 | 1.15 | 0.39 | 74.30 | 21.45 | 12.93 | 1.18 | 0.43 | 2.43 | 33.14 | 472.78 | 103.25 |
| HHC025 | 6 | 9 | 49.26 | 20.05 | 1.42 | 0.80 | 0.39 | 1.28 | 0.30 | 0.14 | 11.55 | 3.52 | 1.67 | 0.24 | 0.14 | 0.97 | 8.51 | 100.23 | 16.72 |
| HHC025 | 9 | 12 | 29.24 | 16.77 | 1.04 | 0.83 | 0.30 | 1.05 | 0.26 | 0.15 | 8.98 | 2.82 | 1.51 | 0.16 | 0.13 | 0.97 | 8.13 | 72.34 | 13.01 |
| HHC025 | 12 | 15 | 22.48 | 12.67 | 0.90 | 0.63 | 0.23 | 0.81 | 0.18 | 0.14 | 6.53 | 2.08 | 0.97 | 0.14 | 0.10 | 0.81 | 5.84 | 54.51 | 9.65 |
| HHC025 | 15 | 18 | 20.76 | 11.61 | 0.61 | 0.39 | 0.14 | 0.68 | 0.13 | 0.14 | 4.90 | 1.80 | 0.92 | 0.09 | 0.08 | 0.65 | 3.68 | 46.57 | 7.40 |
| HHC025 | 18 | 21 | 18.55 | 12.90 | 0.57 | 0.38 | 0.22 | 0.73 | 0.11 | 0.10 | 5.95 | 1.93 | 0.77 | 0.09 | 0.08 | 0.63 | 3.56 | 46.57 | 8.55 |
| HHC025 | 21 | 24 | 37.71 | 30.02 | 0.83 | 0.45 | 0.52 | 1.09 | 0.15 | 0.11 | 15.05 | 4.92 | 1.95 | 0.16 | 0.07 | 0.59 | 4.19 | 97.81 | 20.95 |
| HHC025 | 24 | 27 | 380.80 | 215.80 | 5.99 | 2.65 | 3.49 | 11.39 | 1.08 | 0.40 | 158.63 | 46.88 | 22.44 | 1.32 | 0.40 | 2.48 | 27.68 | 881.42 | 212.82 |
| HHC025 | 27 | 30 | 272.70 | 158.91 | 4.64 | 2.13 | 2.29 | 7.72 | 0.76 | 0.31 | 96.69 | 29.48 | 13.51 | 0.89 | 0.38 | 1.95 | 25.78 | 618.14 | 131.71 |
| HHC025 | 30 | 33 | 128.37 | 72.48 | 1.63 | 0.95 | 0.90 | 3.42 | 0.34 | 0.09 | 41.64 | 12.69 | 5.51 | 0.33 | 0.15 | 0.95 | 10.41 | 279.86 | 56.29 |



**White Cliff Minerals Limited**
ABN 22 126 299 125

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**F** + 61 8 9486 4799

| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC025 | 33 | 37 | 264.11 | 140.15 | 3.91 | 1.86 | 2.26 | 7.01 | 0.68 | 0.22 | 92.03 | 26.82 | 11.32 | 0.76 | 0.32 | 1.55 | 21.59 | 574.58 | 123.53 |
| HHC026 | 0 | 3 | 150.48 | 72.24 | 4.77 | 2.46 | 1.45 | 6.06 | 0.79 | 0.27 | 53.19 | 15.34 | 8.00 | 0.78 | 0.40 | 2.28 | 25.14 | 343.66 | 74.08 |
| HHC026 | 3 | 6 | 124.68 | 73.30 | 4.75 | 2.47 | 1.51 | 5.97 | 0.86 | 0.26 | 53.89 | 14.44 | 8.64 | 0.80 | 0.37 | 2.12 | 29.97 | 324.02 | 73.88 |
| HHC026 | 6 | 9 | 31.82 | 18.53 | 1.19 | 0.99 | 0.42 | 1.29 | 0.23 | 0.15 | 9.21 | 3.19 | 1.65 | 0.21 | 0.15 | 0.95 | 7.87 | 77.85 | 13.81 |
| HHC026 | 9 | 12 | 24.81 | 15.25 | 0.77 | 0.78 | 0.28 | 0.86 | 0.18 | 0.11 | 7.00 | 2.42 | 1.30 | 0.13 | 0.14 | 0.68 | 5.84 | 60.55 | 10.31 |
| HHC026 | 12 | 15 | 24.32 | 13.84 | 0.99 | 0.69 | 0.22 | 0.90 | 0.22 | 0.10 | 8.28 | 2.39 | 1.23 | 0.13 | 0.22 | 0.65 | 5.59 | 59.76 | 11.79 |
| HHC026 | 15 | 18 | 56.63 | 31.20 | 1.92 | 1.12 | 0.59 | 2.62 | 0.33 | 0.19 | 20.06 | 6.23 | 2.76 | 0.33 | 0.32 | 1.13 | 11.68 | 137.11 | 28.54 |
| HHC026 | 18 | 21 | 22.73 | 19.70 | 1.18 | 0.67 | 0.16 | 1.15 | 0.17 | 0.14 | 6.88 | 2.34 | 0.77 | 0.19 | 0.19 | 0.89 | 7.62 | 64.79 | 10.60 |
| HHC026 | 21 | 24 | 14.50 | 9.97 | 0.76 | 0.55 | 0.23 | 0.65 | 0.14 | 0.11 | 4.55 | 1.57 | 0.82 | 0.08 | 0.11 | 0.72 | 5.33 | 40.09 | 6.96 |
| HHC026 | 24 | 27 | 39.55 | 29.20 | 0.92 | 0.51 | 0.46 | 1.13 | 0.17 | 0.16 | 15.16 | 4.31 | 2.24 | 0.15 | 0.11 | 0.76 | 4.95 | 99.81 | 20.55 |
| HHC026 | 27 | 31 | 267.79 | 150.12 | 4.73 | 2.53 | 2.48 | 7.56 | 0.77 | 0.30 | 92.26 | 27.18 | 14.90 | 0.85 | 0.35 | 2.16 | 26.54 | 600.52 | 125.02 |
| HHC027 | 0 | 3 | 123.45 | 61.92 | 4.32 | 2.02 | 1.39 | 5.07 | 0.79 | 0.27 | 46.07 | 13.35 | 8.15 | 0.71 | 0.27 | 2.07 | 25.52 | 295.39 | 64.44 |
| HHC027 | 3 | 6 | 119.03 | 48.20 | 3.27 | 1.49 | 0.90 | 3.41 | 0.56 | 0.23 | 33.01 | 9.54 | 6.19 | 0.45 | 0.32 | 1.57 | 17.40 | 245.58 | 46.27 |
| HHC027 | 6 | 9 | 31.69 | 18.53 | 1.31 | 0.79 | 0.34 | 1.16 | 0.22 | 0.15 | 10.26 | 2.92 | 1.47 | 0.18 | 0.16 | 0.97 | 7.49 | 77.64 | 14.67 |
| HHC027 | 9 | 12 | 26.66 | 16.30 | 1.17 | 0.85 | 0.36 | 1.09 | 0.24 | 0.14 | 8.51 | 2.67 | 1.51 | 0.15 | 0.13 | 1.07 | 7.11 | 67.96 | 12.51 |
| HHC027 | 12 | 15 | 23.09 | 12.90 | 0.73 | 0.61 | 0.20 | 0.82 | 0.15 | 0.09 | 6.88 | 2.14 | 1.18 | 0.14 | 0.11 | 0.75 | 4.95 | 54.75 | 9.90 |
| HHC027 | 15 | 18 | 19.16 | 11.49 | 0.64 | 0.56 | 0.20 | 0.46 | 0.14 | 0.13 | 5.95 | 1.93 | 1.04 | 0.07 | 0.11 | 0.46 | 4.19 | 46.54 | 8.60 |
| HHC027 | 18 | 21 | 17.93 | 11.02 | 0.63 | 0.50 | 0.15 | 0.61 | 0.15 | 0.07 | 5.83 | 1.73 | 0.93 | 0.11 | 0.15 | 0.54 | 3.81 | 44.16 | 8.30 |
| HHC027 | 21 | 24 | 32.06 | 25.92 | 0.77 | 0.50 | 0.42 | 0.81 | 0.15 | 0.09 | 14.00 | 3.65 | 1.77 | 0.09 | 0.10 | 0.60 | 4.83 | 85.76 | 18.51 |
| HHC027 | 24 | 27 | 18.43 | 14.66 | 0.60 | 0.37 | 0.22 | 0.67 | 0.11 | 0.07 | 6.30 | 1.90 | 1.29 | 0.11 | 0.11 | 0.35 | 3.94 | 49.11 | 8.90 |
| HHC027 | 27 | 30 | 13.76 | 10.91 | 0.59 | 0.49 | 0.15 | 0.62 | 0.15 | 0.06 | 4.20 | 1.26 | 0.93 | 0.12 | 0.08 | 0.41 | 3.94 | 37.65 | 6.16 |
| HHC027 | 30 | 33 | 27.52 | 17.71 | 0.70 | 0.56 | 0.29 | 0.96 | 0.13 | 0.11 | 8.98 | 2.78 | 1.23 | 0.13 | 0.11 | 0.57 | 4.57 | 66.35 | 12.59 |
| HHC027 | 33 | 36 | 75.67 | 32.60 | 1.37 | 0.64 | 0.43 | 1.61 | 0.19 | 0.10 | 19.36 | 5.88 | 3.25 | 0.19 | 0.13 | 0.69 | 6.22 | 148.34 | 26.80 |
| HHC027 | 36 | 39 | 140.04 | 105.55 | 2.69 | 1.52 | 1.57 | 4.78 | 0.49 | 0.17 | 68.93 | 20.78 | 9.46 | 0.53 | 0.18 | 1.46 | 14.10 | 372.26 | 92.93 |
| HHC027 | 39 | 42 | 68.54 | 48.32 | 1.43 | 0.81 | 0.97 | 2.47 | 0.23 | 0.16 | 35.69 | 9.61 | 4.65 | 0.27 | 0.14 | 1.01 | 7.37 | 181.67 | 47.00 |
| HHC027 | 42 | 45 | 43.85 | 28.26 | 1.15 | 0.73 | 0.50 | 1.81 | 0.18 | 0.13 | 18.66 | 5.35 | 3.14 | 0.19 | 0.18 | 0.68 | 7.62 | 112.44 | 25.35 |
| HHC027 | 45 | 48 | 228.48 | 137.22 | 5.04 | 2.29 | 2.13 | 7.71 | 0.80 | 0.30 | 89.11 | 25.98 | 13.51 | 0.89 | 0.39 | 2.39 | 28.57 | 544.81 | 121.02 |
| HHC027 | 48 | 51 | 169.52 | 96.17 | 3.45 | 1.58 | 1.44 | 4.97 | 0.53 | 0.23 | 58.55 | 17.10 | 9.18 | 0.60 | 0.30 | 1.57 | 21.97 | 387.15 | 79.70 |
| HHC027 | 51 | 53 | 222.95 | 124.32 | 3.66 | 1.91 | 1.81 | 5.94 | 0.62 | 0.19 | 73.25 | 22.59 | 9.71 | 0.59 | 0.31 | 1.51 | 19.81 | 489.17 | 100.09 |
| HHC028 | 0 | 3 | 117.68 | 64.86 | 4.29 | 2.25 | 1.20 | 5.49 | 0.71 | 0.18 | 47.47 | 13.23 | 8.48 | 0.71 | 0.31 | 1.82 | 22.86 | 291.54 | 65.70 |
| HHC028 | 3 | 6 | 85.74 | 34.95 | 1.97 | 1.07 | 0.63 | 2.49 | 0.32 | 0.19 | 20.18 | 6.31 | 3.85 | 0.35 | 0.26 | 1.14 | 11.43 | 170.89 | 28.81 |
| HHC028 | 6 | 9 | 28.62 | 17.36 | 0.99 | 0.66 | 0.31 | 1.08 | 0.24 | 0.10 | 9.80 | 2.86 | 1.41 | 0.13 | 0.14 | 0.99 | 7.37 | 72.07 | 13.78 |
| HHC028 | 9 | 12 | 24.08 | 14.89 | 0.93 | 0.71 | 0.20 | 0.86 | 0.15 | 0.09 | 7.70 | 2.15 | 1.16 | 0.14 | 0.13 | 0.84 | 6.60 | 60.63 | 10.92 |
| HHC028 | 12 | 15 | 28.13 | 16.42 | 0.88 | 0.62 | 0.20 | 0.84 | 0.16 | 0.10 | 8.40 | 2.68 | 1.08 | 0.12 | 0.17 | 0.75 | 5.97 | 66.52 | 12.08 |
| HHC028 | 15 | 18 | 29.48 | 16.42 | 0.77 | 0.49 | 0.30 | 0.84 | 0.15 | 0.09 | 8.40 | 2.62 | 1.58 | 0.13 | 0.06 | 0.58 | 5.08 | 66.99 | 11.92 |
| HHC028 | 18 | 21 | 28.38 | 15.48 | 0.77 | 0.47 | 0.22 | 0.88 | 0.15 | 0.11 | 9.33 | 2.72 | 1.55 | 0.14 | 0.16 | 0.72 | 5.08 | 66.15 | 12.96 |
| HHC028 | 21 | 24 | 32.31 | 20.05 | 0.95 | 0.61 | 0.29 | 1.05 | 0.14 | 0.11 | 10.26 | 3.19 | 1.55 | 0.13 | 0.10 | 0.64 | 5.33 | 76.72 | 14.54 |
| HHC028 | 24 | 27 | 35.87 | 22.64 | 1.14 | 0.75 | 0.36 | 1.29 | 0.24 | 0.15 | 11.90 | 3.73 | 2.02 | 0.15 | 0.14 | 0.85 | 6.73 | 87.96 | 16.92 |
| HHC028 | 27 | 30 | 43.73 | 34.60 | 0.86 | 0.55 | 0.35 | 1.35 | 0.15 | 0.11 | 16.80 | 5.04 | 2.52 | 0.19 | 0.07 | 0.72 | 5.97 | 112.99 | 22.88 |
| HHC028 | 30 | 33 | 35.87 | 22.52 | 0.87 | 0.35 | 0.19 | 1.14 | 0.15 | 0.14 | 10.38 | 3.26 | 1.60 | 0.12 | 0.14 | 0.50 | 4.57 | 81.80 | 14.63 |
| HHC028 | 33 | 36 | 29.60 | 17.59 | 0.65 | 0.46 | 0.28 | 0.77 | 0.14 | 0.08 | 9.56 | 2.95 | 1.32 | 0.07 | 0.08 | 0.59 | 3.68 | 67.84 | 13.24 |
| HHC028 | 36 | 39 | 87.22 | 36.47 | 1.14 | 0.71 | 0.60 | 1.96 | 0.19 | 0.13 | 25.08 | 7.16 | 3.97 | 0.24 | 0.11 | 0.73 | 7.37 | 173.07 | 33.61 |
| HHC028 | 39 | 42 | 205.14 | 108.95 | 2.58 | 1.28 | 1.47 | 4.41 | 0.48 | 0.14 | 66.95 | 20.30 | 9.16 | 0.49 | 0.16 | 1.13 | 13.71 | 436.37 | 90.33 |
| HHC028 | 42 | 45 | 79.85 | 46.56 | 1.73 | 0.89 | 0.69 | 2.28 | 0.27 | 0.11 | 30.09 | 8.55 | 4.16 | 0.28 | 0.14 | 0.96 | 9.65 | 186.23 | 40.66 |
| HHC028 | 45 | 48 | 116.82 | 57.12 | 2.57 | 1.43 | 0.97 | 3.20 | 0.40 | 0.18 | 37.56 | 10.72 | 5.45 | 0.39 | 0.18 | 1.28 | 12.19 | 250.46 | 51.23 |
| HHC028 | 48 | 51 | 114.98 | 64.74 | 2.54 | 1.19 | 1.37 | 4.35 | 0.48 | 0.24 | 53.19 | 14.86 | 7.86 | 0.46 | 0.29 | 1.31 | 13.21 | 281.05 | 71.04 |
| HHC028 | 51 | 54 | 234.62 | 106.14 | 3.06 | 1.52 | 1.71 | 5.24 | 0.52 | 0.20 | 71.27 | 20.66 | 9.94 | 0.60 | 0.25 | 1.53 | 15.11 | 472.38 | 95.59 |
| HHC028 | 54 | 57 | 114.73 | 55.36 | 1.71 | 0.96 | 0.78 | 2.56 | 0.27 | 0.11 | 37.56 | 10.62 | 5.68 | 0.26 | 0.15 | 0.92 | 8.25 | 239.93 | 50.15 |
| HHC028 | 57 | 60 | 73.34 | 39.76 | 1.26 | 0.74 | 0.44 | 1.54 | 0.26 | 0.09 | 24.84 | 7.48 | 3.24 | 0.15 | 0.21 | 0.71 | 6.10 | 160.16 | 33.74 |
| HHC028 | 60 | 63 | 144.95 | 81.04 | 1.65 | 0.88 | 0.94 | 2.67 | 0.24 | 0.14 | 46.19 | 14.80 | 6.76 | 0.28 | 0.21 | 0.85 | 6.98 | 308.59 | 62.92 |
| HHC028 | 63 | 66 | 325.53 | 167.12 | 4.05 | 1.56 | 2.76 | 7.40 | 0.56 | 0.18 | 127.72 | 36.61 | 17.28 | 0.76 | 0.26 | 1.50 | 17.40 | 710.69 | 169.15 |
| HHC028 | 66 | 69 | 198.39 | 91.24 | 3.37 | 1.75 | 2.11 | 5.97 | 0.56 | 0.20 | 82.46 | 23.50 | 12.00 | 0.71 | 0.27 | 1.57 | 17.02 | 441.13 | 110.04 |
| HHC028 | 69 | 72 | 34.15 | 17.94 | 0.72 | 0.69 | 0.20 | 1.09 | 0.15 | 0.18 | 12.48 | 3.64 | 1.92 | 0.14 | 0.15 | 0.77 | 7.24 | 81.47 | 16.98 |
| HHC028 | 72 | 75 | 200.84 | 104.50 | 3.27 | 1.64 | 1.51 | 5.24 | 0.47 | 0.17 | 68.47 | 19.87 | 10.08 | 0.55 | 0.25 | 1.13 | 17.27 | 435.26 | 92.17 |
| HHC028 | 75 | 79 | 236.47 | 124.90 | 3.72 | 1.74 | 1.64 | 5.99 | 0.61 | 0.20 | 79.55 | 23.20 | 11.39 | 0.59 | 0.24 | 1.66 | 19.81 | 511.71 | 107.05 |
| HHC029 | 0 | 3 | 116.08 | 55.83 | 3.73 | 2.34 | 1.23 | 4.86 | 0.66 | 0.20 | 44.44 | 12.38 | 7.73 | 0.62 | 0.31 | 1.65 | 19.68 | 271.77 | 61.18 |
| HHC029 | 3 | 6 | 130.21 | 71.19 | 4.03 | 2.31 | 1.35 | 5.08 | 0.71 | 0.27 | 51.67 | 14.56 | 7.94 | 0.72 | 0.31 | 1.80 | 22.48 | 314.63 | 70.98 |
| HHC029 | 6 | 9 | 26.78 | 15.60 | 1.04 | 0.45 | 0.27 | 0.98 | 0.17 | 0.11 | 8.40 | 2.55 | 1.12 | 0.13 | 0.11 | 0.64 | 5.84 | 64.19 | 12.12 |
| HHC029 | 9 | 12 | 21.87 | 12.67 | 0.76 | 0.45 | 0.21 | 0.66 | 0.15 | 0.08 | 6.77 | 1.91 | 1.44 | 0.09 | 0.15 | 0.63 | 5.08 | 52.89 | 9.53 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC029 | 12 | 15 | 22.85 | 11.85 | 0.91 | 0.62 | 0.20 | 0.85 | 0.17 | 0.08 | 7.23 | 2.03 | 1.28 | 0.09 | 0.11 | 0.65 | 5.71 | 54.63 | 10.26 |
| HHC029 | 15 | 18 | 34.64 | 17.47 | 0.91 | 0.58 | 0.24 | 0.90 | 0.16 | 0.06 | 10.15 | 3.08 | 1.79 | 0.13 | 0.08 | 0.58 | 4.95 | 75.72 | 14.26 |
| HHC029 | 18 | 21 | 22.36 | 12.78 | 0.63 | 0.33 | 0.15 | 0.51 | 0.13 | 0.01 | 6.42 | 2.07 | 0.99 | 0.08 | 0.11 | 0.30 | 4.06 | 50.92 | 9.19 |
| HHC029 | 21 | 24 | 38.69 | 22.87 | 1.01 | 0.59 | 0.20 | 1.18 | 0.15 | 0.10 | 12.36 | 3.60 | 1.75 | 0.13 | 0.11 | 0.49 | 5.33 | 88.57 | 17.10 |
| HHC029 | 24 | 27 | 53.07 | 34.83 | 1.19 | 0.89 | 0.34 | 1.90 | 0.22 | 0.08 | 19.83 | 6.05 | 2.75 | 0.24 | 0.17 | 0.82 | 8.00 | 130.38 | 27.31 |
| HHC029 | 27 | 30 | 43.36 | 29.20 | 1.04 | 0.62 | 0.24 | 1.27 | 0.16 | 0.09 | 16.10 | 4.76 | 2.27 | 0.15 | 0.13 | 0.68 | 5.59 | 105.67 | 22.05 |
| HHC029 | 30 | 33 | 97.66 | 40.81 | 1.43 | 0.98 | 0.53 | 2.25 | 0.25 | 0.07 | 24.38 | 7.09 | 3.47 | 0.22 | 0.11 | 0.92 | 7.37 | 187.55 | 33.13 |
| HHC029 | 33 | 36 | 99.13 | 30.61 | 1.11 | 0.43 | 0.32 | 1.19 | 0.21 | 0.06 | 16.33 | 4.68 | 2.42 | 0.12 | 0.15 | 0.58 | 6.48 | 163.82 | 22.24 |
| HHC029 | 36 | 39 | 255.51 | 116.22 | 3.41 | 1.94 | 1.41 | 4.38 | 0.63 | 0.28 | 71.62 | 21.99 | 9.50 | 0.64 | 0.23 | 1.87 | 19.94 | 509.56 | 97.65 |
| HHC029 | 39 | 42 | 122.23 | 68.02 | 5.22 | 3.88 | 0.81 | 4.33 | 1.11 | 0.73 | 35.69 | 11.72 | 5.50 | 0.66 | 0.62 | 4.60 | 37.34 | 302.45 | 53.29 |
| HHC029 | 42 | 45 | 80.95 | 56.88 | 4.06 | 3.01 | 0.61 | 3.24 | 0.82 | 0.45 | 26.36 | 8.75 | 4.19 | 0.59 | 0.43 | 3.04 | 33.27 | 226.66 | 39.76 |
| **HHC029** | **45** | **49** | **595.77** | **314.31** | **4.58** | **1.93** | **2.73** | **7.56** | **0.66** | **0.20** | **158.05** | **54.97** | **18.44** | **0.81** | **0.27** | **1.71** | **20.70** | **1182.71** | **218.41** |
| HHC030 | 0 | 3 | 141.88 | 72.01 | 4.11 | 2.08 | 1.52 | 4.91 | 0.60 | 0.25 | 48.64 | 14.86 | 7.34 | 0.64 | 0.18 | 1.94 | 22.60 | 323.55 | 68.24 |
| HHC030 | 3 | 6 | 191.02 | 113.88 | 5.03 | 2.63 | 1.98 | 7.13 | 0.81 | 0.30 | 73.48 | 23.50 | 10.47 | 0.87 | 0.30 | 2.07 | 29.72 | 463.18 | 102.88 |
| HHC030 | 6 | 9 | 62.16 | 35.65 | 1.88 | 1.09 | 0.37 | 1.88 | 0.30 | 0.17 | 19.13 | 6.81 | 3.04 | 0.26 | 0.15 | 0.92 | 11.43 | 145.24 | 28.08 |
| HHC030 | 9 | 12 | 37.83 | 22.28 | 1.00 | 0.63 | 0.31 | 1.34 | 0.22 | 0.11 | 12.13 | 3.83 | 1.73 | 0.19 | 0.14 | 0.82 | 7.75 | 90.31 | 17.15 |
| HHC030 | 12 | 15 | 28.13 | 15.72 | 1.26 | 0.69 | 0.28 | 0.89 | 0.19 | 0.13 | 9.33 | 2.74 | 1.31 | 0.20 | 0.13 | 0.81 | 6.98 | 68.78 | 13.54 |
| HHC030 | 15 | 18 | 26.04 | 14.07 | 0.75 | 0.61 | 0.17 | 0.84 | 0.16 | 0.08 | 7.00 | 2.39 | 0.86 | 0.11 | 0.08 | 0.58 | 5.59 | 59.33 | 10.24 |
| HHC030 | 18 | 21 | 33.41 | 20.05 | 0.77 | 0.59 | 0.31 | 0.92 | 0.17 | 0.13 | 9.33 | 3.13 | 1.45 | 0.15 | 0.01 | 0.69 | 4.95 | 76.08 | 13.38 |
| HHC030 | 21 | 24 | 24.94 | 16.54 | 0.62 | 0.53 | 0.16 | 0.68 | 0.11 | 0.13 | 8.75 | 2.72 | 1.35 | 0.07 | 0.06 | 0.51 | 4.06 | 61.22 | 12.16 |
| HHC030 | 24 | 27 | 32.43 | 27.44 | 0.94 | 0.51 | 0.29 | 1.23 | 0.16 | 0.09 | 11.78 | 4.12 | 1.62 | 0.16 | 0.10 | 0.58 | 5.97 | 87.44 | 17.01 |
| HHC030 | 27 | 30 | 33.66 | 19.47 | 0.87 | 0.96 | 0.27 | 0.99 | 0.16 | 0.13 | 10.26 | 3.07 | 1.92 | 0.18 | 0.13 | 0.89 | 5.71 | 78.67 | 14.38 |
| HHC030 | 30 | 33 | 151.71 | 105.79 | 2.33 | 1.09 | 1.17 | 2.99 | 0.34 | 0.17 | 44.67 | 15.53 | 5.37 | 0.39 | 0.14 | 1.23 | 10.92 | 343.82 | 62.92 |
| **HHC030** | **33** | **36** | **418.88** | **294.37** | **7.59** | **3.33** | **3.72** | **13.20** | **1.19** | **0.33** | **182.54** | **53.64** | **22.55** | **1.41** | **0.37** | **2.68** | **39.87** | **1045.67** | **245.18** |
| HHC030 | 36 | 40 | 334.12 | 202.31 | 5.46 | 2.76 | 2.89 | 9.52 | 0.97 | 0.25 | 125.97 | 39.15 | 16.70 | 1.01 | 0.33 | 1.86 | 29.84 | 773.15 | 171.59 |
| HHC031 | 0 | 3 | 118.91 | 61.81 | 3.73 | 2.31 | 1.25 | 4.56 | 0.71 | 0.26 | 41.99 | 12.50 | 7.06 | 0.64 | 0.33 | 2.00 | 20.95 | 279.02 | 58.86 |
| HHC031 | 3 | 6 | 140.65 | 211.69 | 8.92 | 3.61 | 3.20 | 13.66 | 1.37 | 0.34 | 132.97 | 39.51 | 21.45 | 1.65 | 0.43 | 2.84 | 39.11 | 621.40 | 183.04 |
| HHC031 | 6 | 9 | 35.75 | 21.46 | 1.42 | 0.77 | 0.29 | 1.27 | 0.23 | 0.14 | 10.38 | 3.25 | 1.46 | 0.20 | 0.16 | 0.88 | 8.13 | 85.78 | 15.25 |
| HHC031 | 9 | 12 | 33.04 | 22.40 | 1.12 | 0.74 | 0.29 | 1.16 | 0.26 | 0.10 | 11.78 | 3.46 | 1.47 | 0.16 | 0.05 | 0.76 | 7.75 | 84.56 | 16.53 |
| HHC031 | 12 | 15 | 28.38 | 16.18 | 0.94 | 0.74 | 0.28 | 1.24 | 0.21 | 0.15 | 8.51 | 2.68 | 1.77 | 0.19 | 0.16 | 0.93 | 6.60 | 68.98 | 12.33 |
| HHC031 | 15 | 18 | 26.90 | 13.72 | 0.80 | 0.59 | 0.23 | 0.84 | 0.16 | 0.06 | 6.88 | 2.59 | 1.18 | 0.14 | 0.03 | 0.61 | 4.83 | 59.58 | 10.41 |
| HHC031 | 18 | 21 | 148.02 | 80.92 | 1.79 | 1.02 | 0.85 | 3.09 | 0.30 | 0.15 | 38.49 | 11.95 | 5.73 | 0.39 | 0.18 | 0.85 | 10.54 | 304.27 | 52.62 |
| HHC031 | 21 | 22 | 168.29 | 146.01 | 3.11 | 1.50 | 1.77 | 5.33 | 0.52 | 0.17 | 87.71 | 25.73 | 12.06 | 0.66 | 0.22 | 1.10 | 17.27 | 471.45 | 117.22 |
| HHC032 | 0 | 3 | 144.34 | 78.46 | 4.79 | 2.46 | 1.48 | 6.34 | 0.99 | 0.30 | 57.97 | 17.22 | 9.60 | 0.85 | 0.32 | 2.25 | 29.46 | 356.82 | 80.82 |
| HHC032 | 3 | 6 | 182.42 | 99.10 | 5.23 | 2.74 | 1.85 | 7.05 | 0.86 | 0.34 | 69.52 | 20.78 | 9.86 | 0.93 | 0.31 | 2.10 | 29.21 | 432.30 | 96.46 |
| HHC032 | 6 | 9 | 34.40 | 19.94 | 1.02 | 0.65 | 0.31 | 1.08 | 0.27 | 0.10 | 10.61 | 3.43 | 1.86 | 0.19 | 0.08 | 0.84 | 6.48 | 81.27 | 15.26 |
| HHC032 | 9 | 12 | 26.90 | 16.54 | 0.91 | 0.66 | 0.39 | 1.07 | 0.17 | 0.13 | 8.05 | 2.71 | 1.17 | 0.18 | 0.11 | 0.74 | 6.10 | 65.82 | 11.84 |
| HHC032 | 12 | 15 | 23.22 | 14.43 | 1.06 | 0.80 | 0.30 | 0.89 | 0.19 | 0.14 | 6.88 | 2.11 | 1.23 | 0.13 | 0.17 | 0.85 | 6.73 | 59.13 | 10.18 |
| HHC032 | 15 | 18 | 25.55 | 16.42 | 0.87 | 0.62 | 0.28 | 0.85 | 0.18 | 0.10 | 6.88 | 2.37 | 1.10 | 0.11 | 0.06 | 0.59 | 5.21 | 61.19 | 10.23 |
| HHC032 | 18 | 21 | 135.74 | 89.37 | 1.79 | 1.02 | 1.23 | 3.50 | 0.31 | 0.14 | 49.81 | 16.55 | 6.95 | 0.51 | 0.08 | 0.68 | 10.16 | 317.82 | 68.65 |
| HHC032 | 21 | 23 | 238.92 | 137.80 | 3.31 | 1.62 | 1.81 | 5.94 | 0.55 | 0.23 | 71.62 | 24.41 | 10.33 | 0.68 | 0.22 | 1.37 | 19.05 | 517.85 | 100.01 |
| HHC033 | 0 | 3 | 215.58 | 105.08 | 5.26 | 2.98 | 1.99 | 7.37 | 0.95 | 0.38 | 70.10 | 21.93 | 11.34 | 1.05 | 0.38 | 2.29 | 31.87 | 478.55 | 98.33 |
| HHC033 | 3 | 6 | 118.91 | 40.34 | 3.32 | 1.86 | 0.96 | 3.79 | 0.63 | 0.30 | 27.53 | 8.61 | 4.72 | 0.55 | 0.32 | 1.91 | 18.16 | 231.92 | 40.01 |
| HHC033 | 6 | 8 | 69.28 | 42.10 | 1.65 | 0.90 | 0.59 | 2.34 | 0.30 | 0.15 | 24.14 | 7.73 | 3.54 | 0.34 | 0.16 | 1.01 | 9.27 | 163.52 | 33.87 |
| HHC034 | 0 | 3 | 114.00 | 46.68 | 3.93 | 2.66 | 0.98 | 4.45 | 0.65 | 0.36 | 33.36 | 9.63 | 6.20 | 0.67 | 0.40 | 2.32 | 22.73 | 249.03 | 47.58 |
| HHC034 | 3 | 6 | 156.62 | 131.94 | 3.26 | 1.42 | 1.75 | 5.13 | 0.54 | 0.22 | 80.71 | 26.34 | 11.27 | 0.64 | 0.24 | 1.18 | 17.27 | 438.53 | 110.95 |
| HHC034 | 6 | 9 | 353.78 | 249.81 | 7.20 | 3.56 | 3.54 | 12.56 | 1.26 | 0.38 | 152.80 | 47.36 | 21.74 | 1.41 | 0.39 | 2.97 | 38.99 | 897.74 | 208.77 |
| HHC034 | 9 | 11 | 253.05 | 144.25 | 3.87 | 1.64 | 1.83 | 6.83 | 0.64 | 0.22 | 85.96 | 27.43 | 12.47 | 0.87 | 0.22 | 1.48 | 21.33 | 562.09 | 118.13 |
| HHC035 | 0 | 3 | 117.93 | 58.05 | 4.06 | 2.14 | 1.33 | 4.96 | 0.69 | 0.32 | 37.44 | 11.07 | 5.81 | 0.66 | 0.37 | 1.88 | 23.11 | 269.81 | 53.23 |
| HHC035 | 3 | 7 | 334.12 | 227.52 | 7.39 | 3.70 | 3.75 | 12.33 | 1.42 | 0.39 | 150.47 | 46.15 | 22.55 | 1.45 | 0.49 | 2.93 | 40.76 | 855.44 | 205.46 |
| HHC036 | 0 | 3 | 105.03 | 56.65 | 2.20 | 1.49 | 1.17 | 3.37 | 0.45 | 0.22 | 35.34 | 9.97 | 5.08 | 0.44 | 0.19 | 1.13 | 11.43 | 234.14 | 47.95 |
| HHC036 | 3 | 6 | 176.89 | 105.90 | 2.81 | 0.95 | 1.55 | 5.58 | 0.42 | 0.16 | 67.53 | 19.87 | 9.01 | 0.60 | 0.16 | 0.91 | 10.16 | 402.52 | 90.82 |
| HHC036 | 6 | 9 | 389.40 | 214.04 | 6.82 | 2.70 | 3.80 | 12.33 | 1.07 | 0.32 | 141.13 | 43.74 | 19.89 | 1.42 | 0.31 | 2.36 | 31.62 | 870.94 | 193.11 |
| HHC036 | 9 | 12 | 340.27 | 177.68 | 6.35 | 2.60 | 2.93 | 10.75 | 1.02 | 0.36 | 124.80 | 37.70 | 18.03 | 1.24 | 0.27 | 2.41 | 33.65 | 760.06 | 170.08 |
| HHC036 | 12 | 15 | 265.33 | 141.32 | 8.18 | 4.54 | 2.83 | 11.70 | 1.44 | 0.48 | 100.43 | 29.60 | 15.60 | 1.43 | 0.53 | 3.75 | 51.94 | 639.09 | 139.65 |
| HHC036 | 15 | 19 | 273.93 | 154.22 | 4.51 | 2.66 | 2.35 | 8.05 | 1.01 | 0.28 | 90.98 | 29.60 | 12.70 | 0.95 | 0.19 | 1.90 | 33.02 | 616.36 | 126.04 |
| HHC037 | 0 | 3 | 284.99 | 111.65 | 3.16 | 1.68 | 1.31 | 4.52 | 0.52 | 0.18 | 54.59 | 17.88 | 7.87 | 0.60 | 0.19 | 1.36 | 14.86 | 505.35 | 76.22 |
| HHC037 | 3 | 6 | 280.08 | 151.88 | 2.97 | 1.43 | 1.46 | 5.04 | 0.48 | 0.16 | 72.43 | 23.20 | 9.02 | 0.56 | 0.23 | 1.00 | 15.62 | 565.56 | 99.17 |
| HHC037 | 6 | 9 | 113.14 | 68.96 | 1.57 | 0.78 | 0.63 | 2.37 | 0.27 | 0.11 | 28.58 | 9.03 | 3.66 | 0.31 | 0.11 | 0.99 | 9.40 | 239.91 | 39.48 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC037 | 9 | 12 | 232.78 | 116.81 | 2.40 | 1.46 | 1.47 | 4.71 | 0.45 | 0.23 | 69.87 | 21.57 | 9.83 | 0.52 | 0.25 | 1.42 | 13.21 | 476.98 | 94.35 |
| **HHC037** | **12** | **15** | **524.53** | **262.71** | **6.86** | **2.90** | **4.49** | **14.18** | **1.03** | **0.36** | **193.04** | **53.64** | **27.25** | **1.43** | **0.43** | **2.64** | **31.11** | **1126.62** | **254.98** |
| HHC037 | 15 | 18 | 350.09 | 172.99 | 5.15 | 2.22 | 3.05 | 10.26 | 0.78 | 0.32 | 124.22 | 35.28 | 17.86 | 1.20 | 0.40 | 2.11 | 25.27 | 751.19 | 165.85 |
| HHC037 | 18 | 21 | 266.56 | 132.53 | 6.90 | 3.13 | 3.06 | 12.39 | 1.21 | 0.36 | 99.49 | 26.82 | 16.99 | 1.53 | 0.45 | 2.78 | 31.87 | 606.08 | 134.74 |
| HHC037 | 21 | 24 | 310.79 | 154.81 | 6.21 | 2.96 | 2.43 | 9.87 | 1.02 | 0.40 | 99.84 | 29.96 | 14.73 | 1.24 | 0.45 | 3.04 | 33.27 | 671.01 | 137.25 |
| HHC037 | 24 | 27 | 310.79 | 151.88 | 5.52 | 3.19 | 2.80 | 9.69 | 1.08 | 0.43 | 108.24 | 31.41 | 15.31 | 1.04 | 0.47 | 2.98 | 38.10 | 682.92 | 146.21 |
| HHC037 | 27 | 30 | 312.01 | 157.16 | 4.74 | 2.38 | 2.52 | 7.98 | 0.81 | 0.32 | 101.94 | 30.08 | 13.80 | 0.88 | 0.34 | 2.14 | 28.32 | 665.43 | 137.65 |
| HHC037 | 30 | 33 | 357.46 | 186.48 | 5.68 | 2.74 | 2.92 | 9.92 | 0.88 | 0.36 | 120.14 | 34.80 | 16.35 | 1.12 | 0.41 | 2.30 | 29.33 | 770.90 | 161.73 |
| HHC037 | 33 | 36 | 280.08 | 142.50 | 4.42 | 2.18 | 2.35 | 7.75 | 0.73 | 0.31 | 93.78 | 25.98 | 13.68 | 0.94 | 0.34 | 1.99 | 25.27 | 602.29 | 125.11 |
| HHC038 | 0 | 3 | 64.49 | 33.78 | 2.08 | 1.14 | 0.63 | 2.48 | 0.30 | 0.16 | 22.39 | 6.26 | 3.61 | 0.38 | 0.22 | 1.07 | 11.94 | 150.91 | 31.11 |
| HHC038 | 3 | 6 | 61.17 | 37.65 | 1.42 | 0.79 | 0.42 | 1.86 | 0.27 | 0.14 | 18.43 | 5.94 | 2.49 | 0.28 | 0.16 | 0.73 | 8.00 | 139.76 | 26.08 |
| **HHC038** | **6** | **9** | **733.35** | **443.32** | **8.94** | **3.80** | **5.34** | **17.87** | **1.41** | **0.34** | **241.44** | **73.70** | **31.43** | **1.95** | **0.46** | **2.71** | **35.81** | **1601.86** | **326.04** |
| HHC038 | 9 | 12 | 459.42 | 248.63 | 6.42 | 2.30 | 3.00 | 10.67 | 1.01 | 0.26 | 139.97 | 43.86 | 19.66 | 1.18 | 0.26 | 1.59 | 24.89 | 963.11 | 191.42 |
| HHC038 | 12 | 15 | 359.92 | 198.20 | 5.93 | 2.70 | 3.22 | 10.74 | 1.04 | 0.26 | 132.39 | 38.54 | 19.54 | 1.16 | 0.27 | 2.16 | 29.59 | 805.68 | 178.03 |
| HHC038 | 15 | 18 | 325.53 | 184.13 | 5.15 | 2.57 | 2.54 | 9.12 | 0.89 | 0.26 | 102.06 | 31.90 | 13.97 | 1.05 | 0.33 | 1.94 | 26.79 | 708.23 | 140.16 |
| HHC038 | 18 | 21 | 309.56 | 165.36 | 4.64 | 2.06 | 2.17 | 7.64 | 0.78 | 0.17 | 93.43 | 28.63 | 12.00 | 0.86 | 0.37 | 1.55 | 25.02 | 654.23 | 127.56 |
| HHC038 | 21 | 24 | 357.46 | 186.48 | 6.00 | 2.95 | 2.79 | 10.00 | 1.02 | 0.33 | 124.80 | 36.85 | 17.28 | 1.22 | 0.41 | 2.55 | 34.54 | 784.70 | 168.88 |
| HHC038 | 24 | 27 | 296.04 | 154.81 | 6.66 | 3.50 | 2.42 | 9.44 | 1.20 | 0.52 | 105.09 | 30.93 | 15.13 | 1.15 | 0.48 | 3.48 | 45.84 | 676.71 | 143.83 |
| HHC038 | 27 | 31 | 264.11 | 140.74 | 4.61 | 2.37 | 2.35 | 8.05 | 0.84 | 0.31 | 91.80 | 26.70 | 13.92 | 0.92 | 0.27 | 1.89 | 27.68 | 586.54 | 124.03 |
| HHC039 | 0 | 3 | 61.05 | 22.64 | 1.56 | 0.90 | 0.49 | 1.87 | 0.32 | 0.19 | 15.63 | 4.46 | 2.63 | 0.26 | 0.17 | 0.96 | 10.67 | 123.79 | 21.91 |
| HHC039 | 3 | 6 | 36.61 | 21.58 | 0.64 | 0.38 | 0.25 | 0.89 | 0.10 | 0.05 | 10.26 | 3.36 | 1.12 | 0.12 | 0.02 | 0.41 | 3.56 | 79.35 | 14.38 |
| HHC039 | 6 | 9 | 58.35 | 39.76 | 1.06 | 0.50 | 0.43 | 1.28 | 0.17 | 0.06 | 16.56 | 5.61 | 2.15 | 0.19 | 0.01 | 0.64 | 4.83 | 131.58 | 23.41 |
| HHC039 | 9 | 12 | 170.75 | 129.59 | 2.23 | 0.85 | 0.78 | 2.95 | 0.31 | 0.13 | 45.14 | 17.10 | 4.88 | 0.35 | 0.16 | 0.92 | 8.38 | 384.51 | 64.82 |
| HHC039 | 12 | 15 | 107.85 | 67.55 | 1.49 | 0.55 | 0.43 | 1.43 | 0.21 | 0.10 | 25.78 | 9.39 | 2.95 | 0.21 | 0.09 | 0.69 | 6.48 | 225.20 | 36.87 |
| HHC039 | 15 | 18 | 205.76 | 120.80 | 2.18 | 0.85 | 0.82 | 3.38 | 0.32 | 0.15 | 58.67 | 20.66 | 6.15 | 0.40 | 0.11 | 0.95 | 10.16 | 431.34 | 81.91 |
| HHC039 | 18 | 21 | 224.18 | 122.56 | 2.26 | 1.17 | 1.49 | 5.05 | 0.40 | 0.20 | 75.35 | 24.04 | 9.33 | 0.49 | 0.16 | 0.88 | 12.70 | 480.27 | 102.15 |
| HHC039 | 21 | 24 | 211.28 | 108.84 | 2.94 | 1.37 | 1.48 | 4.51 | 0.52 | 0.17 | 64.04 | 22.35 | 8.19 | 0.62 | 0.19 | 1.31 | 15.87 | 443.68 | 89.95 |
| HHC039 | 24 | 27 | 122.23 | 62.51 | 2.73 | 1.40 | 1.11 | 3.38 | 0.41 | 0.15 | 38.49 | 12.32 | 5.25 | 0.45 | 0.22 | 1.39 | 15.11 | 267.14 | 53.99 |
| HHC039 | 27 | 30 | 129.60 | 67.20 | 2.55 | 1.19 | 1.07 | 3.05 | 0.40 | 0.24 | 41.29 | 13.23 | 5.68 | 0.49 | 0.17 | 1.24 | 13.46 | 280.86 | 57.56 |
| HHC040 | 3 | 6 | 87.34 | 46.44 | 2.32 | 1.18 | 0.96 | 2.97 | 0.46 | 0.16 | 28.69 | 8.69 | 4.48 | 0.46 | 0.17 | 1.21 | 14.73 | 200.25 | 40.16 |
| HHC040 | 0 | 3 | 99.62 | 33.19 | 1.78 | 1.29 | 0.50 | 2.43 | 0.39 | 0.22 | 20.76 | 6.68 | 3.49 | 0.29 | 0.24 | 1.65 | 12.70 | 185.24 | 29.52 |
| HHC041 | 0 | 3 | 59.45 | 32.13 | 1.40 | 1.12 | 0.66 | 1.83 | 0.34 | 0.15 | 18.08 | 5.96 | 2.79 | 0.26 | 0.14 | 1.10 | 10.92 | 136.35 | 25.69 |
| HHC041 | 3 | 6 | 101.59 | 54.65 | 2.09 | 1.33 | 1.23 | 2.64 | 0.37 | 0.23 | 31.84 | 9.92 | 5.10 | 0.36 | 0.18 | 1.15 | 12.70 | 225.38 | 44.22 |
| HHC041 | 6 | 9 | 100.73 | 53.95 | 2.17 | 1.28 | 0.94 | 2.67 | 0.31 | 0.18 | 30.56 | 10.40 | 4.93 | 0.32 | 0.26 | 1.18 | 12.45 | 222.33 | 43.45 |
| HHC041 | 9 | 13 | 127.14 | 66.50 | 2.41 | 1.38 | 1.04 | 3.50 | 0.46 | 0.11 | 37.91 | 12.38 | 5.84 | 0.47 | 0.22 | 1.39 | 15.75 | 276.51 | 53.17 |
| HHC042 | 0 | 3 | 96.68 | 47.50 | 2.52 | 1.46 | 0.97 | 3.39 | 0.48 | 0.23 | 29.63 | 9.23 | 4.84 | 0.51 | 0.23 | 1.50 | 16.25 | 215.42 | 41.89 |
| HHC042 | 3 | 7 | 89.67 | 55.83 | 1.69 | 0.75 | 0.67 | 2.12 | 0.30 | 0.16 | 28.23 | 8.78 | 3.43 | 0.27 | 0.13 | 0.98 | 11.18 | 204.18 | 38.97 |
| HHC043 | 0 | 3 | 163.38 | 75.41 | 4.94 | 2.78 | 1.59 | 6.01 | 0.84 | 0.45 | 50.74 | 15.22 | 8.72 | 0.74 | 0.42 | 2.73 | 29.97 | 363.93 | 71.64 |
| HHC043 | 3 | 6 | 35.75 | 21.11 | 1.35 | 0.89 | 0.27 | 1.24 | 0.26 | 0.14 | 11.31 | 3.40 | 1.75 | 0.16 | 0.08 | 0.72 | 8.00 | 86.44 | 16.23 |
| HHC043 | 6 | 9 | 33.04 | 19.12 | 1.02 | 0.66 | 0.22 | 1.05 | 0.18 | 0.13 | 10.03 | 3.07 | 1.44 | 0.16 | 0.13 | 0.81 | 5.59 | 76.65 | 14.29 |
| HHC043 | 9 | 12 | 178.12 | 94.41 | 3.10 | 1.72 | 1.52 | 5.15 | 0.48 | 0.20 | 58.20 | 18.67 | 8.21 | 0.60 | 0.18 | 1.49 | 17.65 | 389.70 | 80.57 |
| HHC044 | 0 | 3 | 121.98 | 59.58 | 3.27 | 1.61 | 1.30 | 4.39 | 0.57 | 0.19 | 40.24 | 12.69 | 6.01 | 0.59 | 0.30 | 1.87 | 20.19 | 274.77 | 56.79 |
| HHC044 | 3 | 6 | 40.29 | 21.81 | 1.30 | 0.73 | 0.36 | 1.41 | 0.26 | 0.15 | 10.96 | 3.70 | 1.69 | 0.24 | 0.21 | 0.95 | 7.24 | 91.29 | 16.19 |
| HHC044 | 6 | 9 | 22.97 | 14.07 | 1.00 | 0.66 | 0.19 | 0.84 | 0.24 | 0.14 | 7.70 | 2.37 | 1.30 | 0.19 | 0.24 | 0.83 | 7.24 | 59.97 | 11.25 |
| HHC044 | 9 | 13 | 102.08 | 62.86 | 2.03 | 1.21 | 0.88 | 3.47 | 0.38 | 0.16 | 38.26 | 11.71 | 5.93 | 0.39 | 0.21 | 0.95 | 10.03 | 240.53 | 52.38 |
| HHC045 | 0 | 3 | 184.87 | 80.22 | 4.94 | 2.57 | 1.69 | 6.95 | 0.85 | 0.33 | 57.50 | 18.24 | 10.42 | 0.94 | 0.39 | 2.03 | 28.45 | 400.39 | 81.62 |
| HHC045 | 3 | 6 | 33.41 | 18.76 | 1.19 | 0.79 | 0.42 | 1.08 | 0.24 | 0.14 | 10.73 | 3.55 | 1.72 | 0.15 | 0.13 | 0.81 | 6.98 | 80.11 | 15.63 |
| HHC045 | 6 | 9 | 26.90 | 15.83 | 1.06 | 0.70 | 0.43 | 1.04 | 0.16 | 0.09 | 7.93 | 2.54 | 1.84 | 0.13 | 0.11 | 0.68 | 5.46 | 64.91 | 11.65 |
| HHC045 | 9 | 12 | 38.57 | 20.17 | 1.35 | 1.19 | 0.30 | 1.34 | 0.32 | 0.16 | 8.98 | 3.32 | 1.67 | 0.25 | 0.21 | 1.37 | 10.03 | 89.23 | 13.91 |
| HHC045 | 12 | 15 | 93.48 | 47.97 | 1.71 | 0.77 | 0.56 | 2.52 | 0.31 | 0.15 | 25.78 | 8.66 | 4.05 | 0.28 | 0.18 | 0.85 | 8.00 | 195.27 | 36.43 |
| HHC045 | 15 | 17 | 287.45 | 150.70 | 3.88 | 1.92 | 1.88 | 7.09 | 0.71 | 0.15 | 91.80 | 29.48 | 12.18 | 0.81 | 0.32 | 1.70 | 21.84 | 611.89 | 125.97 |
| HHC046 | 0 | 3 | 105.15 | 51.49 | 3.95 | 2.13 | 1.02 | 4.84 | 0.79 | 0.22 | 38.49 | 11.96 | 6.80 | 0.67 | 0.32 | 1.97 | 23.87 | 253.66 | 55.07 |
| HHC046 | 3 | 6 | 167.06 | 90.31 | 5.36 | 2.50 | 1.59 | 6.78 | 0.99 | 0.26 | 62.52 | 19.33 | 8.96 | 0.92 | 0.35 | 1.99 | 25.65 | 394.57 | 88.13 |
| HHC046 | 6 | 9 | 37.83 | 19.23 | 1.11 | 0.61 | 0.34 | 1.29 | 0.22 | 0.11 | 9.21 | 3.65 | 1.41 | 0.16 | 0.09 | 0.87 | 6.60 | 82.75 | 14.14 |
| HHC046 | 9 | 12 | 21.50 | 13.60 | 0.83 | 0.69 | 0.28 | 0.98 | 0.24 | 0.11 | 6.88 | 2.13 | 1.18 | 0.15 | 0.13 | 0.80 | 6.98 | 56.48 | 9.99 |
| HHC046 | 12 | 15 | 21.62 | 13.02 | 0.85 | 0.61 | 0.22 | 0.89 | 0.14 | 0.06 | 6.53 | 1.90 | 0.72 | 0.07 | 0.07 | 0.59 | 5.21 | 52.48 | 9.35 |
| HHC046 | 15 | 18 | 26.78 | 14.19 | 0.86 | 0.51 | 0.21 | 0.88 | 0.15 | 0.06 | 7.35 | 2.25 | 1.35 | 0.11 | 0.08 | 0.51 | 4.83 | 60.10 | 10.56 |
| HHC046 | 18 | 21 | 31.57 | 17.94 | 1.08 | 0.67 | 0.27 | 0.98 | 0.19 | 0.13 | 9.21 | 2.69 | 1.28 | 0.12 | 0.14 | 0.77 | 6.73 | 73.78 | 13.11 |
| HHC046 | 21 | 23 | 162.15 | 153.05 | 3.81 | 1.77 | 1.71 | 5.87 | 0.61 | 0.24 | 87.25 | 26.22 | 9.96 | 0.72 | 0.18 | 1.24 | 22.86 | 477.63 | 117.99 |



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| Hole ID | From | To | $CeO_2$ | $La_2O_3$ | $Dy_2O_3$ | $Er_2O_3$ | $Eu_2O_3$ | $Gd_2O_3$ | $Ho_2O_3$ | $Lu_2O_3$ | $Nd_2O_3$ | $Pr_6O_{11}$ | $Sm_2O_3$ | $Tb_4O_7$ | $Tm_2O_3$ | $Yb_2O_3$ | $Y_2O_3$ | TREO | MREO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHC047 | 0 | 3 | 122.10 | 79.98 | 4.95 | 2.41 | 1.64 | 6.11 | 0.82 | 0.28 | 56.45 | 16.43 | 9.23 | 0.85 | 0.37 | 2.20 | 29.46 | 333.30 | 78.68 |
| HHC047 | 3 | 6 | 152.94 | 118.45 | 5.98 | 2.97 | 1.91 | 8.59 | 0.99 | 0.25 | 79.20 | 22.71 | 12.12 | 1.08 | 0.35 | 2.04 | 32.89 | 442.47 | 108.97 |
| HHC047 | 6 | 9 | 37.10 | 20.64 | 1.09 | 0.72 | 0.27 | 1.38 | 0.22 | 0.15 | 10.26 | 3.25 | 1.35 | 0.20 | 0.07 | 0.66 | 6.48 | 83.83 | 14.80 |
| HHC047 | 9 | 12 | 24.69 | 15.36 | 0.72 | 0.59 | 0.22 | 0.80 | 0.15 | 0.11 | 7.81 | 2.38 | 0.95 | 0.15 | 0.03 | 0.76 | 5.46 | 60.21 | 11.07 |
| HHC047 | 12 | 15 | 27.15 | 16.65 | 1.10 | 0.71 | 0.13 | 1.00 | 0.15 | 0.06 | 8.63 | 2.60 | 1.60 | 0.11 | 0.07 | 0.61 | 5.59 | 66.15 | 12.44 |
| HHC047 | 15 | 18 | 27.52 | 16.07 | 0.91 | 0.56 | 0.15 | 0.77 | 0.16 | 0.05 | 7.70 | 2.46 | 1.11 | 0.12 | 0.21 | 0.58 | 5.46 | 63.82 | 11.19 |
| HHC047 | 18 | 21 | 24.08 | 15.01 | 0.69 | 0.50 | 0.35 | 0.82 | 0.16 | 0.08 | 7.81 | 2.21 | 1.37 | 0.14 | 0.09 | 0.54 | 4.70 | 58.55 | 10.86 |
| HHC047 | 21 | 24 | 42.01 | 29.91 | 1.17 | 0.67 | 0.44 | 1.43 | 0.22 | 0.16 | 13.53 | 4.65 | 2.15 | 0.22 | 0.13 | 0.95 | 7.24 | 104.87 | 19.58 |
| HHC047 | 24 | 27 | 90.16 | 63.21 | 1.96 | 0.99 | 0.69 | 2.86 | 0.37 | 0.18 | 33.71 | 10.54 | 4.67 | 0.32 | 0.18 | 0.96 | 10.79 | 221.61 | 46.52 |
| HHC047 | 27 | 30 | 179.96 | 98.98 | 3.05 | 1.56 | 1.45 | 5.14 | 0.54 | 0.14 | 57.39 | 17.22 | 8.93 | 0.66 | 0.17 | 1.32 | 16.76 | 393.26 | 78.32 |
| HHC048 | 0 | 3 | 119.65 | 67.79 | 4.66 | 2.04 | 1.49 | 5.80 | 0.77 | 0.27 | 47.82 | 13.23 | 8.30 | 0.69 | 0.29 | 1.89 | 24.64 | 299.32 | 66.41 |
| HHC048 | 3 | 6 | 125.91 | 119.04 | 6.20 | 3.00 | 1.97 | 8.58 | 1.00 | 0.27 | 75.58 | 22.47 | 12.23 | 1.06 | 0.33 | 2.47 | 38.35 | 418.46 | 105.31 |
| HHC048 | 6 | 9 | 29.48 | 18.06 | 1.21 | 0.69 | 0.36 | 1.27 | 0.26 | 0.10 | 9.56 | 2.97 | 1.35 | 0.16 | 0.03 | 0.80 | 7.11 | 73.42 | 13.91 |
| HHC048 | 9 | 12 | 28.01 | 16.89 | 1.27 | 0.74 | 0.27 | 0.98 | 0.21 | 0.13 | 8.28 | 2.63 | 1.02 | 0.15 | 0.11 | 0.84 | 7.24 | 68.77 | 12.34 |
| HHC048 | 12 | 15 | 28.13 | 15.01 | 0.94 | 0.53 | 0.25 | 1.03 | 0.19 | 0.10 | 7.70 | 2.30 | 1.02 | 0.14 | 0.08 | 0.51 | 6.35 | 64.28 | 11.08 |
| HHC048 | 15 | 18 | 31.94 | 17.83 | 0.80 | 0.42 | 0.19 | 0.81 | 0.15 | 0.09 | 9.21 | 2.86 | 1.35 | 0.11 | 0.07 | 0.50 | 4.57 | 70.89 | 12.99 |
| HHC048 | 18 | 21 | 31.82 | 19.12 | 1.08 | 0.46 | 0.17 | 1.06 | 0.17 | 0.07 | 9.80 | 2.97 | 1.30 | 0.15 | 0.05 | 0.50 | 4.44 | 73.16 | 14.00 |
| HHC048 | 21 | 24 | 67.68 | 41.75 | 1.24 | 0.58 | 0.39 | 2.21 | 0.23 | 0.13 | 21.70 | 7.33 | 2.75 | 0.22 | 0.06 | 0.77 | 7.11 | 154.16 | 30.49 |
| HHC048 | 24 | 27 | 60.31 | 41.52 | 1.15 | 0.66 | 0.43 | 1.96 | 0.22 | 0.10 | 20.30 | 5.90 | 2.50 | 0.20 | 0.02 | 0.66 | 8.13 | 144.06 | 27.54 |
| HHC048 | 27 | 30 | 59.21 | 34.48 | 1.22 | 0.63 | 0.44 | 1.82 | 0.21 | 0.10 | 17.03 | 5.47 | 2.53 | 0.25 | 0.10 | 0.65 | 6.22 | 130.36 | 23.97 |
| HHC048 | 30 | 33 | 330.44 | 131.94 | 5.78 | 3.13 | 2.25 | 7.78 | 1.05 | 0.44 | 89.81 | 24.89 | 12.12 | 0.89 | 0.49 | 3.09 | 36.70 | 650.81 | 121.38 |
| HHC048 | 33 | 35 | 339.04 | 192.34 | 6.17 | 2.54 | 2.83 | 10.83 | 1.03 | 0.33 | 128.30 | 37.09 | 18.15 | 1.19 | 0.40 | 2.62 | 34.41 | 777.28 | 172.76 |
| HHC049 | 0 | 3 | 163.38 | 84.09 | 4.88 | 2.30 | 1.62 | 6.49 | 0.87 | 0.36 | 61.24 | 16.67 | 9.18 | 0.80 | 0.32 | 2.14 | 29.72 | 384.06 | 83.59 |
| HHC049 | 3 | 6 | 128.98 | 76.23 | 4.35 | 2.29 | 1.48 | 6.51 | 0.88 | 0.39 | 53.77 | 14.80 | 8.42 | 0.73 | 0.34 | 2.14 | 28.95 | 330.27 | 73.65 |
| HHC049 | 6 | 9 | 57.12 | 31.43 | 1.61 | 0.89 | 0.53 | 1.84 | 0.23 | 0.14 | 17.96 | 4.78 | 2.73 | 0.24 | 0.06 | 1.02 | 9.27 | 129.85 | 24.59 |
| HHC049 | 9 | 12 | 24.81 | 14.66 | 0.67 | 0.40 | 0.20 | 0.80 | 0.11 | 0.06 | 7.12 | 2.31 | 0.83 | 0.07 | 0.03 | 0.48 | 4.19 | 56.73 | 10.16 |
| HHC049 | 12 | 15 | 26.29 | 16.54 | 0.78 | 0.57 | 0.22 | 0.67 | 0.17 | 0.13 | 8.40 | 2.40 | 1.16 | 0.14 | 0.06 | 0.57 | 4.83 | 62.92 | 11.72 |
| HHC049 | 15 | 18 | 85.13 | 45.74 | 1.18 | 0.77 | 0.24 | 1.68 | 0.22 | 0.08 | 25.19 | 7.55 | 2.77 | 0.19 | 0.15 | 0.61 | 5.33 | 176.84 | 34.12 |
| HHC049 | 18 | 21 | 33.29 | 20.52 | 0.91 | 0.51 | 0.17 | 1.24 | 0.17 | 0.07 | 10.38 | 2.91 | 1.39 | 0.16 | 0.10 | 0.63 | 6.10 | 78.57 | 14.36 |
| HHC049 | 21 | 24 | 51.10 | 35.18 | 1.27 | 0.75 | 0.38 | 1.75 | 0.26 | 0.14 | 17.96 | 5.53 | 3.08 | 0.26 | 0.13 | 0.84 | 7.37 | 126.02 | 25.03 |
| HHC049 | 24 | 28 | 40.29 | 36.36 | 1.01 | 0.74 | 0.50 | 1.68 | 0.15 | 0.07 | 18.90 | 5.78 | 2.03 | 0.16 | 0.15 | 0.40 | 6.98 | 115.20 | 25.85 |



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# APPENDIX 1.

The following Tables are provided to ensure compliance with the JORC Code (2012 Edition) requirements for the reporting of Exploration Results at Hines Hill

## Section 1: Sampling Techniques and Data

(Criteria in this section applies to all succeeding sections)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| **Sampling techniques** | *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* | Every metre drilled was sampled at the drill rig using a rig mounted static cone splitter to collect 2 – 3kg sub samples.<br>3m composites were collected using the pipe/spear method of sampling the coarse reject sample collected in standard green bags, which remain at the drill site. |
| | *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* | Standard reference material, sample duplicates were automatically collected at 25m sample intervals from the cone splitter<br>Where a duplicate, produced from the cone splitter, wasn't sampled due to it being in a non-mineralised zone, a 4m composite field duplicate was obtained using the pipe/spear method from the sample reject bag. This method maintained a ~25m duplicate and standard insertion rate throughout the entire program. |
| | *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.* | 1m samples were taken for each metre drilled and stored. 3m composite samples were taken for each drill hole and sent to the laboratory for crushing, splitting and analysis. |
| **Drilling techniques** | *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is orientated and if so, by what method, etc).* | The drilling was undertaken by Strike Drilling with their X 350 Air Core tracked rig with 3.5inch RC/AC capability. Clay profile was drilled with blade to refusal and hammer drilled for basement sample |
| **Drill sample recovery** | *Method of recording and assessing core and chip sample recoveries and results assessed.* | Drill recovery was routinely recorded via estimation of the comparative percentage of the volume of the sample bag by the company geologist. The sample recovery was deemed adequate for representative assays. |
| | *Measures taken to maximise sample recovery and ensure representative nature of the samples.* | A qualitative estimate of sample weight was undertaken to ensure consistency of sample size and to monitor sample recoveries at the time of drilling. |
| | *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | Drill sample recovery and quality is considered to be adequate for the drilling technique employed. |
| **Criteria** | **JORC Code explanation** | **Commentary** |



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| | | |
|---|---|---|
| **Logging** | *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* | All holes have been geologically logged for lithology, mineralisation and weathering.<br>A brief description of each drilling sample was recorded and a permanent record has been collected and stored in chip trays for reference. |
| | *The total length and percentage of the relevant intersections logged.* | All intersections logged 100% as all lengths are relevant at the current stage of exploration. |
| **Sub-sampling techniques and sample preparation** | *If core, whether cut or sawn and whether quarter, half or all core taken.* | A sub sample from the RC drill rig of approximately 2-4kg was taken from the sample splitter off the cyclone. |
| | *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* | |
| | *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* | |
| | *Quality control procedures adopted for all sub- sampling stages to maximise representivity of samples.* | No sub-sampling has been undertaken. |
| | *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second- half sampling.* | No sub-sampling has been undertaken. |
| | *Whether sample sizes are appropriate to the grain size of the material being sampled.* | The sample size of 2-4 kilograms is appropriate and representative of the grain size and mineralisation style of the deposit. |
| **Quality of assay data and laboratory tests** | *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*<br>*For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* | Samples were submitted to ALS Laboratories for analysis.<br><br>Elements were analysed using MS81L-REE$^{TM}$ : Ba, Ce, Cr, Cs, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Lu, Nb, Nd, Pr, Rb, Sc, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tm, U, V, W, Y, Yb, Zr. |
| | *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.* | CRM & field duplicated samples were inserted every 25 samples for QA/QC control. |
| **Verification of sampling and assaying** | *The verification of significant intersections by either independent or alternative company personnel.* | Significant intercepts are reviewed by 2 or more company geologists. |
| | *The use of twinned holes.* | No twinned drill holes. |
| | *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* | All field data were collected manually and transferred to spreadsheets. Sample location coordinates were determined and recorded using a handheld GPS. |
| | *Discuss any adjustment to assay data.* | The REE assay data were converted from reported elemental assays to the equivalent oxide compound as applicable to rare earth oxides. The oxides were calculated from the element according to the following factors:<br>• $CeO_2$ 1.1526<br>• $La_2O_3$ 1.1728<br>• $Nd_2O_3$ 1.1664<br>• $Pr_6O_{11}$ 1.2082<br>• $Ho_2O_3$ 1.1455<br>• $Lu_2O_3$ 1.1371<br>• $Sm_2O_3$ 1.1596<br>• $Tb_2O_3$ 1.1762<br>• $Tm_2O_3$ 1.1421<br>• $Y_2O_3$ 1.2699<br>• $Yb_2O_3$ 1.1387<br>• $Dy_2O_3$ 1.1477<br>• $Er_2O_3$ 1.1435<br>• $Eu_2O_3$ 1.1579<br>• $Gd_2O_3$ 1.1526 |
| **Criteria** | **JORC Code explanation** | **Commentary** |
| **Location of data points** | *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* | All locations determined by handheld GPS using GDA94 datum in UTM Zone 50. |



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| | | |
|---|---|---|
| | *Specification of the grid system used.* | |
| | *Quality and adequacy of topographic control.* | |
| **Data spacing and distribution** | *Data spacing for reporting of Exploration Results.* | Sample spacing was 100m. |
| | *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* | Maiden first pass drilling is not designed for an MRE and is too coarse. The drill spacing is intended to identify REE mineralisation, and will have reduced spacing in future programs. |
| | *Whether sample compositing has been applied.* | 3m sample compositing has been applied. |
| **Orientation of data in relation to geological structure** | *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* | Drill holes are vertical and suitable for clay profile drilling. |
| | *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | No bias is seen in the orientation of drilling |
| **Sample security** | *The measures taken to ensure sample security.* | All samples were placed in plastic or calico bags, taken to Perth and delivered to ALS laboratory by White Cliff staff. |
| **Audits or reviews** | *The results of any audits or reviews of sampling techniques and data.* | Data is validated upon up-loading into the master database. Any validation issues identified are investigated prior to reporting of results. |

## Section 2: Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| **Mineral tenement and land tenure status** | *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* | The Hines Hill exploration license E70/5875 is held 100% by Magnet Resource Company Pty Ltd, a 100% subsidiary of White Cliff Minerals Limited.<br>The tenement was granted on 21/10/21, has annual expenditure of $44,000 and the tenement is in good standing. |
| | *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | A land access agreement has been signed with the landowners. |
| **Exploration done by other parties** | *Acknowledgment and appraisal of exploration by other parties.* | No previous exploration. |
| **Geology** | *Deposit type, geological setting and style of mineralisation.* | Potential Carbonatite within Archean terrane. |
| **Drill hole Information** | *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* | A summary of all exploration drilling information and sampling is contained in tabulated data within this announcement. |



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| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *easting and northing of the drill hole collar*<br>*elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br>*dip and azimuth of the hole*<br>*down hole length and interception depth*<br>*hole length.* | |
| | *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | |
| **Data aggregation methods** | *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg. cutting of high grades) and cut-off grades are usually Material and should be stated.* | Intersections have been calculated generally using a 350ppm cut off and internal waste of up to 2m thickness with total intercepts greater than 350ppm.<br>No upper cut off has been applied to intersections or samples. |
| | *Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* | Only relevant elements (REE) are reported here. However, the samples underwent multi element assay as industry standard. |
| | *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | No metal equivalent values are being used. |
| **Relationship between mineralisation widths and intercept lengths** | *These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').* | Drill holes have been drilled vertical, which is generally perpendicular to the horizontal orebody within the clay profile. |
| **Diagrams** | *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | Location maps of projects within the release with relevant exploration information contained. |
| **Balanced reporting** | *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | The reporting of exploration results is considered balanced by the competent person. |
| **Other substantive exploration data** | *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.* | No other exploration to report. |
| **Further work** | *The nature and scale of planned further work (eg. tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>*Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | Full technical review which includes upcoming geochemical sampling results, assay of 1m samples within the ore zone and then further drilling. |



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