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Site M0077: introduction¹



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Introduction

During International Ocean Discovery Program Expedition 364, open-hole drilling occurred from the seafloor to ~500 m drilling depth below seafloor (DSF) and core was recovered between 505.70 and 1334.69 meters below seafloor (mbsf) (Table T1). Attempts to recover drilling chips from the open-hole interval were largely unsuccessful due to loss of drilling fluid into the formation. In the upper cores, the Post-Impact Sedimentary Rocks interval was recovered between 505.70 and 617.33 mbsf. The Upper Peak Ring interval is composed of suevite above impact melt rock from 617.33 to 747.02 mbsf. The Lower Peak Ring interval is formed from granitoids intruded by pre-impact mafic and felsic dikes between 747.02 and 1334.69 mbsf, interspersed with suevite and impact melt rock.

Expedition results are divided into four chapters that separate the open-hole and cored sections and reflect the key lithologic sequences encountered in Hole M0077A:

- Open Hole: 0–505.7 m DSF (see the [Site M0077: Open Hole](#) chapter [Gulick et al., 2017b]).
- Post-Impact Sedimentary Rocks: Core 1R to Section 40R-1, 109.4 cm (505.70–617.33 mbsf) (see the [Site M0077: Post-Impact Sedimentary Rocks](#) chapter [Gulick et al., 2017c]).
- Upper Peak Ring: Sections 40R-1, 109.4 cm, to 95R-3, 117 cm (617.33–747.02 mbsf) (see the [Site M0077: Upper Peak Ring](#) chapter [Gulick et al., 2017d]).
- Lower Peak Ring: Section 95R-3, 117 cm, through Core 303R (747.02–1334.69 mbsf) (see the [Site M0077: Lower Peak Ring](#) chapter [Gulick et al., 2017a]).

Table T1. Hole M0077A operations summary (21°26.996'N, 89°56.968'W). NA = not applicable. [Download table in CSV format.](#)

Week	Start date (2016)	End date (2016)	First core	Last core	Cores recovered (N)	Drilled length (m, coring)	Drilled length (m, open hole)	Recovered length (m)	Depth in hole (m)	Hole recovery (%)
1	8 Apr	15 Apr	NA	NA	NA	NA	503.60	NA	503.60	NA
2	16 Apr	23 Apr	NA	NA	NA	NA	2.70	NA	505.70	NA
3	24 Apr	28 Apr	1R	58R	58	168.49	0	170.28	674.19	100
4	29 Apr	6 May	59R	89R	31	54.50	0	52.03	728.69	95
5	7 May	14 May	90R	152R	63	161.65	0	164.74	890.34	100
6	15 May	22 May	153R	264R	112	329.76	0	331.09	1215.24	100
7	23 May	26 May	265R	303R	39	119.45	0	121.37	1334.69	100
Total:					303	828.99		839.51		

¹ Gulick, S., Morgan, J., Mellett, C.L., Green, S.L., Bralower, T., Chenot, E., Christeson, G., Claeys, P., Cockell, C., Coolen, M.J.L., Ferrière, L., Gebhardt, C., Goto, K., Jones, H., Kring, D., Lofi, J., Lowery, C., Ocampo-Torres, R., Perez-Cruz, L., Pickersgill, A.E., Poelchau, M., Rae, A., Rasmussen, C., Rebolledo-Vieyra, M., Riller, U., Sato, H., Smit, J., Tikoo, S., Tomioka, N., Urrutia-Fucugauchi, J., Whalen, M., Wittmann, A., Yamaguchi, K., Xiao, L., and Zylberman, W., 2017. Site M0077: introduction. In Morgan, J., Gulick, S., Mellett, C.L., Green, S.L., and the Expedition 364 Scientists, *Chicxulub: Drilling the K-Pg Impact Crater*. Proceedings of the International Ocean Discovery Program, 364: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.364.103.2017>

² [Expedition 364 Scientists' addresses.](#)

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These depths were chosen using core-based observations and logging data and may not reflect the precise location of lithologic boundaries within the core.

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