

**PHYSICAL RESEARCH LABORATORY  
RADIOCARBON DATE LIST IV**

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The dates presented below are from some important archaeological and Quaternary sites. All the dates are in years BP, based on  $\tau_{1/2} = 5568$  years. When converting archaeological dates into the AD/BC scale, 1950 should be used as the base year. The dates are not corrected for  $^{13}\text{C}$  fractionation. All the dates older than 10,000 years have been given with  $2\sigma$  errors.

Samples were converted to methane for measuring  $^{14}\text{C}$  activity in gas proportional counters as described earlier (R, 1971, v 13, p 442-449). All archaeological samples were given NaOH treatment.

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SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

**Ayodhya series, Uttar Pradesh**

Ayodhya (26° 45' N, 82° 10' E), Dist Faizabad, subm by Dir Gen Archaeol, New Delhi.

**PRL-452. Early historical deposit 2190 ± 100**

Charcoal, Tr AYD-6, Loc Sec A-C, Layer 11, depth 4.6m; submitter's Sample Ch S 1.

**PRL-456. Early historical deposit 2350 ± 140**

Charcoal, Tr AYD-4, Loc V-X (SE), Pit X sealed by Layer 30, depth 11.2m; submitter's Sample Ch S 5.

**PRL-458. Early historical deposit 1920 ± 150**

Charcoal, Tr AYD-8, Loc O-V, Layer 9, depth 3.1m; submitter's Sample Ch S 7.

**PRL-459. Early historical deposit 1920 ± 90**

Charcoal, Tr AYD-6, pit sealed by Layer 7, depth 4m; submitter's Sample Ch S 8.

**PRL-462. Northern Black Polished (NBP) Ware 1990 ± 90**

Charcoal, Tr AYD-7, Loc H-J, Layer 8, depth 4.5m; submitter's Sample 130.

**PRL-466. NBP deposit 2070 ± 90**

Charcoal, Tr AYD-5, Loc Sq C1 Qd 1, pit sealed by Layer 12, depth 4.4m; submitter's Sample 1251.

**PRL-467. NBP deposit 1910 ± 90**

Charcoal, Tr AYD-5, Loc Sq C1 Qd 1, Layer 13, depth 4.4m; submitter's Sample 1252.

**Daimabad series, Maharashtra**

Daimabad (19° 31' N, 74° 42' E), Dist Ahmednagar, subm by Dir Gen Archaeol, New Delhi.

**PRL-411. Malwa and Jorwe cultures 3230 ± 100  
overlap deposit**

Charcoal, Tr FZ 64, Layer 7, depth 1.6m; submitter's Sample DMD/2/1976-77.

**PRL-412. Malwa culture 3250 ± 110**

Charcoal, Tr FZ 64, Layer 8, depth 1.7m; submitter's Sample DMD/3/1976-77.

**PRL-419. Buff and Cream ware culture 2980 ± 110**

Charcoal, Tr Y'4, Layer 10, depth 1.8m; submitter's Sample DMD/11/1976-77.

**PRL-420. Late Harappan culture (?) 1410 ± 140**

Charcoal, Tr HZ 64, Layer 14, depth 0.8m; submitter's Sample DMD/13/1976-77.

**PRL-426. Late Harappan culture 3600 ± 150**

Charcoal, Tr CZ 61, Pit 25, depth 3.7m; submitter's Sample 26/1975-76/(2).

**PRL-428. Buff and Cream ware culture 3400 ± 110**

Charcoal, Tr CZ 61, Pit 10, depth 3.2m; submitter's Sample 28/1975-76/(1).

**PRL-429. Sawalda culture 3390 ± 150**

Charcoal, Tr CZ 61, Layer 16, depth 3.9m; submitter's Sample 29/1975-76. *Comment:* Sawalda culture has been dated to ca 3400 BP.

**Mahagara series, Uttar Pradesh**

Mahagara (25° 54' N, 82° 3' E), Dist Allahabad; subm by G R Sharma, Allahabad Univ, Allahabad.

**PRL-407. Neolithic deposit 3300 ± 100**

Charcoal, Tr MGR-G/7, Loc XXXVI-XXXVIII, Band B in Pit sealed by Layer 17, depth 2.4 to 2.6m; submitter's Sample AU/ALLD/MGR-77/1.

**PRL-408. Neolithic deposit 3190 ± 110**

Charcoal, Tr MGR-G/7, Loc XXXIX-XL, Layer 12, depth 1.25 to 1.35m; submitter's Sample AU/ALLD/MGR-77/2.

**PRL-409. Neolithic deposit** **3260 ± 150**

Charcoal, Tr MGR-G/7, Loc XXXIX-XL, Floor F/H13 sealed by Layer 8, depth 1.15m; submitter's Sample AU/ALLD/MGR-77/3.

**Ranihat series, Uttar Pradesh**

Ranihat (33° 15' N, 78° 47' E), Dist Tehri, subm by K P Nautiyal, Garhwal Univ, Garhwal, Srinagar.

**PRL-392. Red ware deposit** **1640 ± 140**

Charcoal, Tr RNT-1, Loc IV-VI, Layer 10, depth 3.1m; submitter's Sample RNT-1, 5.

**PRL-394. Red ware deposit** **1520 ± 140**

Charcoal, Tr RNT-1, Loc IV-VI, Layer 8, depth 2.75m; submitter's Sample RNT-1, 3.

**PRL-470. Sangamner, India, gravel bed** **14,400**  
**+ 340**  
**- 320**

Shells from gravel bed near Sangamner (19° 54' N, 74° 16' E), Dist Ahmednagar, subm by S N Rajaguru, Deccan Coll, Poona. *Comment:* gravel bed yielded Upper Palaeolithic tools.

**Sanghol series, Punjab**

Sanghol, Dist Ludhiana subm by G B Sharma, Dept Tourism and Archaeol, Patiala.

**PRL-509. Late Harappan deposit** **3570 ± 150**

Charcoal, Tr EX-1, Layer 48, depth 5.4m; submitter's Sample 1.

**PRL-510. Late Harappan deposit** **3550 ± 150**

Charcoal, Tr EX-2, pit sealed by Layer 19, depth 3.4 to 3.8m; submitter's Sample 3.

**PRL-511. Late Harappan deposit** **3740 ± 160**

Charcoal, Tr FX-2, Layer 23, depth 3.9 to 4.02m; submitter's Sample 4.

**PRL-512. Late Harappan deposit** **3350 ± 110**

Charcoal, Tr FX-2, Layer 22, depth 3.8 to 4.12m; submitter's Sample 5.

**PRL-513. Late Harappan deposit** **3540 ± 150**

Charcoal, Tr EX-1, hearth sealed by Layer 40, depth 7.7m; submitter's Sample 6.

**PRL-515. Gray and Red ware deposit** **1940 ± 100**

Charcoal, Tr DX 1, Layer 33, depth 6.2; submitter's Sample 8.

**PRL-516. Black Slipped ware deposit** **1870 ± 100**

Charcoal, Tr DX 1, Layer 32, depth 7m; submitter's Sample 9.

**PRL-517. Black Slipped ware deposit** **1990 ± 140**  
Charcoal, Tr DX 1, Layer 31, 6m; submitter's Sample 10.

**PRL-518. Black Slipped ware** **1980 ± 100**  
Charcoal, Tr DX 1, Layer 30, depth 5.5 to 6m; submitter's Sample

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## II. QUATERNARY SAMPLES

### Bhimrana series, Gujarat

Coral from Bhimrana (22° 21' N, 69° 21' E), Dist Jamnagar; subm by S K Gupta, PRL, Ahmedabad. *Comment*: samples measured to date sea-level changes along Saurashtra coast.

**PRL-498. Inland coral reef** **>35,000**  
Coral, depth 0.22m; submitter's Sample TF-909A.

**PRL-499. Inland coral reef** **>35,000**  
Coral, depth 0.22m; submitter's Sample TF-909B.

**PRL-472. Kathupalli, lagoon sediment** **670 ± 100**  
Shell from lagoon sediment 2km NW of Kathupalli (13° 19' N, 80° 19' E), Dist Chingleput, alt +4m; subm by J Nageshwar Rao, Quaternary Div, Geol Survey India, Hyderabad; submitter's Sample NJ-239.

**PRL-497. Kharaghoda, Rann sediments** **15,300**  
**+ 590**  
**- 550**

Crocodile jaw bones from Kharaghoda Little Rann, Dist Kutch. Subm by S K Gupta, PRL, Ahmedabad; submitter's Sample 49. *Comment*: sample measured to date sand layers representing period of high rainfall in W India.

### Krishna-Godavari delta series, Andhra Pradesh

Sediments from Krishna-Godavari delta were measured to date recent sedimentary deposits; subm by A T R Raju, Inst Petroleum Exploration, Oil and Nat Gas Comm, Dehra Dun.

**PRL-448. Mukkalatippa, deltaic sediment** **Modern**  
Wood from river cutting at Mukkalatippa (16° 38' N, 82° 13' E), Dist East Godavari, depth 1.51m; submitter's Sample 1.

**PRL-449. Chapala Uppada, deltaic sediment** **5650 ± 120**  
Calcareous segregations from Krishna-Godavari delta near Chapala Uppada (17° 55' N, 83° 28' E), Dist Visakhapatnam, depth 15.1m; submitter's Sample 2.

**PRL-450. Jaganadhapuram, deltaic sediment** **5550 ± 110**  
Shells coll from deltaic sediment near Jaganadhapuram (18° 05' N, 83° 30' E), Dist Visakhapatnam, depth 1.2m; submitter's Sample 3.

**PRL-451. Kovvada, deltaic sediment** **25,200**  
 + 1800  
 - 1500

Lignite from well near Kovvada (16° 57' N, 82° 11' E), Dist East Godavari, depth 197m; submitter's Sample 4.

*General Comment:* PRL-450, -451 were obtained to determine recent deltaic sedimentation rate.

#### **Laccadives storm beach series**

Storm beaches at Chetlad (11° 41' N, 72° 11' E), Bitra (11° 35' N, 72° 09' E) and Kiltan Islands (11° 29' N, 73° E); subm by H N Siddiqui, Nat Inst Oceanog, Panaji, Goa. *Comment:* sample studied to assess ages of storm beach.

**PRL-477. Dead coral** **280 ± 90**  
 Dead coral from N end of Chetlat I.; submitter's Sample CHT-14.

**PRL-479. Dead coral** **1620 ± 100**  
 Dead coral from N end of Chetlat I.; submitter's Sample CHT-16.

**PRL-481. Dead coral** **Modern**  
 Dead coral from N end of Bitra I.; submitter's Sample BR-6.

**PRL-484. Dead coral** **2780 ± 110**  
 Dead coral from old coral storm beach, S end of Kiltan I.; submitter's Sample KT-18.

#### **Pacific Ocean sediment series**

Box core of calcareous sediments (Krishnamurthy *et al*, 1979, p 273-283), from Ontong Jawa plateau (0° 0.3' S, 161° 58.5' E) water depth 4169m. Coll by W H Berger, subm by Devendra Lal, PRL, Ahmedabad. *Comment:* samples measured to study sedimentation rate and benthic mixing.

Sample	Core no.	Core depth (mm)	<sup>14</sup> C age
PRL-430	ERDC-129BX	0 to 5	4170 ± 160
PRL-431	"	5 to 10	4490 ± 130
PRL-432	"	10 to 15	3220 ± 150
PRL-433	"	15 to 20	4880 ± 160
PRL-559	"	30 to 40	6750 ± 180
PRL-434	"	40 to 50	6220 ± 100
PRL-560	"	50 to 70	8610 ± 140
PRL-435	"	70 to 90	9760 ± 220
PRL-561	"	150 to 200	15,900 + 290 - 280
PRL-437	"	200 to 250	21,600 + 890 - 800
PRL-438	"	280 to 330	29,000 + 1300 - 1100

#### REFERENCES

- Agrawal, D P, Gupta, S K, and Kusumgar, Sheela, 1971, Tata Institute date list IX: Radiocarbon, v 13, p 442-449.  
 Krishnamurthy, R V, Lal, Devendra, Somayajulu, B L K, and Berger, W H, 1979, Radiometric studies of box cores from the Ontong-Jawa Plateau: Indian Acad Sci, Proc, v 88, pt II, no. 3, p 273-283.