



**ENC Scheme for the NIOHC region prepared by
the North Indian Ocean International Charting
Coordination Working Group (NICCWG).**

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INTRODUCTION

The purpose of the North Indian Ocean International Charting Coordination Working Group (NICCWG) is to facilitate the production and promote the availability of official electronic chart data for safe, efficient, and environmentally sensitive maritime navigation within the NIOHC Region.

In order to ensure that adequate regional ENC coverage will be available to meet International Maritime Organization (IMO) Electronic Chart Display and Information System (ECDIS) carriage requirements in a timely manner, the NICCWG was tasked to develop an ENC scheme to ensure adequate ENC coverage and to include provision for additional/replacement coverage over time.

ENCs are required to enable safe port-to-port navigation for international shipping, and they must correspond to the paper chart coverage for the routes between the ports, as well as the port areas themselves.

This report and its annexes:

- 1) summarizes the current status of ENC coverage for the entire NIOHC region to week 22/2017,
- 2) depicts a regional ENC scheme (Annex A) in a format similar to that of the paper INT Chart Scheme found in S-11 part B region J,
- 3) contains recommendations for near-term actions to resolve specific identified issues.

IHO WEND PRINCIPLES

The purpose of WEND is to ensure that high quality, updated, official ENCs are provided through integrated services that support chart carriage requirements of SOLAS Chapter V. According to the IMO performance standards for ECDIS:

- Member States will strive to ensure that mariners, anywhere in the world, can obtain fully updated ENCs for all shipping routes and ports across the world.
- Member States will strive to ensure that their ENC data is available to users through integrated services, each accessible to any ECDIS user (i.e., providing data in S-57 form), in addition to any national distribution or system-specific SENC delivery.
- Member States are encouraged to distribute their ENCs through an RENC in order to share a common experience and reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability, and availability of ENCs.
- ENC duplication should be avoided; only a single country should produce an ENC for any given area. Normally, a Member State produces ENCs

within their national waters; however, they can delegate responsibility for the production of ENC's, completely or in part, to another country. The designated country then becomes the producing country in the considered area.

WORK PLANS AND PROCESS

The process so far takes the existing ENC coverage within the NIOHC region as a starting point and compares it to INT Chart coverage.

This coverage should be assessed against:

- traffic routes
- port coverage
- action plans for addressing gaps and overlaps in ENC coverage between countries;

We recommend setting up a regular biannual teleconference to discuss progress on the scheme.

DATA ANALYSIS METHODOLOGIES

To successfully and accurately report on regional ENC coverage, and to appropriately plan to address regional ENC deficiencies, the UKHO produced a baseline assessment of regional ENC coverage. A call went out to states within the region to provide details of planned ENC's so that they can be incorporated into the proposed scheme.

The UKHO adhered to the following for ENC analysis:

1. Assess deficiencies in ENC Coverage for Navigation Purpose (Usage bands 1, 2, and 3 Electronic Navigational Charts (ENC).
 - a. Overview (Band 1) cells within region coverage;
 - b. General (Band 2) cells against INT chart scheme from S-11 Part B Region J;
 - c. Coastal (Band 3) cells for the region against INT chart scheme from S-11 Part B Region J.

Further analysis by the NICCWG on the following:

2. Assessment to be undertaken on deficiencies in coverage within National ENC schemes.

- a. Identify small gaps or slivers existing between same navigation purpose ENC cells within the same national schemes;
 - b. Identify small gaps or slivers existing between same navigation purpose ENC cells that junction with ENCs of other national schemes.
3. Identification of overlapping areas of same navigation purpose ENC Cells
 - a. Collect polygons representing areas of overlap;
 - b. List affected overlapping cells.
4. Identify any other data anomalies, such as navigation purposes that are inconsistent with the scale of the ENC cell.
5. Identify and consider proposed updates to the ENC scheme over the next year from new cells or revised limits.
6. Prepare a report of all identified data deficiencies for the NIOHC region.
 - a. Report all data gaps;
 - b. Report all data overlaps;
 - c. Propose recommendations to fix data deficiencies.

CONCLUSIONS

1. Overview coverage (Band 1) ENCs are complete for the region. Member States intending to produce further cells within this scheme will need to consult NICCWG prior to completion of their cells to ensure no overlap of data.
2. General coverage (Band 2) ENCs are complete for the region. Member States intending to produce further cells within this scheme will need to consult NICCWG prior to completion of their cells to ensure no overlap of data.
3. Coastal coverage (Band 3) ENCs have some gaps mainly in the Red Sea and along the coasts of Yemen, Saudi Arabia, Egypt, Sudan and Somalia. Member States are encouraged to provide details of ENC production within these areas to NICCWG for inclusion in the scheme.
4. Analysis of gaps and overlaps as defined in Methodologies 2-5 above should be carried out by NICCWG on receipt of WEND-WG data.

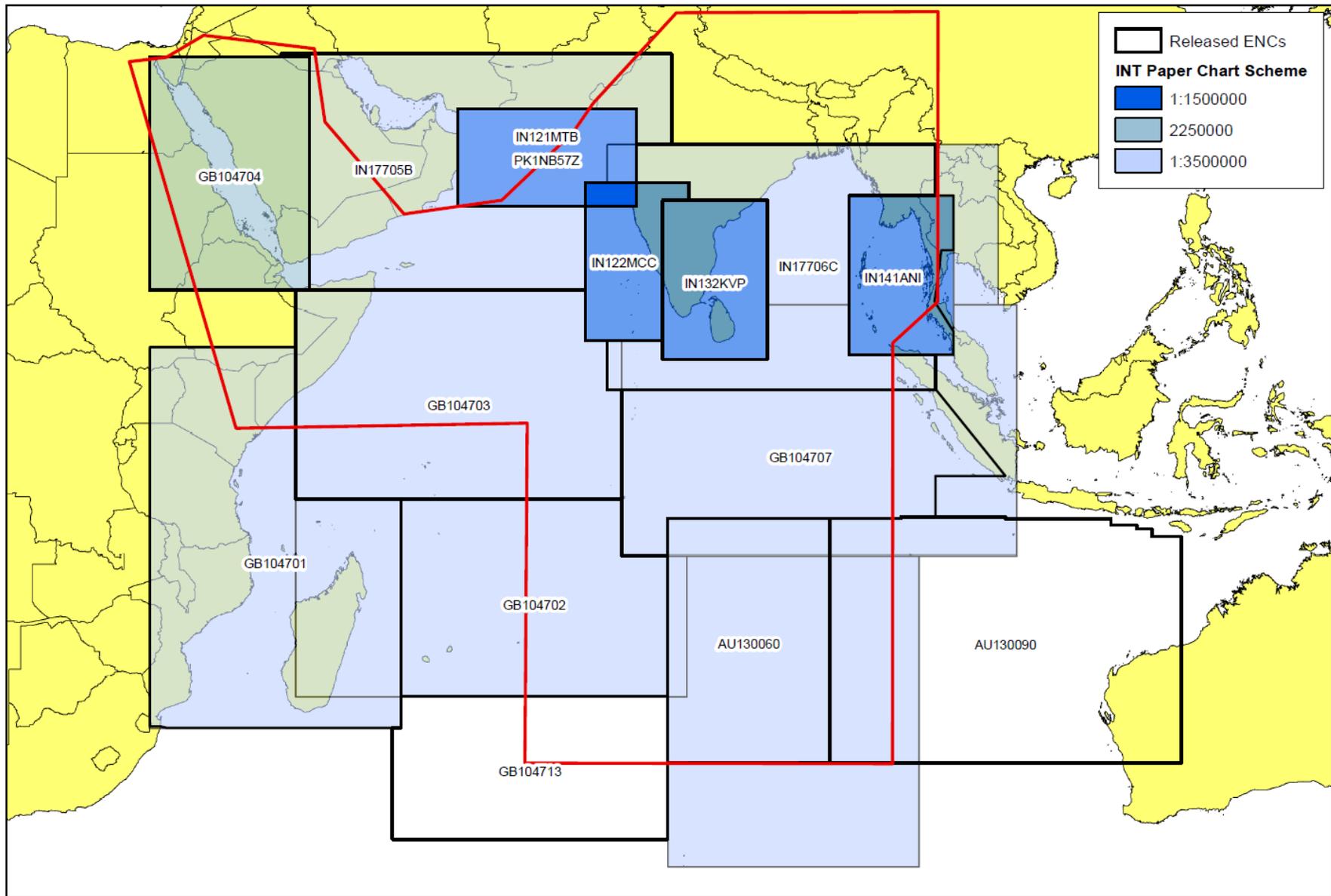
RECOMMENDATIONS FOR DISCUSSION AT 17TH NIOHC

1. Members of the NICCWG and NIOHC note the report and discuss the findings in order to progress the ENC scheme for the region.
2. Members of the NIOHC with national ENC schemes in the planning stage are encouraged to provide details of the scheme to the NICCWG chair and vice-chair to ensure integration into the NIOHC ENC scheme.
3. NICCWG work towards completing analysis for Approach and Port (Bands 4 & 5) coverage.

Prepared at Taunton by UKHO on behalf of the NICCWG

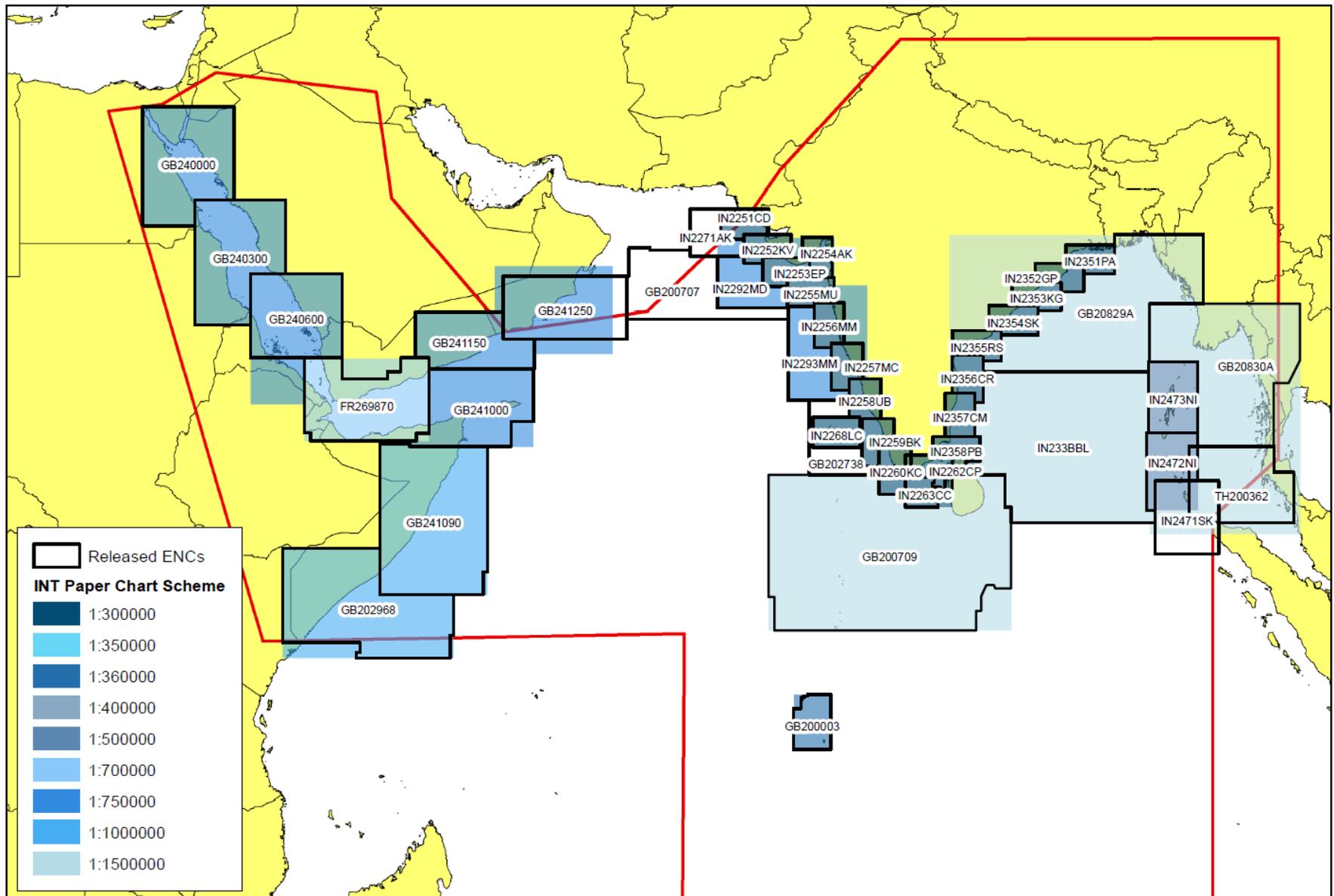
14th July 2017

NIOHC ENC Coverage - Usage Band 1



Usage Band 1 ENC's - NIOHC							
Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
AU130060	1	3,500,000	Australia - Mid Indian Ocean Basin	AHS	714	AU	3,500,000
AU130090	1	3,500,000	Australia - North West Approaches	AHS			
GB104701	1	3,500,000	Indian Ocean - Maputo to South West of Muqdisho	UKHO	701	GB	3,500,000
GB104702	1	3,500,000	Indian Ocean - Part Chagos Archipelago to Ile De La Reunion	UKHO	702	GB	3,500,000
GB104703	1	3,500,000	Indian Ocean - Somalia to the Chagos Archipelago and the Seychelles Group	UKHO	703	GB	3,500,000
GB104704	1	1,500,000	Red Sea	UKHO	704	GB	2,250,000
GB104707	1	3,500,000	Indian Ocean - Part Chagos Archipelago to Sumatera	UKHO	707	GB	3,500,000
GB104713	1	3,500,000	Indian Ocean - Southwest Indian Ridge	UKHO			
IN121MTB	1	700,000	Title Not Specified	INHO	751	IN	1,500,000
IN122MCC	1	700,000	Title Not Specified	INHO	752	IN	1,500,000
IN132KVP	1	700,000	Title Not Specified	INHO	754	IN	1,500,000
IN141ANI	1	700,000	Title Not Specified	INHO	757	IN	1,500,000
IN17705B	1	3,000,000	Arabian Sea	INHO	705	IN	3,500,000
IN17706C	1	3,000,000	Bay of Bengal	INHO	705	IN	3,500,000
PK1NB57Z	1	1,500,000	Bombay to Muscat	INHO	751	IN	1,500,000

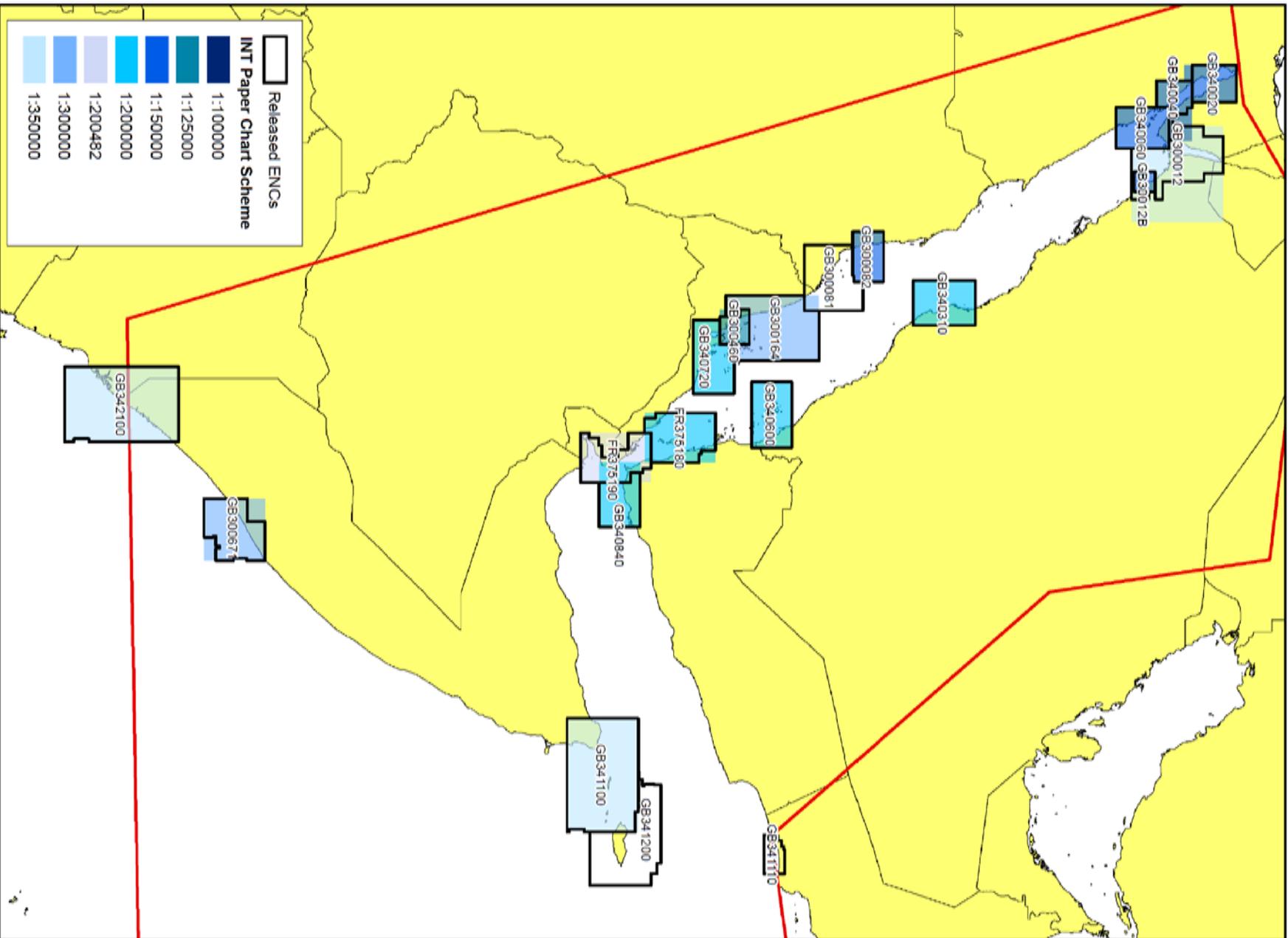
NIOHC ENC Coverage - Usage Band 2



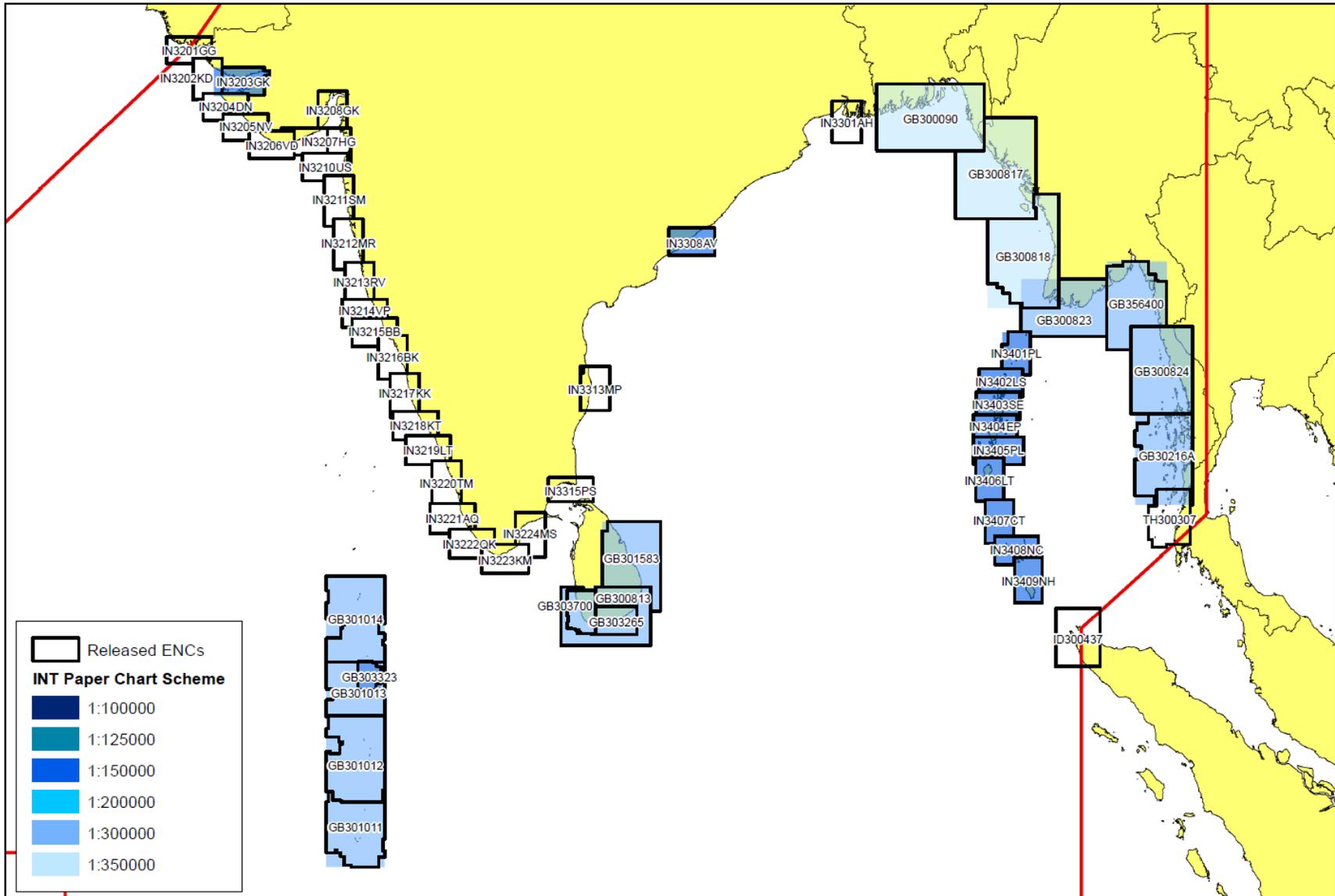
Usage Band 2 ENC's - NIOHC							
Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
FR269870	2	700,000	Gulf of Aden - Bab El Mandeb	SHOM	7004	FR	700,000
GB200003	2	350,000	British Indian Ocean Territory - Chagos Archipelago	UKHO	7380	GB	360,000
GB200707	2	700,000	Arabian Sea	UKHO			
GB200709	2	1,500,000	Indian Ocean - Maldives to Sri Lanka	UKHO	753	GB	1,500,000
GB202738	2	700,000	Lakshadweep Sea - Northern Part	UKHO			
GB202968	2	700,000	Africa - East Coast - Lamu to Cadale (Itala)	UKHO	7000	GB	1,000,000
GB20829A	2	1,500,000	Indian Ocean - Bay of Bengal - Northern Part	UKHO	756	IN	1,500,000
GB20830A	2	1,500,000	Bay of Bengal - Andaman Sea	UKHO	757	IN	1,500,000
GB240000	2	700,000	Red Sea - Suez (El Suweis) to Gezirat Wadi Gimal	UKHO	7010	GB	750,000
GB240300	2	700,000	Berenice to Masamirit	UKHO	7008	GB	750,000
GB240600	2	700,000	Masamirit to Jazirat at Ta'ir	UKHO	7006	GB	750,000
GB241000	2	700,000	Somalia and Yemen - Eastern Approaches to the Gulf of Aden	UKHO	7002	GB	750,000
GB241090	2	700,000	Africa - East Coast. Cadale (Itala) to Raas Macbar	UKHO	7001	GB	1,000,000
GB241150	2	700,000	Arabia - South East Coast - Ash Shihr to Ra's Marbat	UKHO	7014	GB	750,000
GB241250	2	700,000	Arabia - South East Coast - Kuria Muria Islands to Khalij al Masirah	UKHO	7015	OM	750,000
IN2251CD	2	180,000	Sir Creek to Dwarka	INHO	7318	IN	300,000
IN2252KV	2	180,000	Okha to Veraval	INHO	7325	IN	300,000
IN2253EP	2	180,000	VERAVAL TO PIPAVAV	INHO	7328	IN	300,000
IN2254AK	2	180,000	Approaches to Gulf of Khambhat (Cambay)	INHO	7331	IN	300,000
IN2255MU	2	180,000	APPROACHES TO MUMBAI	INHO	7334	IN	300,000
IN2256MM	2	300,000	Murud Janjira Hr. to Malvan	INHO	7340	IN	300,000
IN2257MC	2	300,000	Malvan to Coondapoor	INHO	7343	IN	300,000
IN2258UB	2	180,000	Coondapoor to Badagara	INHO	7348	IN	300,000
IN2259BK	2	300,000	Badagara to Cochin(Kochi)	INHO	7356	IN	300,000
IN2260KC	2	300,000	Cochin to Cape Comorin	INHO	7362	IN	300,000
IN2262CP	2	180,000	Cape Comorin to Pamban	INHO	7365	IN	300,000

Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
IN2263CC	2	300,000	CAPE COMORIN TO COLOMBO	INHO	7383	IN	300,000
IN2268LC	2	180,000	CENTRAL LAKSHADWEEP	INHO	7353	IN	300,000
IN2271AK	2	350,000	APPROACHES TO GULF OF KACHCHH	INHO			
IN2292MD	2	700,000	DWARKA TO MUMBAI	INHO	7021	IN	750,000
IN2293MM	2	700,000	MUMBAI TO NEW MANGALORE	INHO	7022	IN	750,000
IN233BBL	2	700,000	Bay of Bengal -Southern Portion	INHO	755	IN	1,500,000
IN2351PA	2	300,000	Paradip to Pussur River	INHO	7419	IN	300,000
IN2352GP	2	300,000	Gopalpur to Paradip	INHO	7416	IN	300,000
IN2353KG	2	300,000	Kalingapatnam to Gopalpur	INHO	7413	IN	300,000
IN2354SK	2	300,000	SACRAMENTO SHOAL TO KALINGAPATNAM	INHO	7408	IN	300,000
IN2355RS	2	300,000	RAMAYAPATNAM TO SACRAMENTO SHOAL	INHO	7405	IN	300,000
IN2356CR	2	300,000	Chennai (Madras) to Ramaypatnam	INHO	7400	IN	300,000
IN2357CM	2	300,000	POINT CALIMERE TO CHENNAI	INHO	7397	IN	300,000
IN2358PB	2	180,000	APPROACHES TO PALK BAY	INHO	7394	IN	300,000
IN2471SK	2	700,000	Katchal and Sumatra	INHO			
IN2472NI	2	350,000	Nicobar Island	INHO	7032	IN	500,000
IN2473NI	2	350,000	Andaman Island	INHO	7031	IN	500,000
TH200362	2	700,000	Satun to Ranong	RTNHD			

NIOHC ENC West Coverage - Usage Band 3



NIOHC ENC East Coverage - Usage Band 3



Usage Band 3 ENC's - NIOHC							
Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
FR375180	3	180,000	Al Hudaydah to Al Mukha	SHOM	7118	FR	200,000
FR375190	3	180,000	Bab El Mandeb and Golfe de Tadjoura	SHOM	7114	FR	200,482
GB300012	3	350,000	Red Sea - Al 'Aqaba to Duba	UKHO	7142	GB	350,000
GB300081	3	180,000	Red Sea - Ras Lakham to Ras Qassar	UKHO			
GB300082	3	90,000	Red Sea - Sudan - Outer Approaches to Port Sudan	UKHO	7128	GB	150,000
GB300090	3	350,000	Bay of Bengal - Bangladesh - Malancha River to Saint Martin's Island	UKHO	7425	BD	350,000
GB30012B	3	90,000	Red Sea - Saudi Arabia - Approaches to Duba	UKHO	7142	GB	150,000
GB300164	3	180,000	Red Sea - Eritrea - North and North-East Approaches to Massawa (Mits'iwa)	UKHO	7124	GB	300,000
GB300460	3	90,000	Approaches to Massawa (Mitsâ€™iwa)	UKHO	7125	GB	125,000
GB300671	3	180,000	Outer Approaches to Muqdisho and Marka Anchorage	UKHO	7105	GB	300,000
GB300813	3	180,000	Sri Lanka - South Coast - Dondra Head to Sangama Kanda Point	UKHO	7386	GB	300,000
GB300817	3	350,000	Bay Of Bengal - Bangladesh and Burma (Myanmar) - Shahpuri Point to Mun Aung Island	UKHO	7430	GB	350,000
GB300818	3	350,000	Bay of Bengal - Burma - Manaung (Cheduba) Island to Pathein River	UKHO	7433	GB	350,000
GB300823	3	180,000	Pyamalaw River to Rangoon River	UKHO	7438	GB	300,000
GB300824	3	180,000	Andaman Sea - Burma (Myanmar) - Heinze Islands to Mergui	UKHO	7444	GB	300,000
GB301011	3	180,000	Indian Ocean - Maldives - Addoo Atoll to South Huvadho Atoll	UKHO	7377	GB	300,000
GB301012	3	180,000	Indian Ocean - Maldives - North Huvadho Atoll to Mulaku Atoll	UKHO	7374	GB	300,000
GB301013	3	180,000	Indian Ocean - Maldives - Mulaku Atoll to South Maalhosmadulu Atoll	UKHO	7371	GB	300,000
GB301014	3	180,000	Indian Ocean - Maldives - South Maalhosmadulu Atoll to Ihavandhippolhu Atoll	UKHO	7368	GB	300,000
GB301583	3	180,000	Sri Lanka - East Coast - Akkeraipattu to Pulmoddai Roads	UKHO	7389	GB	300,000
GB30216A	3	180,000	Mergui Archipelago	UKHO	7447	GB	300,000
GB303265	3	90,000	Sri Lanka – South Coast – Weligama to Little Basses Reef	UKHO			
GB303323	3	90,000	Indian Ocean - Maldives - Male' Atoll	UKHO	7372	GB	150,000
GB303700	3	90,000	Sri Lanka - Weligama to Colombo	UKHO			
GB340020	3	90,000	Suez Bay to Ras Sheratib	UKHO	7136	GB	150,000

Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
GB340040	3	90,000	Ras Sheratib to Ashrafi Islands	UKHO	7134	GB	150,000
GB340060	3	90,000	Ashrafi Islands to Safaga	UKHO	7132	GB	150,000
GB340310	3	180,000	Shi'b Nazar to Qita'kidan	UKHO	7148	GB	200,000
GB340600	3	180,000	Approaches to Jizan	UKHO	7154	GB	200,000
GB340720	3	180,000	Southern Approaches to Massawa (Mitsâ€™iwa)	UKHO	7122	GB	200,000
GB340840	3	180,000	Ghubbat Al Haykah to Aden Harbour	UKHO	7162	GB	200,000
GB341100	3	350,000	Raas Casey to Suqutra	UKHO	7110	GB	350,000
GB341110	3	90,000	Outer Approaches to Port Salalah (Mina Raysut)	UKHO			
GB341200	3	350,000	Suqutra (Socotra)	UKHO			
GB342100	3	350,000	Lamu to Kismaayo	UKHO	7705	GB	350,000
GB356400	3	180,000	Rangoon River to Heinze Island	UKHO	7441	GB	300,000
ID300437	3	180,000	Sumatera Pantai Barat Laut Sigli ke Pulau Rondo hingga Pulau Raya	DISHIDROS			
IN3201GG	3	150,000	Gorachan Creek to Godia Creek	INHO			
IN3202KD	3	90,000	AKHAU TO DWARKA	INHO			
IN3203GK	3	150,000	Gulf of Kachchh	INHO	7319	IN	150,000
IN3204DN	3	150,000	Dwarka to Navibandar	INHO			
IN3205NV	3	150,000	Navibandar to Veraval	INHO			
IN3206VD	3	150,000	Veraval to Diu Head	INHO			
IN3207HG	3	90,000	Diu Head to Gopinath Point	INHO			
IN3208GK	3	150,000	Gulf of Khambhat (Cambay)	INHO			
IN3209AU	3	90,000	Hazira to Umargam	INHO			
IN3210US	3	150,000	Umargam to Satpati	INHO			
IN3211SM	3	150,000	Satpati to Murud Janjira	INHO			
IN3212MR	3	150,000	Murud - Janjira Hr. to Ratnagiri	INHO			
IN3213RV	3	150,000	Ratnagiri to Vengurla	INHO			
IN3214VP	3	150,000	Vengurla to Betul	INHO			
IN3215BB	3	150,000	Betul to Belekeri	INHO			
IN3216BK	3	150,000	Belikeri to Kundapura	INHO			

Cell Number	Usage Band	Scale	Title	Producing Authority	INT Chart Source	INT Chart Producer	INT Chart Scale 1
IN3217KK	3	150,000	Coondapoor to Kasaragod	INHO			
IN3218KT	3	150,000	Kasaragod to Tellicherry	INHO			
IN3219LT	3	150,000	Tellicherry to Tanur Nagaram	INHO			
IN3220TM	3	150,000	Tanur Nagaram to Manakkudam	INHO			
IN3221AQ	3	150,000	Alleppey to Quilon	INHO			
IN3222QK	3	150,000	Quilon to Kolachel	INHO			
IN3223KM	3	150,000	Kolachel to Manappad	INHO			
IN3224MS	3	150,000	Manappad to Setukkarai	INHO			
IN3301AH	3	150,000	Approaches to Hugli River	INHO			
IN3308AV	3	150,000	Outer Approaches to Vishakhapatnam	INHO	7409	IN	150,000
IN3313MP	3	150,000	Mamallapuram (Mahabalipuram) to Pt. Pudi	INHO			
IN3315PS	3	125,000	Palk Strait	INHO			
IN3401PL	3	150,000	Preparis Island to Landfall Island	INHO	7435	IN	150,000
IN3402LS	3	150,000	Landfall Island to Stewart Sound	INHO	7436	IN	150,000
IN3403SE	3	150,000	Stewart Sound to Elphinstone Harbour	INHO	7437	IN	150,000
IN3404EP	3	150,000	Elphinstone Harbour to Port Blair	INHO	7439	IN	150,000
IN3405PL	3	150,000	Port Blair to Little Andaman Island	INHO	7440	IN	150,000
IN3406LT	3	150,000	Little Andaman to Ten Degree Channel	INHO	7443	IN	150,000
IN3407CT	3	90,000	TEN DEGREE CHANNEL TO CHOWRA ISLAND	INHO	7445	IN	150,000
IN3408NC	3	90,000	CHOWRA ISLAND TO NANCOWRY HARBOUR	INHO	7446	IN	150,000
IN3409NH	3	150,000	Nancowry Harbour to Great Nicobar Island	INHO	7448	IN	150,000
TH300307	3	180,000	Phangnga to Ranong	RTNHD			