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Preliminary Report on Inventory of
TUNA FADs IN MINDANAO SEA



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TD/RES125

PRELIMINARY REPORT ON INVENTORY OF TUNA FADs IN MINDANAO SEA, THE PHILIPPINES

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1) Introduction:

Tuna fishery in the Southeast Asian waters has been significantly important for the domestic consumptions as valuable protein resource for most of the countries in the region, as well as for exports to the many parts of the world. The Philippines is one of the largest tuna harvesting countries in the regions using various fishing techniques such as purse seine net for large scale, ring net, drifting longline and hand line. Mindanao Sea as a part of Celebes Sea is one of the important tuna fishing ground located nearby and connecting to the west Pacific Ocean. In the Mindanao Sea, to enhance harvesting of tuna species such as bigeye and yellowfin tunas including some neritic-tuna species such as skipjack and other small pelagic species therefore Fish Aggregating Devices (FADs) has been used in wide areas. Deployment of FADs in the sea where the water depths are around 4,000m are mainly made by fishers. In 2007 the Bureau of Fisheries and Aquatic Resources (BFAR), the Philippines requested SEAFDEC to investigate how impact of the FADs in fisheries resources since especially many young tuna particularly the yellowfin and bigeye tuna were caught in the FADs areas. In connection to the ASEAN-SEAFDEC program on the Information Collection of High Migratory Species in the Southeast Asian Waters in 2007, the inventory survey using the MV SEAFDEC2 in cooperation with the BFAR was conducted in from 19 September – 2 October. The main objective is to make an inventory the fish aggregating devices deployed in the survey areas and to conduct the larval fish survey as well as to collect the oceanographic data using ICTD for further investigation for their relationship. However, the report will focus only inventory of FADs found from the survey.

2) Results

The observation survey was conducted based on the cruise track using radar and binocular within the range which could be detected and observed. Each FADs found from radar will be confirmed by sight observation. The survey was made only during daytime. Most of FADs found are drum types made of steel tube, some FADs were made of Styrofoam covered with fishing net. Fishing 1 shows the materials of FADs before deployment. Figure 2 shows distribution of FADs found during the surveys in day time. Table 1 shows list of location of FADs found during the survey.

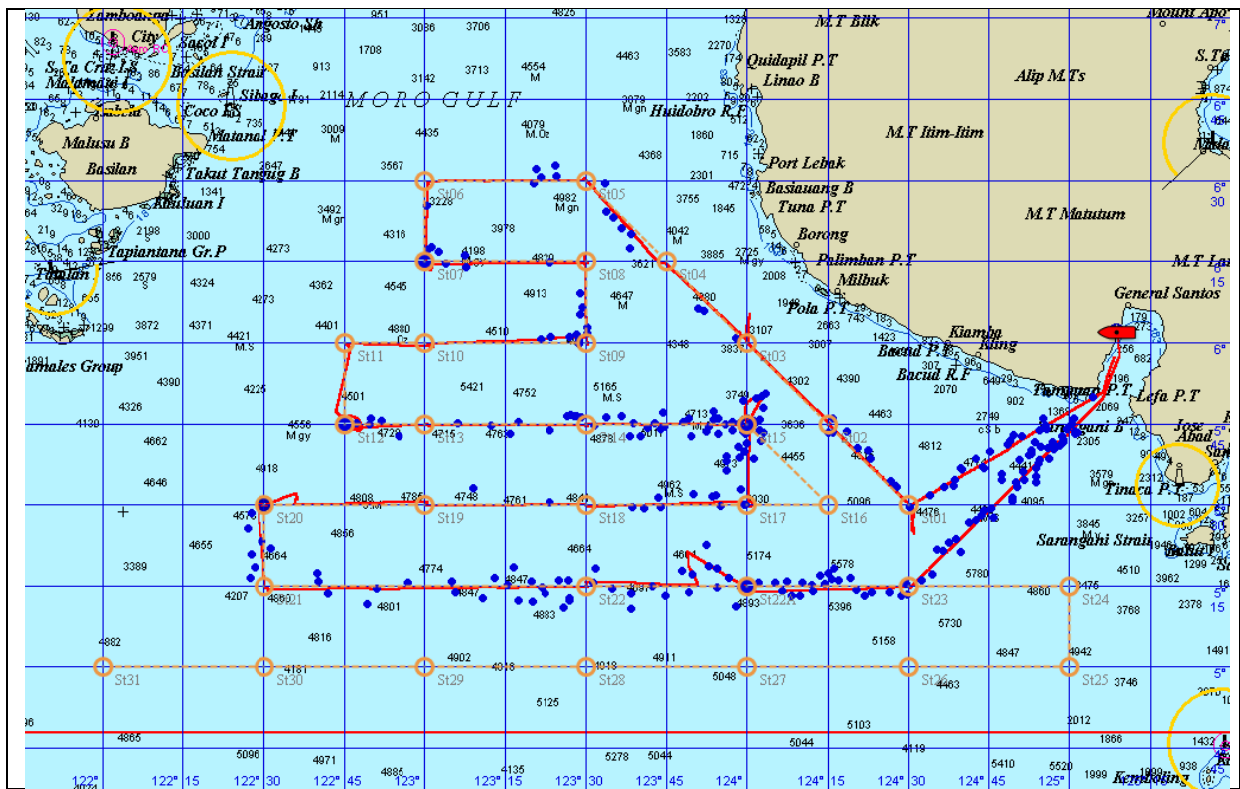
3) Acknowledgements

We would like to thank all crews of MV SEAFDEC2 for their collaboration in Searching of FADs. Thank also is given to the Government of Japan through Trust Fund of Fishery Agency on the Information Collection of the High Migratory Species in the Southeast Asia waters for supporting the project.

Figure 1:



Figure 2. Distribution of FADs found during the survey in Mindanao Sea



Jonathan O. Dickson

Number of Payao in CELEBES SEA, PHILIPPINES. 27-5/2007						
No.	Date	POSITION		Payao's Type	Ship's crouse	Remarks.
		Lat	Long			
1	19/09/2007	05°-50'.0 N	125°-04'.4 E	Drum	240°	General Santos - St.01
2	"	05°-45'.9 N	125°-00'.9 E	"	"	"
3	"	05°-44'.8 N	124°-56'.8 E	"	"	"
4	"	05°-44'.0 N	124°-55'.9 E	"	"	"
5	"	05°-45'.9 N	124°-55'.3 E	"	"	"
6	"	05°-43'.9 N	124°-54'.6 E	"	"	"
7	"	05°-42'.7 N	124°-51'.3 E	"	"	"
8	"	05°-42'.9 N	124°-49'.8 E	"	"	"
9	"	05°-41'.9 N	124°-49'.2 E	"	"	"
10	"	05°-41'.2 N	124°-48'.7 E	"	"	"
11	"	05°-39'.8 N	124°-45'.4 E	"	"	"
12	"	05°-38'.6 N	124°-44'.3 E	"	"	"
13	"	05°-37'.0 N	124°-44'.0 E	"	"	"
14	"	05°-38'.5 N	124°-42'.8 E	"	"	"
15	"	05°-36'.6 N	124°-40'.0 E	"	"	"
16	"	05°-36'.8 N	124°-39'.8 E	"	"	"
17	"	05°-34'.7 N	124°-38'.7 E	"	"	"
18	"	05°-33'.6 N	124°-38'.5 E	"	"	"
19	"	05°-33'.4 N	124°-36'.9 E	"	"	"
20	"	05°-31'.8 N	124°-34'.1 E	"	"	"
21	"	05°-29'.7 N	124°-30'.5 E	"	"	"
22	"	05°-33'.4 N	124°-28'.1 E	"	315°	St.01 - St.02
23	"	05°-33'.5 N	124°-28'.0 E	"	"	"
24	"	05°-34'.5 N	124°-26'.9 E	"	"	"
25	"	05°-38'.6 N	124°-23'.2 E	"	"	"
26	"	05°-40'.2 N	124°-22'.7 E	"	"	"
27	"	05°-40'.6 N	124°-20'.9 E	"	"	"
28	"	05°-43'.5 N	124°-18'.8 E	"	"	"
29	"	05°-43'.3 N	124°-16'.2 E	"	"	"
30	"	05°-43'.4 N	124°-15'.2 E	"	"	"
31	"	05°-46'.0 N	124°-16'.2 E	"	"	"
32	20/09/2007	06°-00'.9 N	123°-58'.2 E	"	313°	St.03 - St.04
33	"	06°-05'.8 N	123°-52'.2 E	"	"	"
34	"	06°-06'.3 N	123°-51'.1 E	"	"	"
35	"	06°-17'.6 N	123°-38'.5 E	"	318°	St.04 - St.05
36	"	06°-20'.2 N	123°-38'.6 E	"	"	"
37	"	06°-21'.1 N	123°-36'.9 E	"	"	"
38	"	06°-23'.2 N	123°-35'.4 E	"	"	"
39	"	06°-24'.3 N	123°-33'.9 E	"	"	"
40	"	06°-29'.5 N	123°-33'.7 E	"	"	"
41	"	06°-30'.7 N	123°-24'.9 E	"	270°	St.05 - St.06
42	"	06°-32'.6 N	123°-24'.5 E	"	"	"
43	"	06°-30'.7 N	123°-21'.7 E	"	"	"
44	"	06°-32'.0 N	123°-20'.8 E	"	"	"
45	"	06°-29'.4 N	123°-20'.4 E	"	"	"
46	"	06°-25'.4 N	123°-00'.7 E	"	180°	St.06 - St.07
47	"	06°-17'.6 N	123°-01'.5 E	"	"	"
48	21/09/2007	06°-17'.2 N	123°-00'.9 E	"	090°	St.07 - St.08
49	"	06°-16'.9 N	123°-02'.7 E	"	"	"
50	"	06°-14'.7 N	123°-04'.2 E	"	"	"
51	"	06°-16'.1 N	123°-07'.6 E	"	"	"
52	"	06°-14'.0 N	123°-07'.8 E	"	"	"
53	"	06°-14'.8 N	123°-23'.5 E	"	"	"
54	"	06°-09'.0 N	123°-29'.2 E	"	180°	St.08 - St.09
55	"	06°-06'.5 N	123°-29'.7 E	"	"	"
56	"	06°-05'.3 N	123°-29'.3 E	"	"	"
57	"	06°-02'.8 N	123°-30'.4 E	"	"	"
58	"	06°-01'.80 N	123°-30'.4 E	"	"	"
59	"	06°-00'.4 N	123°-29'.0 E	"	"	"
60	"	05°-59'.8 N	123°-29'.0 E	"	"	"
61	"	06°-01'.5 N	123°-28'.6 E	"	268°	St.09 - St.10
62	"	06°-01'.1 N	123°-27'.0 E	"	"	"
63	"	06°-01'.5 N	123°-23'.6 E	"	"	"

64	"	06°-00'.7 N	123°-21'.8 E	"	"	"
65	22/09/2007	05°-45'.1 N	122°-47'.5 E	"	088°	St.12 - St.13
66	"	05°-44'.8 N	122°-49'.8 E	"	"	"
67	"	05°-46'.1 N	122°-49'.9 E	"	"	"
68	"	05°-45'.5 N	122°-52'.0 E	"	"	"
69	"	05°-42'.8 N	122°-55'.4 E	"	"	"
70	"	05°-45'.2 N	123°-06'.4 E	"	090°	St.13 - St.14
71	"	05°-44'.6 N	123°-12'.4 E	"	"	"
72	"	05°-43'.2 N	123°-15'.9 E	"	"	"
73	"	05°-45'.4 N	123°-17'.6 E	"	"	"
74	"	05°-43'.8 N	123°-23'.5 E	"	"	"
75	"	05°-46'.5 N	123°-26'.7 E	"	"	"
76	"	05°-46'.6 N	123°-27'.5 E	"	"	"
77	"	05°-46'.5 N	123°-28'.1 E	"	"	"
78	"	05°-46'.4 N	123°-28'.4 E	"	"	"
79	"	05°-46'.1 N	123°-29'.3 E	"	"	"
80	"	05°-44'.8 N	123°-31'.7 E	"	"	St.14 - St.15
81	"	05°-46'.3 N	123°-34'.1 E	"	"	"
82	"	05°-46'.4 N	123°-36'.9 E	"	"	"
83	"	05°-42'.8 N	123°-38'.4 E	"	"	"
84	"	05°-45'.2 N	123°-39'.1 E	"	"	"
85	"	05°-42'.8 N	123°-40'.4 E	"	"	"
86	"	05°-44'.2 N	123°-41'.8 E	"	"	"
87	"	05°-45'.1 N	123°-43'.1 E	"	"	"
88	"	05°-43'.9 N	123°-44'.0 E	"	"	"
89	"	05°-44'.6 N	123°-44'.8 E	"	"	"
90	"	05°-47'.0 N	123°-45'.5 E	"	"	"
91	"	05°-45'.3 N	123°-48'.2 E	"	"	"
92	"	05°-45'.9 N	123°-49'.3 E	"	"	"
93	"	05°-42'.7 N	123°-49'.8 E	"	"	"
94	"	05°-43'.6 N	123°-52'.7 E	"	"	"
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97	"	05°-47'.4 N	123°-54'.0 E	"	"	"
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103	"	05°-45'.2 N	123°-58'.8 E	"	"	"
104	"	05°-43'.5 N	123°-59'.5 E	"	"	"
105	23/09/2007	05°-50'.5 N	124°-03'.8 E	"		Recoard during
106	"	05°-50'.2 N	124°-03'.1 E	"		Drifting at St.15 &
107	"	05°-49'.7 N	124°-01'.8 E	"		before proceeded
108	"	05°-48'.0 N	124°-03'.2 E	"		to St.15
109	"	05°-49'.2 N	123°-59'.4 E	"		
110	"	05°-45'.0 N	124°-01'.6 E	"		
111	"	05°-44'.6 N	124°-00'.3 E	"		
112	"	05°-45'.4 N	123°-57'.6 E	"		
113	"	05°-45'.6 N	124°-01'.4 E	"	178°	St.15 - St.17
114	"	05°-45'.2 N	124°-01'.1 E	"	"	"
115	"	05°-44'.6 N	124°-00'.9 E	"	"	"
116	"	05°-45'.8 N	124°-02'.6 E	"	"	"
117	"	05°-43'.7 N	123°-59'.9 E	"	"	"
118	"	05°-43'.6 N	123°-59'.6 E	"	"	"
119	"	05°-43'.4 N	123°-59'.8 E	"	"	"
120	"	05°-43'.2 N	123°-59'.9 E	"	"	"
121	"	05°-43'.3 N	124°-03'.2 E	"	"	"
122	"	05°-43'.7 N	124°-02'.5 E	"	"	"
123	"	05°-41'.8 N	124°-02'.8 E	"	"	"
124	"	05°-41'.4 N	124°-00'.2 E	"	"	"
125	"	05°-39'.8 N	123°-59'.6 E	"	"	"
126	"	05°-40'.7 N	123°-58'.6 E	"	"	"
127	"	05°-38'.9 N	123°-58'.8 E	"	"	"
128	"	05°-38'.6 N	124°-01'.4 E	"	"	"
129	"	05°-36'.4 N	123°-56'.5 E	"	"	"
130	"	05°-39'.0 N	123°-56'.5 E	"	"	"

131	"	05°-38'.2 N	123°-56'.3 E	"	"	"
132	"	05°-32'.9 N	123°-59'.0 E	"	"	"
133	"	05°-30'.0 N	123°-59'.9 E	"	"	"
134	"	05°-30'.0 N	124°-59'.8 E	"	269°	St.17 - St.18
135	"	05°-29'.9 N	123°-55'.4 E	"	"	"
136	"	05°-31'.7 N	123°-54'.4 E	"	"	"
137	"	05°-31'.5 N	123°-53'.7 E	"	"	"
138	"	05°-32'.0 N	123°-50'.3 E	"	"	"
139	"	05°-29'.5 N	123°-44'.1 E	"	"	"
140	"	05°-31'.3 N	123°-43'.8 E	"	"	"
141	"	05°-29'.3 N	123°-41'.1 E	"	"	"
142	"	05°-29'.7 N	123°-38'.9 E	"	"	"
143	"	05°-30'.4 N	123°-23'.4 E	"	269°	St.18 - St.19
144	"	05°-33'.0 N	123°-09'.1 E	"	"	"
145	24/09/2007	05°-28'.4 N	122°-27'.9 E	"	175°	St.20 - St.21
146	"	05°-25'.6 N	122°-27'.2 E	"	"	"
147	"	05°-23'.3 N	122°-29'.7 E	"	"	"
148	"	05°-20'.9 N	122°-27'.9 E	"	"	"
149	"	05°-21'.9 N	122°-31'.6 E	"	"	"
150	"	05°-18'.5 N	122°-28'.4 E	"	"	"
151	"	05°-16'.5 N	122°-27'.6 E	"	"	"
152	"	05°-17'.3 N	122°-40'.2 E	"	090°	St.21 - St.22
153	"	05°-15'.8 N	122°-40'.5 E	"	"	"
154	"	05°-13'.7 N	122°-42'.1 E	"	"	"
155	"	05°-11'.7 N	122°-49'.4 E	"	"	"
156	"	05°-14'.5 N	122°-51'.2 E	"	"	"
157	"	05°-15'.5 N	122°-57'.2 E	"	"	"
158	"	05°-15'.7 N	123°-05'.3 E	"	"	"
159	"	05°-13'.8 N	123°-05'.8 E	"	"	"
160	"	05°-12'.8 N	123°-10'.9 E	"	"	"
161	"	05°-16'.6 N	123°-13'.2 E	"	"	"
162	"	05°-15'.1 N	123°-15'.6 E	"	"	"
163	"	05°-18'.4 N	123°-16'.6 E	"	"	"
164	"	05°-12'.4 N	123°-17'.5 E	"	"	"
165	"	05°-15'.8 N	123°-19'.9 E	"	"	"
166	"	05°-12'.0 N	123°-20'.2 E	"	"	"
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169	"	05°-16'.1 N	123°-25'.1 E	"	"	"
170	"	05°-11'.1 N	123°-26'.1 E	"	"	"
171	"	05°-16'.0 N	123°-27'.0 E	"	"	"
172	"	05°-12'.8 N	123°-27'.1 E	"	"	"
173	"	05°-12'.4 N	123°-27'.2 E	"	"	"
174	"	05°-15'.7 N	123°-31'.6 E	"	"	"
175	"	05°-18'.3 N	123°-32'.1 E	"	092°	St.22 - St.22A
176	"	05°-14'.4 N	123°-35'.1 E	"	"	"
177	"	05°-13'.6 N	123°-38'.7 E	"	"	"
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180	"	05°-13'.1 N	123°-44'.9 E	"	"	"
181	"	05°-17'.7 N	123°-48'.0 E	"	"	"
182	"	05°-13'.9 N	123°-49'.3 E	"	"	"
183	"	05°-17'.2 N	123°-49'.9 E	"	"	Drifting at St.22A
184	25/09/2007	05°-22'.6 N	123°-52'.6 E	"	119°	Drifting - St.22A
185	"	05°-18'.6 N	123°-53'.1 E	"	"	"
186	"	05°-18'.2 N	123°-54'.7 E	"	"	"
187	"	05°-14'.8 N	123°-59'.0 E	"	"	"
188	"	05°-16'.5 N	123°-56'.9 E	"	"	"
189	"	05°-11'.4 N	123°-58'.2 E	"	"	"
190	"	05°-14'.8 N	123°-54'.7 E	"	088°	St.22A - St.23
191	"	05°-15'.6 N	124°-02'.3 E	"	"	"
192	"	05°-15'.5 N	124°-05'.5 E	"	"	"
193	"	05°-14'.0 N	124°-06'.7 E	"	"	"
194	"	05°-15'.8 N	124°-07'.6 E	"	"	"
195	"	05°-13'.1 N	124°-08'.5 E	"	"	"
196	"	05°-15'.5 N	124°-10'.4 E	"	"	"
197	"	05°-13'.2 N	124°-10'.0 E	"	"	"

198	"	05°-14'.1 N	124°-12'.5 E	"	"	"
199	"	05°-15'.2 N	124°-12'.2 E	"	"	"
200	"	05°-16'.8 N	124°-13'.7 E	"	"	"
201	"	05°-15'.5 N	124°-14'.6 E	"	"	"
202	"	05°-16'.2 N	124°-16'.0 E	"	"	"
203	"	05°-17'.4 N	124°-15'.3 E	"	"	"
204	"	05°-18'.2 N	124°-16'.3 E	"	"	"
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211	"	05°-13'.3 N	124°-28'.9 E	"	"	"
212	"	05°-15'.4 N	124°-29'.7 E	"	"	"
213	"	05°-13'.4 N	124°-30'.1 E	"	"	"
214	"	05°-16'.0 N	124°-32'.7 E	"	045°	St.23 - General Santos
215	"	05°-17'.2 N	124°-34'.6 E	"	"	"
216	"	05°-21'.5 N	124°-36'.6 E	"	"	"
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220	"	05°-23'.6 N	124°-39'.0 E	"	"	"
221	"	05°-26'.8 N	124°-41'.5 E	"	"	"
222	"	05°-27'.2 N	124°-42'.7 E	"	"	"
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232	"	05°-34'.2 N	124°-50'.2 E	"	"	"
233	"	05°-34'.7 N	124°-51'.8 E	"	"	"
234	"	05°-36'.1 N	124°-51'.5 E	"	"	"
235	"	05°-34'.2 N	124°-53'.9 E	"	"	"
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242	"	05°-39'.4 N	124°-53'.1 E	"	"	"
243	"	05°-38'.3 N	124°-54'.6 E	"	"	"
244	"	05°-40'.2 N	124°-53'.0 E	"	"	"
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247	"	05°-40'.7 N	124°-54'.9 E	"	"	"
248	"	05°-40'.5 N	124°-56'.1 E	"	"	"
249	"	05°-40'.5 N	124°-57'.3 E	"	"	"
250	"	05°-40'.3 N	124°-57'.3 E	"	"	"
251	"	05°-41'.5 N	124°-57'.0 E	"	"	"
252	"	05°-41'.0 N	124°-58'.4 E	"	"	"
253	"	05°-42'.8 N	124°-58'.9 E	"	"	"
254	"	05°-41'.5 N	124°-59'.1 E	"	"	"
255	"	05°-42'.0 N	124°-59'.0 E	"	"	"
256	"	05°-44'.0 N	124°-59'.8 E	"	"	"
257	"	05°-43'.2 N	125°-01'.2 E	"	"	"
258	"	05°-43'.4 N	125°-01'.6 E	"	"	"
259	"	05°-43'.5 N	125°-01'.3 E	"	"	"
260	"	05°-45'.5 N	125°-00'.6 E	"	"	"
261	"	05°-44'.9 N	125°-01'.4 E	"	"	"
262	27/09/2007	05°-12'.2 N	124°-32'.7 E	Drum	090°	St.23 - St.24
263	"	05°-17'.3 N	124°-34'.5 E	"	"	"
264	"	05°-18'.3 N	124°-36'.8 E	"	"	"

265	"	05°-12'.5 N	124°-43'.4 E	"	"	"
266	"	05°-13'.8 N	124°-54'.1 E	"	"	"
267	"	05°-13'.8 N	124°-54'.7 E	"	"	"
268	28/09/2007	04°-59'.7 N	124°-39'.9 E	Drum	272°	St.25 - St.26
269	"	04°-59'.8 N	124°-34'.0 E	"	"	"
270	"	04°-59'.9 N	124°-14'.9 E	Drum	270°	St.26 - St.27
271	"	05°-00'.4 N	124°-12'.4 E	"	"	"
272	"	04°-59'.8 N	124°-05'.1 E	"	"	"
273	29/09/2007	05°-01'.1 N	123°-23'.6 E	Drum	270°	St.28 - St.29
274	"	05°-00'.1 N	123°-21'.6 E	"	"	"
275	"	04°-58'.7 N	123°-15'.9 E	"	"	"
276	"	05°-00'.4 N	123°-16'.2 E	"	"	"
277	"	05°-01'.1 N	123°-16'.0 E	"	"	"
278	"	05°-00'.9 N	123°-10'.5 E	"	"	"
279	30/09/2007	05°-00'.7 N	122°-13'.3 E	Drum	270°	St.30 - St.31
280	"	05°-01'.3 N	122°-12'.0 E	"	"	"
281	"	05°-00'.9 N	122°-01'.7 E	"	"	"
282	"	05°-01'.3 N	122°-53'.3 E	"	"	"
283	"	05°-01'.4 N	122°-32'.2 E	"	"	"
284	01/10/2007	05°-01'.4 N	122°-56'.8 E	Drum	090°	St.29 - St.28
285	"	04°-58'.8 N	123°-02'.1 E	"	"	"
286	"	05°-01'.8 N	123°-10'.7 E	"	"	"
287	"	04°-59'.0 N	123°-15'.9 E	"	"	"
288	"	05°-00'.6 N	123°-16'.1 E	"	"	"
289	"	04°-59'.9 N	123°-18'.2 E	"	"	"
290	"	04°-58'.5 N	123°-22'.4 E	"	"	"
291	"	05°-00'.5 N	123°-21'.7 E	"	"	"
292	"	05°-00'.9 N	123°-23'.8 E	"	"	"
293	"	05°-01'.2 N	123°-24'.9 E	"	"	"
294	"	05°-00'.2 N	123°-27'.3 E	"	"	"
295	"	05°-02'.1 N	123°-24'.8 E	Drum	090°	St.28 - St.27
296	"	04°-58'.1 N	123°-37'.2 E	"	"	"
297	"	04°-59'.2 N	123°-38'.2 E	"	"	"
298	"	05°-01'.4 N	123°-38'.8 E	"	"	"
299	"	05°-00'.0 N	123°-40'.7 E	"	"	"
300	"	04°-58'.8 N	123°-42'.2 E	"	"	"
301	"	04°-58'.4 N	123°-45'.1 E	"	"	"
302	"	05°-00'.2 N	123°-48'.5 E	"	"	"
303	"	04°-57'.2 N	123°-51'.7 E	"	"	"
304	"	05°-00'.5 N	123°-52'.9 E	"	"	"
305	"	04°-59'.1 N	123°-53'.2 E	"	"	"
306	"	05°-00'.1 N	123°-57'.1 E	"	"	"
307	"	04°-57'.9 N	123°-52'.9 E	"	"	"
308	"	04°-59'.9 N	124°-00'.9 E	"	"	"
309	"	05°-00'.7 N	124°-01'.5 E	"	"	"
310	01/10/2007	05°-04'.3 N	123°-56'.6 E	Drum	060°	St.27 - General Santos.
311	"	05°-04'.1 N	123°-59'.1 E	"	"	"
312	"	05°-03'.9 N	123°-59'.9 E	"	"	"
313	"	05°-04'.0 N	124°-02'.0 E	"	"	"
314	"	05°-07'.4 N	124°-00'.9 E	"	"	"
315	"	05°-07'.6 N	124°-01'.3 E	"	"	"
316	"	05°-07'.7 N	124°-02'.9 E	"	"	"
317	"	05°-08'.5 N	124°-03'.6 E	"	"	"
318	"	05°-06'.7 N	124°-06'.2 E	"	"	"
319	"	05°-08'.9 N	124°-06'.0 E	"	060°	"
320	"	05°-11'.8 N	124°-06'.8 E	"	"	"
321	"	05°-11'.8 N	124°-07'.4 E	"	"	"
322	"	05°-11'.7 N	124°-10'.2 E	"	"	"
323	"	05°-10'.9 N	124°-12'.0 E	"	"	"
324	"	05°-13'.4 N	124°-12'.5 E	"	"	"
325	"	05°-14'.6 N	124°-12'.4 E	"	"	"
326	"	05°-14'.4 N	124°-15'.0 E	"	"	"
327	"	05°-16'.2 N	124°-13'.8 E	"	"	"
328	"	05°-15'.2 N	124°-16'.4 E	"	"	"
329	"	05°-16'.5 N	124°-15'.5 E	"	"	"
330	"	05°-16'.3 N	124°-19'.7 E	"	"	"
331	"	05°-18'.0 N	124°-17'.1 E	"	"	"

332	"	05°-19'.2 N	124°-22'.5 E	"	"	"
333	"	05°-22'.3 N	124°-25'.8 E	"	"	"
334	"	05°-24'.6 N	124°-26'.6 E	"	"	"
335	"	05°-22'.8 N	124°-28'.8 E	"	"	"
336	"	05°-27'.0 N	124°-30'.5 E	"	"	"
337	"	05°-26'.1 N	124°-32'.9 E	"	"	"
338	"	05°-25'.2 N	124°-33'.5 E	"	"	"
339	"	05°-27'.2 N	124°-34'.1 E	"	"	"
340	"	05°-29'.8 N	124°-33'.3 E	"	"	"
341	"	05°-27'.9 N	124°-35'.8 E	"	"	"
342	"	05°-29'.0 N	124°-37'.9 E	"	"	"
343	"	05°-33'.2 N	124°-37'.7 E	"	"	"
344	"	05°-32'.6 N	124°-38'.2 E	"	"	"
345	"	05°-32'.1 N	124°-40'.9 E	"	"	"
346	"	05°-33'.3 N	124°-41'.6 E	"	"	"
347	"	05°-35'.1 N	124°-43'.3 E	"	"	"
348	"	05°-37'.0 N	124°-47'.4 E	"	"	"
349	"	05°-37'.7 N	124°-48'.0 E	"	"	"
350	"	05°-38'.0 N	124°-48'.2 E	"	"	"
351	"	05°-36'.4 N	124°-49'.1 E	"	"	"
352	"	05°-39'.7 N	124°-51'.1 E	"	"	"
353	"	05°-40'.1 N	124°-51'.1 E	"	"	"
354	"	05°-37'.5 N	124°-52'.2 E	"	"	"
355	"	05°-41'.8 N	124°-51'.3 E	"	"	"
356	"	05°-41'.7 N	124°-53'.3 E	"	"	"
357	"	05°-40'.9 N	124°-53'.3 E	"	"	"
358	"	05°-39'.2 N	124°-54'.6 E	"	"	"
359	"	05°-40'.8 N	124°-53'.0 E	"	"	"
360	"	05°-42'.5 N	124°-53'.4 E	"	"	"
361	"	05°-43'.7 N	124°-54'.7 E	"	"	"
362	"	05°-41'.1 N	124°-56'.2 E	"	"	"
363	"	05°-44'.2 N	124°-55'.9 E	"	"	"
364	"	05°-44'.9 N	124°-55'.8 E	"	"	"
365	"	05°-40'.8 N	124°-57'.7 E	"	"	"
366	"	05°-45'.9 N	124°-55'.4 E	"	"	"
367	"	05°-43'.0 N	124°-57'.9 E	"	"	"
368	"	05°-42'.8 N	124°-59'.3 E	"	"	"