Overview of the Kanmon Kaikyo 【関門海峡の概要】

	【Introduction】	【はじめに】
1	The Kanmon Kaikyo are located in the most western part of the Seto Inland Sea between Honshu and Kyushu, and extend over a distance of 15 nautical miles. They function as a key route for marine traffic between the Japan Sea and the Seto Inland Sea. Kanmon Port is located in the Straits. In the port area, the Act on Port Regulations' traffic rules are followed. Additionally, this Act on Port Regulations designates which passages will be used for entry and which for departure.	関門海峡は、本州と九州を隔てる全長約15海里の海峡で、瀬戸内海の最西部に位置し、日本海と瀬戸内海を結ぶ海上交通の要衝です。海峡には港則法が適用される関門港があり、航路が定められています。
2	The Straits form an S shape, with restricted vision ahead, and the navigable width varies from one nautical mile down to approximately 500 meters at Hayatomo Seto, one of its narrowest parts. Tidal currents in the waterway are strong, and this sector is one of the few difficult waterways of Japan.	海峡は大きくＳ字型に湾曲して見通しが悪く、可航幅は広いところで約１海里、最狭部の一つである早鞆瀬戸は幅約500mで潮流も強く、我が国有数の航海の難所です。
3	10 port districts (Ku in Japanese), 8 passages, and more than 200 quays are located in Kanmon Port.	海峡及びその周辺には、10の港区、8つの航路、200を超える岸壁が存在します。
4	As a gateway to the rapidly developing economies of East Asia such as China and South Korea, the port handles large volumes of overseas shipping, and approximately 560 vessels per day pass through the Straits.	また、発展が著しい中国・韓国などの東アジアへの玄関口として外国船の通航を含めた船舶の交通量は非常に多く、一日に約 560 隻の船舶が往来しています。
5	Together with many fishing boats working in these waters, these vessels form a complex congested traffic flow in the Straits, and maritime accidents are not uncommon. Considerable care is required when navigating the Kanmon Kaikyo.	これらの航行船に、海峡内で操業する漁船が相まって、船舶交通は輻輳し、交通流も複雑です。そのため海難も多く発生しており、航行に当たっては十分な注意が必要です。

6	To better enhance the safety of marine traffic in the Kanmon Kaikyo, the Japan Coast Guard has established the Kanmon Kaikyo Vessel Traffic Service Center（call name: Kanmon MARTIS）. The VTS Center is charged with 24-hour monitoring of shipping movements, collection and analysis of the necessary information for safe passage, and for providing navigational assistance.	この関門海峡の海上交通の安全を図るために海上保安庁は「関門海峡海上交通センター呼び出し名称かんもんマーチス」を設置し、24時間体制で船舶の動静監視、安全航行に必要な情報の収集・解析、航行援助等を行っています。
7	Vessels passing through the Kanmon Kaikyo are required to pay due attention to the geographical characteristics, passages, weather, and sea conditions in the Straits, and to follow the applicable ordinances such as the Act on Port Regulations and the navigational safety guidance provided.	関門海峡を通航する船舶は、当海峡の地理的特徴、航路、気象・海象等に十分注意すると共に、適用される港則法等の法令、航行安全指導等に従って航行しなければなりません。
8	This DVD was created with the aim to promote safe sailing by offering information which should be checked by Captains（Shipmasters）and by navigators when passing through the Kanmon Kaikyo. The DVD also gives other useful information relevant to this area. In this outline, topics such as weather and tidal characteristics in the Kanmon Kaikyo, behaviour of fishing boats in the Straits, cautions when passing through the Straits at night, applicable regulations that require attention, and management of bridge resources are explained. In the videos for east-bound and west-bound passages, explanations are given according to the actual sailing conditions in light of the surrounding environment.	この DVD は、船長及び航海士が関門海峡を通航する前に確認しておくべき内容や、通航する際に参考となる事柄について提供し、航行の安全に寄与する目的で作成したものです。 概要編では、海峡の気象・潮流の特徴、海峡内の漁船の動向、夜間航行における注意、特に注意すべき適用法令、ブリッジリソースマネジメントについて説明し、東航編及び西航編では、実際の航行状況にあわせて周囲の状況を確認しながら説明を加えています。

	【Weather and Tidal Characteristics in the Kanmon Kaikyo】	【関門海峡の気象・潮流の特徴】
9	Tidal flows in the Kanmon Kaikyo are rapid and complex around curves and bends in the passage. In Dannoura and Moji the westerly flows become the strongest at around the time of high water, and the easterly flows become the strongest at around the time of low water.	関門海峡の潮流は、速く、屈曲部ではその流れも複雑です。壇之浦及び門司のほぼ高潮時に西流が、低潮時に東流が最強となります。
10	It sometimes happens that the maximum tidal current in Hayatomo Seto, the narrowest part of the Kanmon Passage, is over 7 knots. Moreover, rates in excess of 10 knots can occur during spring tides. Caution is required.	最狭部の早鞆瀬戸は潮流が強く、流速が7ノットを超えることがあり、特に大潮の時には10 ノットに達することがあるので注意が必要です。
11	Easterly and westerly tidal flows occur regularly twice daily, and slack water at the center of the Hayatomo Seto lasts for no more than a few minutes.	東流・西流はほぼ規則正しく１日２回現れ、早鞆瀬戸中央部での憩流（けいりゅう）は、ほんの数分しかありません。
12	The maximum rate of tidal flow in the Hayatomo Seto is as shown in the diagram. The strong flow off Moji Saki is distributed from the characteristic tidal rips that occur in the middle of the Strait, funneling the rips to generate a dramatic increase in the rate of flow.	早鞆瀬戸の最強流速発生海域はこの図に示すとおりで、特に門司埼沖の強い流れは、この海域に特徴的に発生する潮目の航路中央よりに分布し、潮目を挟んで流速が著しく変化します。
13	The danger of grounding increases in the Hayatomo Seto when vessels are unable to stem the tide. This also introduces the dangers of risk of collision with following, approaching and crossing vessels.	早鞆瀬戸では潮流に抗しきれない場合、乗り揚げの危険が増すとともに、後続船や反航船との衝突の危険が高くなります。

14	In such cases, vessels passing through the Hayatomo Seto against the current are required to maintain a ground speed of at least 4 knots more than the rate of the current.	このため、潮流をさかのぼり早鞆瀬戸を航行しようとする汽船は、潮流の速度に４ノットを加えた速力以上の速力
15	At the Hayatomo Seto, both easterly and westerly flows impinge on the north side of the passage, and care is required to prevent being set off course.	また、早鞆瀬戸では東流・西流共に北側に圧流されるので注意が必要です。
16	The tidal current direction in the area from Hayatomo Seto to O Seto generally follows the middle of the fairway. Maximum velocity of the current in a spring tide may become over 7 knots.	早鞆瀬戸から大瀬戸では、潮流は、ほぼ航路に沿って流れ、大潮期には、最強流速が、７ノットを超えることがあります。
17	A counter-clockwise circulating flow develops in Moji District when flow in the Hayatomo Seto is westward. Caution is required when berthing and unberthing.	門司区では早鞆瀬戸が西流の間、反時計回りの還流が生じます。離着岸時には、注意が必要です。
18	At O Seto there is a tendency for tidal flows to impinge on the Moji side during easterly flows, and on the Kokura side during westerly flows.	大瀬戸では東流時には門司側へ、西流時には小倉側へ圧流される傾向があります。
19	Generally, vessels may be forced towards the shore or into the path of oncoming vessels in strong currents of these narrow straits. This tendency increases in areas where the tidal current is crossing the courses of vessels. Dangerous situations may occur with vessels frequently drifting off course to the south when passing through curves and bends at O Seto. This tendency is particularly strong at night because of the difficulty to accurately monitor and plot one's own position. Care is required.	総じて強い潮流がある場合は、圧流によって船位が偏位し、陸岸や反航船の進路に近付くことがあるため注意が必要です。この傾向は、特に潮流が進路と交差する水域で顕著となります。 大瀬戸の屈曲部を航行する際にしばしば航路を離れて南方に偏り、危険に陥ることがあります。特に夜間は自船の正確な位置が把握しづらいためその傾向が強くなります。

20	The Coast Guard has established three tidal current signal stations in the Kanmon Kaikyo. These have electronic signboards which display the current direction and rate of the tidal stream in the Hayatomo Seto. These tidal current signal stations are in the following positions and the names of them are as follows. 1）The Eastern entrance to the Kanmon Kaikyo, named He Saki tidal current signal station. 2）The narrowest section, named the Hinoyamashita tidal current signal station. 3）The Western entrance to the Kanmon Kaikyo, named the Daiba Hana tidal current signal station.	海上保安庁は、関門海峡に潮流信号所を設置し、通航船舶に対して電光表示板で早鞆瀬戸の現在の潮流情報を提供しています。信号所は海峡の東口の部埼潮流信号所、最狭部の火ノ山下潮流信号所、海峡西口の台場鼻潮流信号所の３箇所です。
21	The Kanmon Passage typically has 20 foggy days per year, and visibility may be restricted by fog, rain, or yellow dust from the beginning of spring through the rainy season（May and June）. These phenomena frequently occur from the early hours until dawn of a breezy day but dissipate by midday.	視界を制限する霧や黄砂に関して、関門海峡の年間の霧日数は約20日で、例年春先から梅雨時期にかけて霧や雨のため視界が制限される場合があります。微風の日の未明から日の出頃に発生することが多く、昼までには消滅することが多いといわれています。
22	Ship movements through the Kanmon Kaikyo may be stopped on the instructions of the Captain of Kanmon Port when the visibility is reduced to 500 meters or less. Vessels are then required to wait outside the Strait until visibility is restored.	関門航路の霧による通航禁止は、視程500m以下となった場合で、関門港長から指示がある場合は、船舶は視程が回復するまで航路外で待機しなければなりません。
23	Care is also required with yellow dust common in spring. Information relating to this dust is published jointly by the Ministry of the Environment and the Japan Meteorological Agency（http://www.jma.go.jp/en/kosa/）.	また、春に多いと言われている、黄砂の発生にも注意を払う必要があります。黄砂情報は、環境省と気象庁が共同でその発生に関するデータを公開しています。 (http://www.jma.go.jp/jp/kosa/)

	【Fishing Vessels in the Kanmon Kaikyo】	【関門海峡の漁船の動向】
24	Large numbers of fishing boats are present in the Hayatomo Seto and in the vicinity of O Seto, and this number is increased by many sport fishing boats, especially on public holidays. Care is required when passing through the passage under such conditions.	早鞆瀬戸、大瀬戸付近は漁船が多く、特に休日には多数の遊漁船も加わり、航行船舶は注意が必要です。
25	In the passage, it is dangerous for large ships to have to take avoiding actions in the midst of rapid tidal flows as these can result in uncontrolled situations because of the force of the current.	航路内では、大型船が漁船を避けようと急潮流のなか左右に大きく変針することはそれに伴う圧流に繋がり、操船困難となる場合があり危険です。
26	Transiting vessels are to maintain a sharp lookout, reduce speed as necessary and use the whistle as required.	見張りをしっかり行ない、速力を落とし、汽笛を吹鳴して注意を喚起しながら航行する方がよいでしょう。
27	The Kanmon Kaikyo VTS Center provides information on fishing boats in the Kanmon Kaikyo via VHF Radiotelephone, as well as by its websit (http://www6.kaiho.mlit.go.jp/kanmon/).	関門海峡海上交通センターでは国際 VHF、ホームページ等で操業漁船の情報を提供しています。
	【Cautions pertaining to Night Navigation in the Kanmon Kaikyo 】	【関門海峡の夜間航行における注意】
28	When passing through the Kanmon Kaikyo at night, recognition of navigation lights of vessels or the lights of navigation aids, may be hindered by lights of harbour facilities and by the city lights from Shimonoseki and Kitakyushu. Care is required.	夜間航行の際には、海峡の港湾施設や下関・北九州といった市街地等の陸岸の灯火により通航船舶及び航路標識の灯火視認が妨げられる場合があり、十分な注意が必要です。
29	Particularly in the vicinity of the Kanmon Bridge on the Shimonoseki side, lights on the shore interfere with recognition of lights on west-bound vessels, and lights on the shore between Moji and Kokura tend to interfere with recognition of lights on East-bound vessels between Yamazoko-no-Hana and Ganryu Shima.	特に関門橋付近の下関側陸上灯火は西航船の灯火の視認を妨げ、又、門司から小倉にかけての陸岸の灯火は、山底の鼻から巌流島沖の東航船の灯火の視認を妨げやすい。

	【Passage Through the Kanmon Kaikyo, and Traffic Regulations】	【関門海峡の交通法規と通航】
30	The Act on Port Regulations applies to Kanmon Port in Kanmon Kaikyo.	関門海峡の大部分を占める関門港では港則法の適用があります。
31	The Act on Port Regulations is a special set of regulations under the Act on Preventing Collisions at Sea, established to determine general requirements for marine traffic. This general law of the Act for Preventing Collisions at Sea applies unless otherwise provided for by special navigational regulations in the Act on Port Regulations.	港則法は船舶交通の一般原則を定めている海上衝突予防法の特別法であり、港則法で特別に定められている航法以外は、一般法の海上衝突予防法が適用されます。
32	In Kanmon Port, the Act on Port Regulations stipulates that: when vessels enter into or leave from or transit Kanmon Port, they shall use the designated passage; vessels shall not anchor in the passage; vessels in the Kanmon passage and No.2 Kanmon passage shall keep as near to the outer limit of the passage which lies on their starboard side as is safe and practicable.. Furthermore, in the Kanmon passage other than Hayatomo Seto Waterway, a vessel may overtake another vessel only if the following conditions are met: when a vessel being overtaken does not need to take any cooperative movement in order for an overtaking vessel to pass safely. when an overtaking vessel can keep out the way of any other vessels safely. In case of overtaking, an overtaking vessel shall give the designated signals. It should be noted, however, that as the Kanmon Kaikyo has curves, bends and fast tidal flows, great care is required of an overtaking vessel.	関門港においては、港則法により航路の航行義務、航路内投錨禁止、できる限り航路の右側を航行しなければならないことなどが定められています。 早鞆瀬戸水路では追い越しが禁止されていますが、追い越される船舶が自船を安全に通過させるための動作をとることを必要としないとき及び、自船が他の船舶の進路を安全に避けられるときには他船を追い越すことができます。 この場合、追い越す船舶は定められた汽笛信号を行う必要があります。 また、関門航路は航路が屈曲し潮流も早いことから、追い越す船舶は細心の注意が必要です。

33	From May 2012, the following revisions were made to the regulations: overtaking in the Hayatomo Seto Waterway, which is the narrowest sea area in Kanmon Kaikyo, is prohibited; and the speed that should be maintained, which is faster than the speed of tidal flows in the Hayatomo Seto, has been changed from at least 3 knots or more to 4 knots or more in adverse current conditions. Furthermore, showing of the route by using AIS and signal flags when navigating in Kanmon Port; areas that should not be entered by vessels of over 100 G/T leaving Tanoura District; and special navigational regulations with regard to the intersections of Kanmon Passage and other passages, are stipulated.	2012 年 5 月 1 日から関門海峡で最も狭い海域である早鞆瀬戸水路における追い越しが禁止されたほか、これまで 3 ノット以上とされていた早鞆瀬戸での潮流をさかのぼり航行する場合の速力の維持が４ノット以上に改正されました。 関門港では、港内を航行する場合、AIS 及び信号旗による進路の表示、田野浦区から出港する総トン数 100 トン以上の船舶の航路進入禁止区域があり、さらに関門航路とその他の航路交差部における特定航法も定められています。
34	In addition, vessels navigating in Kanmon Port must monitor International VHF Channel 16 and 13. Passenger vessels and ocean-going vessels of 300 G/T or more and domestic vessels of 500 G/T or more that are required to be equipped with an AIS must send the information of the destination appropriately. Furthermore, vessels of over 300 G/T must fully understand the rules related to the Act on Port Regulations before sailing as there are specific, applicable rules, such as for example when and where such vessels should hoist International Maritime Signal Flag Numeral pennant '1' (one) to indicate they have right of way over small craft.	また、港内を航行する船舶は、国際 VHF チャンネル 16及び13 を聴取するとともに、AIS の搭載が義務化されている外航旅客船、総トン数300トン以上の外航船及び総トン数 500 トン以上の内航船は、AIS を適切に運用して、目的地情報を送信する必要があります。 加えて総トン数300 トン以上の船舶は、それより小さい船舶に対する航法上の優先を表示するため国際信号旗「1」を掲げる等の特有の規則があるため、通航前に港則法に関する規則を十分に理解しておく必要があります。

35	In addition to the Act on Port Regulations, the Coast Guard in this area provides instructions on safe navigation in the Kanmon Kaikyo. It is important to have a full understanding of the Act on Port Regulations, the Act on Preventing Collisions at Sea and the instructions on safe navigation when passing through the Straits. This DVD does not refer to the details of sailing restrictions issued by the Captain of Kanmon Port when visibility is limited, nor measures against earthquakes, tsunami and typhoons. For information regarding these matters, see other materials such as the Kanmon Kaikyo Marine Guide.	関門海峡では航行の安全を図るため、管轄する海上保安庁が港則法以外にもさまざまな航行安全指導を行っており、海峡通過に当たっては、港則法、海上衝突予防法及び航行安全指導について理解を深めておくことが重要です。 この DVD では、視界制限状態における関門港長からの航行制限指示の詳細、地震津波対策及び台風対策については言及していません。それらについては、関門海峡マリンガイド等関係資料を参考にしてください。
	【Bridge Resource Management】	**【ブリッジリソースマネジメント】**
36	As described previously, safe navigation in the Kanmon Kaikyo is hindered by a number of factors. Maritime traffic in the Straits is very congested, the passage itself has bends, curves, and intersections; is subject to dramatic changes in weather and sea conditions; and is frequented by many fishing boats.	すでに述べたように、関門海峡は船舶交通が輻輳し、航路が屈曲、交差しており、気象・海象の変化も激しく、操業漁船も多いという、船舶の安全な航行を阻害する要因が多く存在します。
37	It is therefore necessary to prepare for appropriate resources for passage as well as to implement BRM（Bridge Resource Management）to ensure that information making the best use of the experience of the Master, navigator, and helmsman on the bridge is shared, and that the decision-making process achieves the most appropriate actions.	そのため通航には、適切なリソースを用意するとともに、船橋内の船長、航海士、操舵手がメンバーの経験を含めた情報を共有し、最も適切な行動を取るための意志決定プロセスを踏む BRM (Bridge Resource Management) を適切に実行することが必要です。
38	To achieve effective BRM, it is important to define clearly the role and priority of resources on the bridge, to facilitate effective communication for mutual verification of information, and to ensure that an error by an individual does not develop into an error chain that affects the entire Bridge Team.	効果的な BRM 実施のためには船橋内のリソースの役割と優先順位を明確にするとともに、効果的なコミュニケーションで各情報の相互チェックを行い、個人のエラーが船橋内全体のエラーへと発展することを防ぐことが重要です。

39	These measures ensure that the vessel's Captain is able to receive the appropriate information, and that he is able to recognize the situation and make the most appropriate decisions, and take the lead in actions to ensure safe operation of the vessel.	そのことによって操船者へ適切な情報が提供でき、操船者は、状況をよく認識できて最適な判断が行え、明確なリーダーシップにより行動して安全運航を図ることができます。
40	In practice, a competent Bridge Team will scan to port and starboard of the wheelhouse according to the area of the passage, and will be sufficiently aware of details of expected hazards and cautions before passing through the Straits.	具体的には、航行海域に応じて船橋内要員ソースに対して右舷・左舷の見張りの範囲を定め、予想される注意しなければならない状況について、海峡通過前に十分に説明しておく必要があります。
41	Furthermore, when passing through the Hayatomo Seto, noted for its strong tidal flows and limited space to maneuver, it is important that the Captain is able to obtain the necessary information on the speed of his vessel and on its horizontal displacement.	さらに潮流が強く、可航幅の狭い、早鞆瀬戸通過時には、自船の速力、横偏位について、船長が適切な情報を入手できる体制を整えておくことも重要です。
42	In particular, the role of bridge resources for the following areas of the passage must be clarified. • Verification of entry to, and exit from, Tanoura District. • Verification of speed and horizontal displacement in the vicinity of Hayatomo Seto. • Verification of entry to, and exit from, Moji District and Shimonoseki District. • Verification of horizontal displacement in the vicinity of O Seto, and of vessels approaching from behind curves and bends. • Verification of entry to, and exit from, Kokura District, Wakamatsu District, etc.. • Verification of movement of vessels at the intersection of Kanmon Passage and No.2 Kanmon Passage. • Verification of movement of vessels in the vicinity of the eastern and western exits of the passage.	特に次の海域における船橋内リソースの役割を明確にしておかなければなりません。 ・田野浦区への船舶の出入確認 ・早鞆瀬戸付近での速力、横偏位の確認 ・門司区・下関区への船舶の出入確認 ・大瀬戸付近での横偏位、湾曲部の陰から出てくる船舶の確認 ・小倉区・若松区等への船舶の出入確認 ・関門航路と関門第二航路合流部の船舶の動向確認 ・航路の西口・東口付近での船舶の動向確認

43	Furthermore when vessels communicate in English with other ships or with the Japan Coast Guard, International Maritime Organization Standard Marine Communication Phrases shall be used. Communications shall be concise and clear.	更に、他船又は海上保安庁と英語で通信するときは、IMO 標準海事通信用語集を使用し、連絡は明確であり、理解できることが必要です。
44	In Kanmon Port is a compulsory pilotage area and, as such, vessels shown in this table, including vessels of 10,000 G/T or more, are required to have a pilot aboard when passing through the Kanmon Kaikyo.	関門港は強制水先区となっているため、関門海峡を通過する総トン数一万トン以上の船舶を含め、この表に示す船舶は水先人を乗船させなければなりません。
45	When a pilot embarks, the Captain is required to use a Pilot Card which gives information about the ship's propellers, the rudder, and the vessel handling characteristics, as per regular Bridge Resource Management practice. The Captain must, in turn, receive from the Pilot an Information Card and a Passage Plan, and both Passage Plans must be compared and agreed upon. Furthermore, sharing of information is vital to ensure the safe navigation of the Kanmon Kaikyo by the vessel. The entire Bridge Team must be present to absorb all information pertinent to the safety of the vessel and any changes made known to all members. Only then will the Captain welcome the Pilot as a member of the Bridge Team and hand over the con to the Pilot.	水先人乗船時には、船長はパイロットカードを使用して水先人に対して自船情報を提示するとともに、推進器、舵、操船の特徴等についても情報交換を行わなければなりません。また、水先人からインフォメーションカード、パッセージプランの提示を受け、関門海峡の安全な航行に必要な情報を船橋内の全ての人的リソースが共有し、水先人を含めた適切な BRM を運用しなければなりません。
	This concludes the description of the Outline of the Kanmon Kaikyo.	以上が、関門海峡の概要です。