

Annex 1: On Council Regulation fixing for 2014 the fishing opportunities for certain fish stocks and groups of fish stocks, which are not subject to international negotiations or agreements (COM(2013)753)

At the upcoming meeting on 16–17 December, the Fisheries Council will agree on fishing opportunities for 2014 for EU stocks in Atlantic waters. Due to the large number of stocks covered by this proposal, we only provide detailed recommendations on a few species which in our opinion require particular attention.

OVERALL COMMENTS ON THE PROPOSAL

We would like to state our general support for the Commission's proposal. The proposed fishing opportunities are based on management plans where in place, on scientific advice for the MSY approach when provided, and reduced for stocks of which the status relative to (proxies of) MSY is unknown. Nevertheless, in several cases the Commission's proposal clearly disregards scientific advice, which we strongly disagree with.

The situation of European fish stocks seems to be improving slowly. Fewer stocks are outside safe biological limits, and a lower percentage of stocks are overfished. However, the number of overfished stocks remains high in the Northeast Atlantic at 39 %, while in the Mediterranean and the Black Sea as much as 88 % of the stocks for which scientific data are available are classified as overfished. Considering the political agreement to restore and maintain populations of European fish stocks above biomass levels capable of producing maximum sustainable yield (MSY), an exploitation rate at MSY (F_{MSY}) has to be reached by 2015 where possible, and by 2020 at the latest. For stocks where the exploitation rate already is at F_{MSY} , it should be maintained or further reduced. Adhering to these principles should further reduce the percentage of overfished stocks in EU waters over the coming years.

Recent ICES efforts on assessment methods using more and different kinds of data, has improved the scientific advice, providing the EU with more full assessments as well as new quantitative assessments. However, there is still a need for and an obligation to provide data under the current Data Collection Framework (DCF). The new quantitative assessment methods do not absolve Member States from their obligation to submit data. Data needs will continue to increase with the implementation of the discard ban over the coming years. This is already anticipated in the ICES advice, which for several stocks now include advice for total catches (including estimated discards) and total landings.

We also note that despite the improvements in scientific advice, the difference between the agreed TACs and the scientific advice on sustainable catch increased to 29 % compared to 2012, breaking a downward trend since 2008. Another positive trend that has been reversed is the number of stocks for which the advice is to reduce catches to the lowest possible level; it was decreasing until this year, but has now increased again from 8 to 11¹.

¹European Commission, 2013. Communication from the Commission to the Council concerning a consultation on fishing opportunities for 2014. COM(2013)319.

We advise the Ministers to stick to the political agreement in the reviewed Common Fishery Policy (CFP) reform and to follow the scientific advice that are in line with the CFP.

DETAILED SPECIES RECOMMENDATIONS

Cod (*Gadus morhua*)

The Spawning Stock Biomass (SSB) of several of the cod stocks covered by the proposal (COM(2013)753) is below the precautionary level, including stocks in the Irish Sea, West of Scotland and Kattegat. For these stocks, ICES has in recent years repeatedly recommended a total allowable catch (TAC) of zero.

Immediate challenges, particularly for these cod stocks, are the high levels of bycatch of juveniles and subsequent discarding in the cod trawl fisheries. Merely reducing the TAC will not sufficiently reduce mortality, as large amounts of cod are also caught in the haddock, whiting, plaice, sole and nephrops fisheries. When the annual quota for cod is exhausted, the discarding of cod is likely to increase. Complementary measures, such as mandatory use of the best available selective gears, real-time closures and closure of mixed fisheries as soon as one of the TACs has been taken up should be considered. As the development of discard ban plans are required under the new CFP and will gradually be implemented from the start of 2015, we urge decision-makers to proceed with this work and to collaborate with all stakeholders, particularly taking into account the experience and knowledge provided by the respective (Regional) Advisory Councils.

Cod in division IIIa East (Kattegat)

This stock has seen a fivefold reduction in SSB since the 1970s and has remained at a historical low since 2000, despite the existence of a long-term management plan adopted in 2005². The management measures in the plan and the implementation of them therefore appear to be largely ineffective (ICES, 2012³). The ICES considers the SSB to be far below the limit for risk of depletion and classifies the stock as suffering from reduced reproductive capacity. Total landings are estimated to be as high as ten times the allocated TAC⁴.

Based on the above, the ICES advice for 2014 is to prohibit directed catches and to minimise bycatch and discards. Moreover, tagging studies conducted in 2006 suggest that the Kattegat may function as a nursery area for North Sea cod, further adding to the reasons to drastically lower the fishing pressure in this area⁵. The Scientific, Technical and Economic Committee for Fisheries (STECF) agrees with the ICES advice⁶.

The Commission states that this stock continues to be in a poor situation and therefore should be subject to the 20 % reduction in TAC stipulated by the management plan. While proposing a zero TAC for this stock in 2012 and a TAC of 100 tonnes in 2013, this year the Commission proposes a TAC of 80 tonnes exclusively for bycatch and states that no directed fisheries should be allowed.

²Council Regulation (EC) No 1342/2008, repealing Regulation (EC) No 423/2004.

³ICES Advice 2012, Book 6, Chapter 6.4.2, pg 3.

⁴ICES Advice 2012, Book 6, Chapter 6.4.2, pg 6 and 8, tables 6.4.1.1 and 6.4.1.3.

⁵Svedäng, H., Righton, D. and P. Jonsson (2006). *Return migrations of Atlantic cod (Gadus morhua L.) to the North Sea evidenced by archival tagging of cod off the eastern Skagerrak coast*. ICES CM 2006/Q: 06.

⁶Scientific, Technical and Economic Committee for Fisheries (STECF). Review of scientific advice for 2014, Part 2 (STECF-13-11), pg 39.

Considering the state of the Kattegat cod stock and the very high levels of unaccounted removals of cod here, we believe it should be mandatory to use the most selective fishing gear available, ensuring little or no bycatch of cod, and that no fishing should be allowed in the currently partially protected spawning grounds and nursery areas.

Considering the critical state of the stock, we urge Ministers to stick to the existing political agreements to follow scientific advice and to set the TAC for 2014 at zero for Kattegat cod (area IIIa East). In addition, we call on Ministers to make the use of more selective gear, such as grids in trawls targeting nephrops, mandatory. Any fisheries failing to reduce bycatch of cod to a minimum level should be closed until further measures are agreed.

Cod in division VIIa (Irish Sea)

According to ICES this stock has seen a tenfold reduction in SSB since the 1980s and, when performing an evaluation in 2009, ICES found the management plan to be inconsistent with the precautionary approach⁷. Since 2000, ICES has advised that this fishery should be closed until a substantial improvement has been documented.

It is not, according to ICES, possible to identify any other catch option for this stock in 2014 that is compatible with the MSY approach. The advice is the same as for 2013, that no targeted cod fishing should be allowed, while bycatch of cod should be reduced to the lowest possible level⁸. STECF agrees with the ICES advice⁹, indicating that stricter measures than a 25 % reduction in fishing mortality are warranted under the recovery plan. This advice is not endorsed by the Commission, which proposes a TAC of 228 tonnes for 2014.

We urge Ministers to close the targeted cod fisheries in the Irish Sea (division VIIa) in 2014. Any fishery taking cod as bycatch also needs to be closed, unless measures are agreed to reduce bycatch and discarding of cod. We therefore ask Ministers to make the use of selective gears, such as the eliminator trawl for fisheries targeting whitefish and sorting grids in trawls targeting nephrops, mandatory in this area.

Cod in divisions VIa (West Scotland) and Vb_{1&2} (Faroe Plateau and Faroe Bank)

The ICES provides separate advice for each of the three cod stocks in these areas, while the EU is managing them as a single unit covered by one TAC. Cod in area VIa is mostly caught as bycatch in other fisheries, while there are directed fisheries in area Vb.

In **VIa (West Scotland)**, the SSB has increased from an all-time low in recent years, but is still far below the estimated limit for ‘risk of depletion’¹⁰. The 2005 and 2008 year classes are considered to be more abundant than the recent average, but still well below the historical average. ICES have stated that it is important to protect the 2008 year class to ensure that it contributes to rebuilding the stock¹¹. Nevertheless, ICES indicates that large quantities of this year class were discarded in 2011¹² and concludes that the current management actions have not constrained catches nor increased the stock biomass¹³.

⁷ICES advice 2012, Book 5, Chapter 5.4.5, pg 1.

⁸ICES advice 2012, Book 5, Chapter 5.4.5, pg 3.

⁹Scientific, Technical and Economic Committee for Fisheries (STECF). Review of scientific advice for 2014, Part 2 (STECF-13-11), pg 147.

¹⁰ICES Advice 2013, Book 5, Chapter 5.4.3, pg 1.

¹¹ICES Advice 2011, Book 5, Chapter 5.4.3, pg 4.

¹²ICES Advice 2013, Book 5, Chapter 5.4.3, pg 4.

¹³ICES Advice 2013, Book 5, Chapter 5.4.3, pg 1.

ICES advises that any non-zero catch for this stock would be inconsistent with the precautionary approach¹⁴ and that catches would need to be reduced to the lowest possible level to be in accordance with the MSY approach¹⁵. Discard rates are high, representing 72 % of the total catch according to ICES¹⁶. STECF supports the ICES advice and notes that current management measures (a combination of TAC, area closures, technical measures and effort restrictions) do not control mortality levels within VIa¹⁷.

In **Vb₁ (Faroe Plateau)**, cod is mainly caught through the targeted longline fishery for cod and haddock, in the jigging fishery and as bycatch in the trawl fishery for saithe. There is no management plan in place for this stock, only an effort system with the aim of keeping fishing mortality at around 0.45, which is above the estimated precautionary level as well as the level consistent with the MSY approach.

The SSB of this stock is increasing after reaching a historical low in 2007 and is now estimated to be above the level of risk of depletion but below the precautionary level¹⁸. The ICES states that the stock is overfished in relation to both MSY and the precautionary approach but that a cod fishery could still be sustained. The advice is to reduce fishing mortality by 69 % in line with the MSY approach, which translates to a TAC of 3.6 tonnes, international waters included.

The cod stock in the **Vb₂ (Faroe Bank)** area has reached a very low level and, since 2008, ICES has consistently advised that this fishery should be closed¹⁹. However, a closure of the cod fishery is likely to lead to high levels of discarding, as cod is a common bycatch in other fisheries. It is therefore important to ensure that any fisheries in these areas which cannot demonstrate very low levels of bycatch are also closed.

The Commission's proposal is a zero TAC for 2014 for the entire management unit, including all three stocks.

Taking into account the poor state of these stocks, we strongly advise Ministers to follow the Commission's proposal and close the targeted cod fishery. We also urge Ministers to make the use of selective gears mandatory for fisheries targeting other species in this management unit, in order to minimise bycatch of cod. Moreover, we call on Ministers to advocate a better match between EU management areas and ICES areas. In this particular case, it is evident that some stocks are in a bad condition and fishing closures are needed, while others could still sustain low exploitation levels.

Haddock (*Melanogrammus aeglefinus*)

The Spawning Stock Biomass (SSB) of several of the haddock stocks covered by this proposal is below the precautionary level. Immediate challenges are the high levels of bycatch of juveniles and subsequent discarding in the mixed demersal trawl fisheries, particularly within the nephrops fisheries. Measures such as mandatory use of the best available selective gears should be considered.

¹⁴ICES Advice 2013, Book 5, Chapter 5.4.3, pg 4.

¹⁵ICES Advice 2013, Book 5, Chapter 5.4.3, pg 4.

¹⁶ICES Advice 2013, Book 5, Chapter 5.4.3, pg 2.

¹⁷Scientific, Technical and Economic Committee for Fisheries (STECF). Review of scientific advice for 2014, Part 2 (STECF-13-11), pg 116.

¹⁸ICES Advice 2013, Book 4, Chapter 4.4.1, pg 3.

¹⁹ICES Advice 2013, Book 4, Chapter 4.4.2, pg 1.

Haddock in divisions Vb (Faroe waters) and VIa (West of Scotland)

The SSB for the haddock stock in **Faroe waters (division Vb)** has decreased since 2003 and the stock has suffered from poor recruitment since 2005. The ICES has advised a zero TAC for this stock since 2009.

A new management plan based on MSY principles developed by ICES has been proposed but not approved. Even a complete closure of this fishery will not enable the stock to recover to precautionary or MSY levels in 2015. Therefore, the ICES advice is to close the directed fishery on haddock in 2014 and to put measures in place that reduced bycatch of haddock in other fisheries, while developing a recovery plan.

The EU is managing this stock together with haddock in area **VIa (West of Scotland)**. Large amounts of haddock are discarded in the nephrops fisheries in these waters²⁰. The ICES advice is to set a TAC of no more than 3 988 tonnes, in line with the MSY approach, and to improve selectivity in the nephrops fishery²¹. The STECF agrees with the ICES advice²² and the Commission proposal is in line with the scientific advice.

We call on Ministers to follow the Commission proposal of a TAC of 3 988 tonnes in the West of Scotland area (VIa) and to ensure that no directed fishery takes place in Faroe waters (Vb). We also urge Ministers to facilitate improved selectivity in the nephrops fisheries in this area.

Haddock in the Irish Sea (division VIIa)

Haddock in the Irish Sea is a data-limited stock and its status in relation to MSY is largely unknown, but the SSB appears to have been increasing over the last few years. The fishery does not fall under any management plans. The stock is subjected to high discard rates (68 %), mainly from the nephrops fishery. There is also a history of misreporting of this species in the area, making landing data less reliable.

The TAC for this stock has not been taken in recent years, and is not limiting the fishery of any country at this point. Instead catches are restricted by the application of the cod management plan. In addition, increased use of technical measures to reduce bycatch has increased selectivity but discard rates of mainly undersized fish remain high. The total catch in 2012 was 340 tonnes, with discards estimated to 721 tonnes²³.

Considering the high levels of discards coupled with the data limitations of the stock, we believe it should be mandatory to use the most selective fishing gear available, such as the square mesh panels trialled by the Northern Irish fleet, ensuring little or no bycatch.

The ICES advice, using the assessment method for data-limited stocks, is that total catches should not be higher than 1 120 tonnes, resulting in landings of no more than 572 tonnes at current discard rates. ICES also advise further technical measures to reduce discards in the mixed

²⁰ICES Advice 2013, Book 5, Chapter 5.4.8, pg 5.

²¹ICES Advice 2013, Book 5, Chapter 5.4.8, pg 1.

²²Scientific, Technical and Economic Committee for Fisheries (STECF). Review of scientific advice for 2014, Part 2 (STECF-13-11), pg 147.

²³ICES Advice 2013, Book 5, Chapter 5.4.10, pg 2.

demersal and nephrop fisheries. STECF supports this advice²⁴. The Commission is proposing a TAC of 951 tonnes – a 20 % reduction compared with the TAC in 2013.

We ask Ministers to consider a lower TAC than the Commission proposal of 951 tonnes, closer to the scientific advice, since the TAC is not restricting the fishery anyway, but the key issue is to reduce the discard rate. We urge Ministers to make the greater use of selective gear in order to reduce the significant bycatch of juvenile haddock so that this stock can increase, particularly considering the future implementation of the discard ban.

Haddock in divisions VIIb–k (Celtic Sea and West of Scotland)

The Spawning Stock Biomass (SSB) of haddock in divisions VIIb–k has shown a slowly increasing trend since the mid-1990s, but it is not clear if the stock is distinct from haddock in the surrounding areas. Recruitment in 2009 was exceptionally strong, but has since then been below average and was at its lowest level recorded in 2012. The stock is now declining due to low recruitment and high mortality.

Haddock are caught in mixed demersal fisheries. Fishing mortality in these divisions remains above that estimated for MSY (F_{MSY}) and the discard levels are very high – on average around 48 % of the weight and 79 % in terms of numbers over the past ten years²⁵. It is unclear whether the technical measures in place are sufficient to reduce the bycatch of juveniles, but due to the very poor recruitment recently, many of the fish currently discarded are above the allowed minimum landing size. Future catches and the development of the SSB will be highly dependent on the incoming year classes.

The ICES advice for MSY transition (to gradually achieve F_{MSY} by 2015) is that catches should not be higher than 5 281 tonnes. Based on current discard rates, landings of no more than 3 602 tonnes are suggested. This is a 75 % reduction compared to the advice for 2013. ICES also concludes that management of the stock should ensure that fishing effort is not allowed to increase and that technical measures are fully implemented in order to reduce discards.

The Commission proposal is in line with the ICES advice, with a TAC of 3 602 tonnes, but it is for one management area including all of divisions VIIb–k and subareas VIII, IX, and X, and therefore does not correspond to the scientific stock assessment area (Divisions VIIb–k + rectangles 33E2 and 33E3 in Division VIIa).

We urge Ministers to set a TAC in line with the scientific advice and the Commission proposal of less than 3 602 tonnes, as the incoming year class for 2013 might well be weaker than the mean of the past 8 years. In addition, the use of more selective gears, such as grids in trawls targeting nephrops, must be made mandatory in order to reduce the high levels of discarding.

Hake (*Merluccius merluccius*)

In the recovery plan for southern hake in **divisions VIIIc and IXa**, the targets are to rebuild the SSB to above 35 000 tonnes by 2016 and to reduce the fishing mortality (F) to 0.27. However, this recovery plan has not been evaluated by ICES and is not in line with the MSY approach. The fishing mortality agreed in the plan has consistently been overshot in the last decade, resulting in a SSB currently below target.

²⁴Scientific, Technical and Economic Committee for Fisheries (STECF). Review of scientific advice for 2014, Part 2 (STECF-13-11), pg 183.

²⁵ICES Advice 2013, Book 5, Chapter 5.4.11, pg 4.

In addition, over the last 10 years, the catch limits agreed have never been in line with scientific advice. Just last year, ICES advised a TAC of no more than 10 600 tonnes which was ignored both in the Commission proposal for 2013 (14 144 tonnes) and in the final agreed TAC (*idem*). This year, ICES advises total catches of no more than 13 123 tonnes for 2014, based on the transition to MSY approach, including discards of about 13 % for this fishery²⁶, which results in landings advice of no more than 12 025 tonnes. The STECF agrees with the ICES advice.

The Commission is managing these divisions (VIIIc and IXa) together with area X and EU waters of CECAF 34.1.1, but in the latter two areas only 200–300 tonnes are likely to be caught. Again, the Commission has chosen to disregard the scientific advice and proposes a TAC of 16 266 tonnes in line with the unevaluated management plan, which is a 15 % increase of last year's agreed TAC.

We ask Ministers to follow the scientific advice and set the quota for southern hake in divisions VIIIc, IX, X and CECAF 34.1.1 to no more than 12 025 tonnes.

Anglerfish (*Lophiidae* sp.)

The two anglerfish species *L. piscatorius* and *L. budegassa* are not separated in landings, and therefore managed under a combined quota in areas VIIIc, IX, X and EU waters of CECAF 34.1.1.

For 2014, ICES advises combined landings of no more than 2 629 tonnes, based on the MSY approach, and the STECF agrees with this advice. The Commission proposal is in line with the scientific advice. However, last year, the Council did not follow the Commission proposal and agreed on a TAC that was more than 18 % above the scientific advice.

We urge Ministers to follow the Commission proposal this year, as it is consistent with the scientific advice, and to set a TAC of no more than 2 629 tonnes for 2014.

Sole (*Solea solea*)

Sole in division VIIa (Irish Sea)

Sole in the Irish Sea is still in a desperate state. Fishing mortality has been above the MSY target for three consecutive years and the biomass has been below $MSY_{Btrigger}$ since 2004. The SSB is the lowest observed since the time series began in the 1970s. Based on the MSY approach, the ICES advice is to not allow any directed fishing and to minimise bycatch and discarding²⁷.

In its TAC summary for 2013²⁸, the Commission admits that “the stock is outside safe biological limits... while subject to a scientific advice that there should be no fishing”. Nevertheless, a quota of 60 tonnes was proposed last year, resulting in an agreed TAC of 140 tonnes, and a quota of 95 tonnes is proposed for 2014, even though the scientific advice for a zero quota remains. With this proposal, the Commission ignores the ICES conclusion that it cannot identify any non-zero catch limit compatible with the MSY approach, considering the low SSB and recruitment since 2000.

We call on Ministers to adopt a zero TAC for sole in VIIa.

²⁶ICES Advice 2013, Book 7, Chapter 7.4.7.

²⁷ICES Advice 2013, Book 5, Chapter 5.4.34.

²⁸European Commission, 2013. Fishing TACs and Quotas 2013 Poster.

http://ec.europa.eu/fisheries/documentation/publications/poster_tac2013_en.pdf

Nephrops (*Nephrops norvegicus*)

The nephrops trawl fishery in some areas has significant discard of undersized fish, including small nephrops, cod, haddock and whiting. Additionally, the bottom trawl operations targeting nephrops potentially reduce the carrying capacity for nephrops burrows by changing the consistency of the sediment, thus reducing the possibilities of stock recovery. The impact of nephrops trawl fisheries can be reduced by promoting a shift towards creel fisheries and improving trawl selectivity through gear adaptations.

Scientific assessment of nephrops relies heavily on trends from landing data, landings per unit of effort (LPUE) and surveys. It is important to note that nephrops stocks can fluctuate significantly depending on the environmental conditions and that this adds an additional level of uncertainty to long-term stock assessments²⁹.

The ICES provides biennial advice for each Functional Unit (FU) and new data available for landings did not change the perception for any of the stocks.

The areas ICES provides advice for do not match the management areas used by the Commission. Both ICES and STECF have repeatedly recommended that these stocks should be managed on the level of FUs, rather than at the ICES division level.

Nephrops in divisions VIIIabde (Bay of Biscay and Western Iberian Seas)

Last year, ICES was able to provide quantitative advice for this stock based on the methods for data-limited stocks for the first time. Indicative trends show that the SSB has increased slightly and that F has declined in recent years, while recruitment has deteriorated.

The advice of both ICES and STECF is that landings should not be above 3 200 tonnes, and this is also the Commission's proposal³⁰. The Commission proposed the same TAC last year (in line with scientific advice) but the Council agreed a TAC more than 20 % higher at 3 899 tonnes.

The Council should not disregard the scientific advice given by both scientific bodies, especially considering the discard rate of almost 25% and a downward trend in recruitment which reflects the situation of the stock.

We therefore urge Ministers to follow the Commission proposal based on scientific advice and set the TAC for nephrops in division VIIIabde to 3 200 tonnes.

Nephrops in division VIIIc (North Galicia and Cantabrian Sea)

For nephrops in division VIIIc, the ICES provides assessments for two Functional Units (FU) within this area: 25 and 31. For both FUs, the ICES advises zero catches based on precautionary considerations, as it has since 2002³¹.

The Commission has decreased its proposed TAC over the last years, following a recovery plan agreed in 2006. The plan aims to rebuild the stock to within safe biological limits within a period of 10 years and reduce F by 10 % relative to the previous year, but was never evaluated by ICES. This year the Commission proposes a TAC of 67 tonnes that, despite being a low figure, may have a detrimental impact on the stock.

²⁹Gonzalez Herraiz, *et al.* (2009). The NAO index and the long-term variability of *Nephrops norvegicus* population and fishery off West of Ireland. *Fisheries Research* 98: 1–7.

³⁰ICES Advice 2013, Book 7, Chapter 7.4.13.

³¹ICES Advice 2013, Book 7, Chapter 7.4.14.

We ask Ministers to follow the scientific advice and set the TAC for nephrops in division VIIIc to zero, as well as to align the management units with the functional units (FU) used in the scientific advice.

Nephrops in divisions IXa, X and EU waters of CECAF 34.1.1 (Portuguese Coast, West Portugal and Azores)

For these stocks, the mismatch of the area units used in the scientific advice and the management units used by the Commission has historically resulted in increased fishing effort in areas where a zero TAC was advised. Landings have very much stagnated in all FUs in these divisions over the last 30 years, and available information indicates that all stocks are at very low abundance levels. ICES advice therefore remains zero catches for FUs 26 and 27³², 110 tonnes for FUs 28 and 29³³, and 90 tonnes for FU 30³⁴. This would result in a combined TAC of 200 tonnes for divisions IX and X, but it would also allow exploitation of nephrops in FU 26 and 27, for which a zero catch is advised.

The Commission does not even follow the combined TAC advice listed above, which would still neglect the advised zero TAC for FU 26 and 27, but proposes a TAC of 221 tonnes. In addition, it should be noted that the combined TAC of 246 tonnes agreed for 2012, was overshot by almost 30 % (353 tonnes), which makes the management of these stocks even more complicated.

We therefore urge Ministers to set a zero TAC for nephrops in area IX, X and CECAF 34.1.1 until the management area is adapted to the functional units used in the scientific advice, which is requested by ICES itself.

³²ICES Advice 2013, Book 7, Chapter 7.4.15.1.

³³ICES Advice 2013, Book 7, Chapter 7.4.15.2.

³⁴ICES Advice 2013, Book 7, Chapter 7.4.15.3.