Scrabster
Port Quality Audit

Confidential Report No. CR 155

July 1998

SEAFISH

The Sea Fish Industry Authority

Seafish Technology

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Summary

This report presents the findings of a Quality Audit of the fishing port of Scrabster that examined: the quality of raw material supplies to the port, standards of physical infrastructure, operating practices and management controls.

The quality of fish supplied to the market was reasonable given the trip lengths of the vessels landing to the port, but the quality of the earliest caught fish by vessels working ten-day trips borders on acceptability. Supply of forward information to the market could be improved.

The physical infrastructures, servicing the fleet and marketing/distribution of landings are generally excellent but market space is at a premium during peak operations and depth of water in the inner docks limits their use by the newer, larger class of visiting fishing vessels.

Standards of hygiene and cleaning, etc. are generally good, although occasional infringements of personal hygiene and walking on boxes was noted. Recommendation is made for better management of the use of market doors and the method of displaying large fish on the market.

Documented policy and control procedures exist with regard to: cleaning, waste management, the environment, water sampling and pest control. Revision of the Waste Management Plan is required and is in preparation.

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1. Introduction

The increasing demands of the corporate food sector and the requirements of food safety legislation have given impetus to the need to raise quality and operating standards within the fish industry. This was recognised by the Industry Task Force that identified the port sector as a potential weak link in the production and distribution chain.

In response to the recommendations of the Task Force, Seafish introduced an initiative targeted at raising standards by means of port quality audits. The audits examine and report on the:

- quality of fish supplies to the port
- physical infrastructure
- operating practices
- management controls

Recommendations for improvements are made and action is then encouraged at local level.

The audits focus primarily on the workings of the fish market. They cover the operations from landings at the quayside (or overland deliveries to the market) to the despatch of fish from the market after sale. They do not cover standards on fishing vessels (other than in the quality of fish supplied to the market) or within fish factories. They do however report where conflicts arise between the activities of different sectors within or around the environs of the fish market, its quays and roads. The report is confidential to the trade and is not for publication.

This document presents the findings of a quality audit of the port of Scrabster undertaken during June/July 1998. It was carried out with the full co-operation and participation of catchers, salespersons, buyers, merchants and the port operators, Scrabster Harbour Trust.

2. Survey Procedures

The survey took place between 28 June and 2 July, 1998. Fish quality assessment was carried out by a small team of Seafish technologists.

All of the fish sampled were being offered for sale on the fishmarket. Wherever possible, the assessment was made as the fish were first received into the fishmarket building. Fish were taken from throughout each box or bin and assessment was made of:

- freshness (using the Torry Sensory Assessment System (Appendix 1))
- gutting and washing
- temperature and icing practice
- box weights and box filling practice
- damage to fish

Note was also made of the trip length and any vessel operating practices or equipment which may have affected quality (e.g. fishroom insulation/chilling, fish handling systems, washing/gutting machines, etc.).

Assessment of the standards of physical infrastructure, operating practices and management controls was undertaken using a structured approach. This included observations on site and discussions with a wide range of port staff and users.

3. Fish Supplies

3.1 Sampling Achieved

In all, 10 vessel landings were sampled. The landings were made by a total of 9 vessels working the gears outlined in Table 1.

Table 1 – Range of gears selected for fish samples

Range of Gears Selected for Fish Samples	
Single trawl	5
Multi-rig	3
Pair trawl	1
Total	**9 vessels**

A total of 59 landed units were sampled. These were made up of 54 (70 litre) boxes and 5 (400 kilo) bins. The samples covered a wide range of species as listed in Table 2.

Table 2 – Range of species sampled

Species	Number of Samples
Cod	22
Haddock	8
Monk	8
Megrim	5
Ling	4
Whiting	4
Other	8
Total	**59**

The landings sampled were the product of a range of trip lengths as outlined in Table 3.

Table 3 – Range of trip lengths from which fish were sampled

Trip Length (days)	Samples Assessed
10	14
8	2
7	16
6	4
5	13
4	6
3	4
Total	**59**

3.2 Freshness Quality

The overall freshness quality of fish supplied to the market measured 8.3 on the Torry sensory assessment scale, in a range from 9.5 down to 5.5 Torry score (for details of Torry scoring and its relationship with eating quality and EU quality grading see Appendix I)

The results represent reasonable quality standards given the trip lengths of the vessels landing to the port, but the quality of the earlier caught fish by the vessels fishing ten-day trips is cause for concern. Over 10% of this fish scored 6.5 or less. One vessel working only a five-day trip also scored a 6 which represents a serious failure of fishroom good practice.

3.3 Gutting and Washing

Spoilage of fish after death is caused by enzymatic and bacteriological action, particularly in the gut cavity. By removing the gut contents and washing the fish, the rate of spoilage is reduced. It must however, be done efficiently or the bacteria from the gut cavity can spread to the cut flesh and promote spoilage.

58 of the 59 units sampled contained gutted fish. Of these 53 were well gutted, 3 were average and only 2 units were found to contain badly gutted fish. 6 units contained fish with fillet slash from careless knife work. The poorly gutted and slashed fish were small haddocks.

Washing also scored well with only 1 unit in the 59 sampled containing badly washed fish. 56 units were well washed and only 2 boxes rated as just average.

3.4 Temperature Control

Temperature control is by far the most significant factor affecting the rate of deterioration of fish quality. Typically white fish remains acceptable for about 10-12 days after capture if it is well iced. Recommended practice is that boxes be iced throughout their depth in order for the ice to rapidly pull down fish temperatures. Icing only the top or bottom of boxes can markedly slow the chilling process and lead to loss of quality.

Sample temperatures of fish were taken throughout each box as soon as possible after landing and a record made of the standard of icing practice.

Fish temperatures averaged 0.75 degrees centigrade in a range from -0.9 to 7.9 degrees centigrade which indicates that temperature control at sea is generally good. 69% of the boxes sampled were iced throughout the box, 22% iced top and bottom, and only 9% iced either top or bottom only.

3.5 Box Filling

Standards of boxing practice at sea are also critical to quality. Fish should be aligned within the box to prevent distortion, with their belly cavities down (roundfish) to facilitate drainage. To prevent crushing and to allow sufficient ice to cool the fish, the boxes must not be overfilled. Seafish recommend a maximum weight of fish of 50kg for the 70litre Chep box. The standardised or nominal market weight for Scrabster is 51kg for cod and whiting and 52kg for haddock and saithe.

The overall average weight of fish in a box is 56.8kg which is 9% above the standardised port box weight based on 52kg. This is above the legal tolerance of 5% for standardised boxes but is considerably better than most Scottish north-east ports. Figure 1 shows the number of boxes in selected weight ranges.

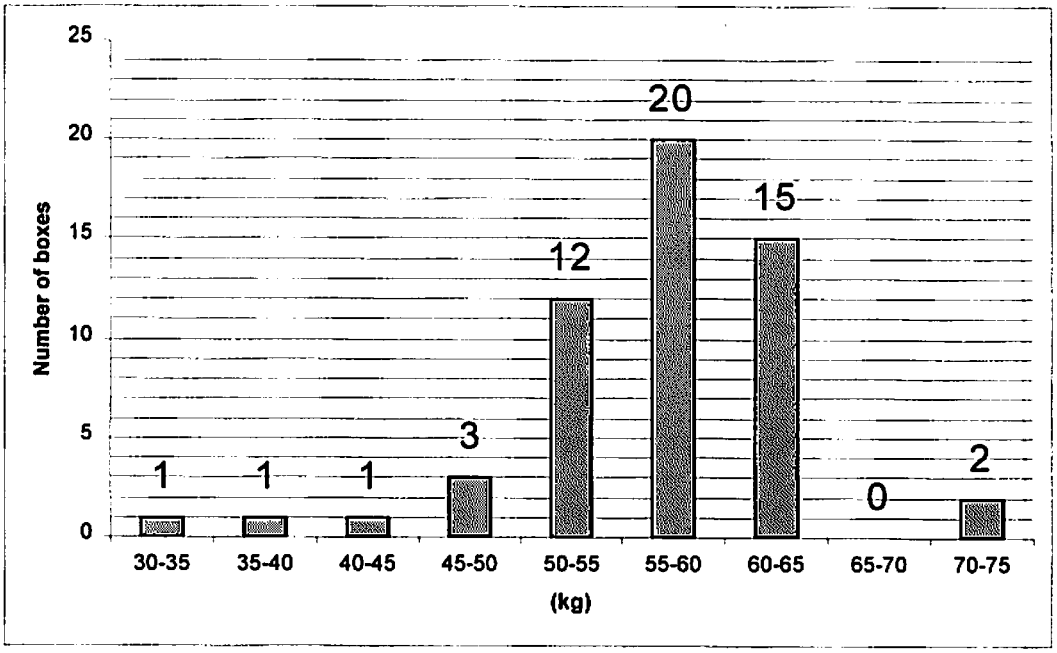


Figure 1 – Box weights distribution

4. Physical Infrastructures

4.1 Background

Scrabster has a long history of association with fish and maritime trading, particularly with the islands to the north, but it is only in relatively recent years that it has developed to the scale at which it now operates. In 1997 fish sales at the port reached £30 million.

The rapid growth of the port was built on the strategic advantage that its northerly location, just east of the four-degree line, gives it with respect to serving visiting vessels working grounds to the north and north-west. Initially it was used as a consigning port but major investment in new quays and a fish market in 1993 has encouraged more landings for local sale. Figure 2 overleaf shows the layout of the harbour.

4.2 Berthing and Unloading

Facilities within the new fish dock enable discharge of vessels direct to the market and are generally adequate. Lack of water depth in the inner docks however restricts their use to smaller classes of vessels and plans are in preparation for the deepening of the inner dock in order that it can accommodate the increasing number of deeper draft fishing vessels.

The market quay has a wide apron and is well drained and lit. It may only be used for landing. The quay is approximately 120m in length and the southern end is allocated for vessels landing to road transport for consigning. During peak operations berthing space may be limited particularly for larger vessels and use is then made of the lay-by quay in the outer basin.

A dedicated berth for fuel and water is located at the end of the South Breakwater. There has been some minor damage by vessels to the concrete margins and steelwork at the fuel berth (Figure 3).

Figure 3 - Damage to fuelling berth

Deliveries of fuel may also be made by road tanker to other agreed berths.

Landings are mostly made using the vessels own gear but mobile crane and fork truck hire is available in the port. Boxes are transferred from the quay to the market manually using steel hooks to drag them, whilst bins are transported by pallet trucks.

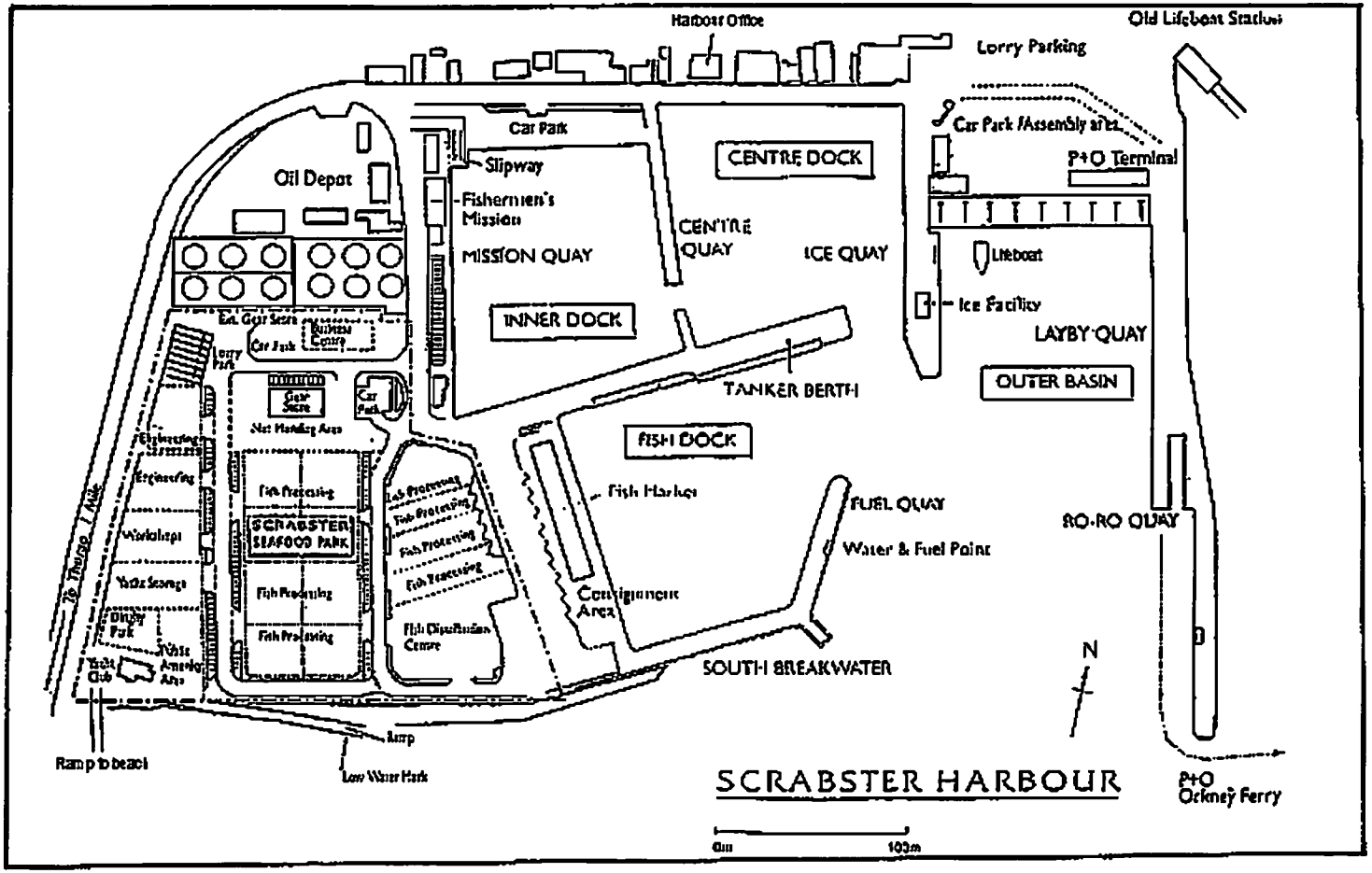


Figure 2 – Scrabster Harbour

4.3 Fish Market

The new fish market, completed in 1993, was designed to meet the requirements of EC hygiene regulations and to cope with increased landings by larger vessels (Figure 4).

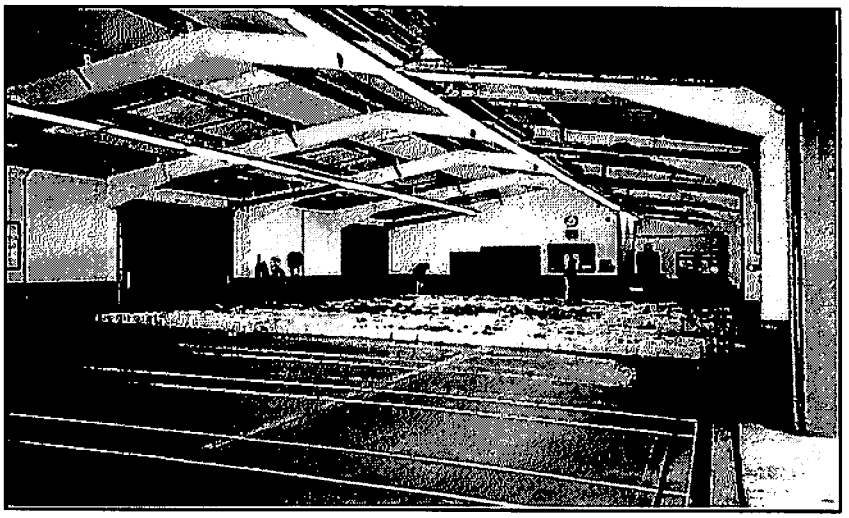


Figure 4 – Fish market

It replaced the older market in the inner dock that was inadequate in many respects and unsuitable for upgrading (Figure 5).

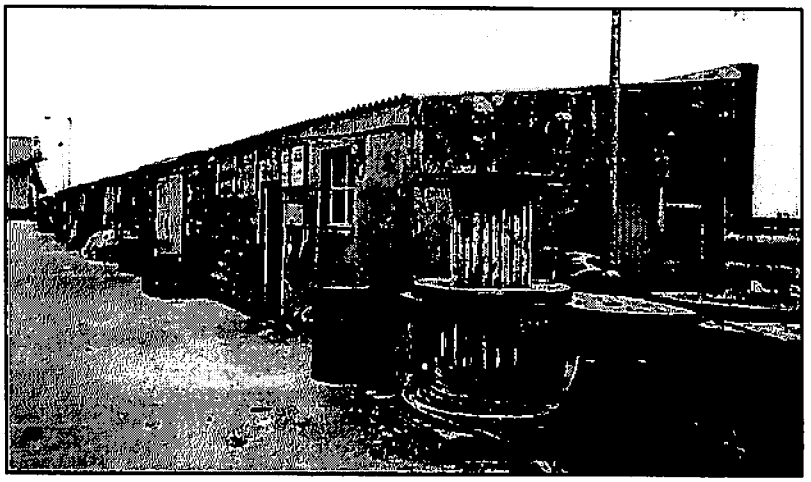
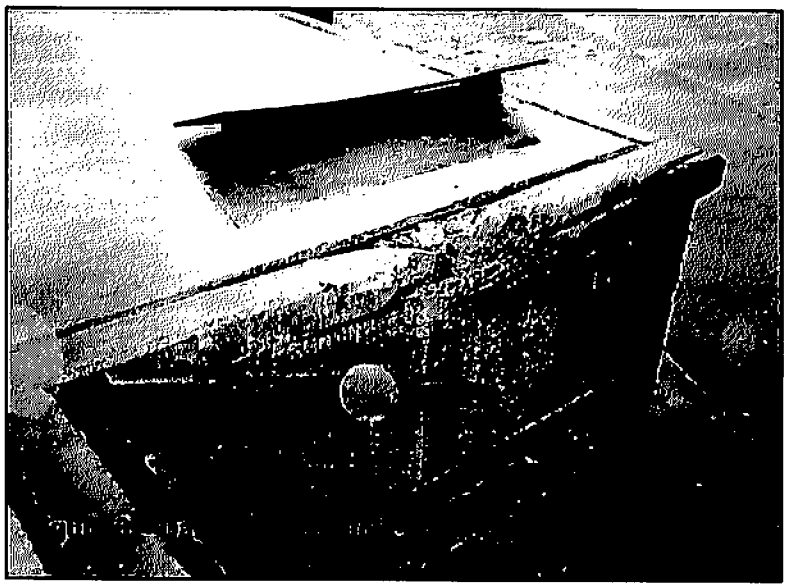


Figure 5 – Old fish market

The new market has capacity for approximately 4,000 boxes and provides office accommodation, a small canteen, toilets and stores. The structure of the building is insulated but not mechanically chilled. (Refrigerated storage is available at the distribution centre to the rear of the market). Translucent sheets in the roof have been painted over in an attempt to minimise solar heat gains to the building but the paint on some has begun to flake off.

The floor surface is well drained and clearly marked with "tramlines" to aid the orderly laying out of catches. The market is well lit and generally maintained in good order. The only internal defect noted was localised corrosion of some of the portal frames causing the paint to flake off. Externally there was minor damage caused by fork trucks to brickwork and also to the wooden fenders of the saw-tooth vehicle loading bays (Figure 6).

4.4 Market Equipment



As it is standard practice for vessels landing at the port to sort and grade at sea, and for boxes to be sold as standardised units, no provision is made for sorting or grading on the market. Two electronic balances are located, one at each end of the hall for check-weighing and weighing of part boxes etc. Ice is delivered to the market and handled in tubs.

4.5 Cleaning Equipment and Waste Facilities

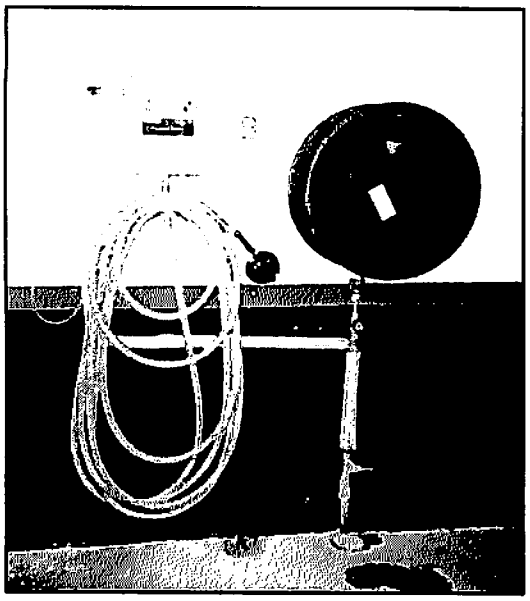


Figure 7 - Chemical and detergent dosing for market

Wash-down hoses are provided within the market at regular intervals with chemical and detergent injection for cleaning purposes (figure 7).

There is also a water point on the outside of the market convenient for wash-down of the consignment quay area.

D. Steven and Son provide a box washing and storage facility. Boxes consigned from the port are usually washed elsewhere and returned clean for storage at the distribution centre.

A vehicle washing facility is also provided at the distribution centre.

Excellent provision is made for vessels' garbage and operational wastes with skips and bins etc at various locations as defined in the ports waste plan (Figures 8 and 9).

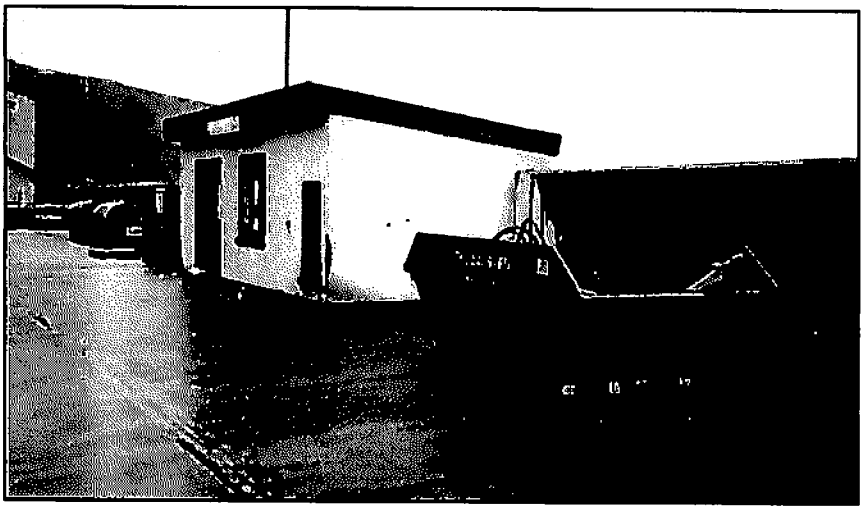


Figure 8 – Waste skips and bins

4.6 Access and Parking

Adequate access to the dock estate is provided by the A9. A dedicated parking and vehicle marshalling area for Ro-Ro traffic is provided adjacent to the terminal away from the fish dock.

Good provision is made for fish transport to and from the market and the consigning area. To the rear of the distribution centre there is a lorry park and car parking is provided on Shore Quay.

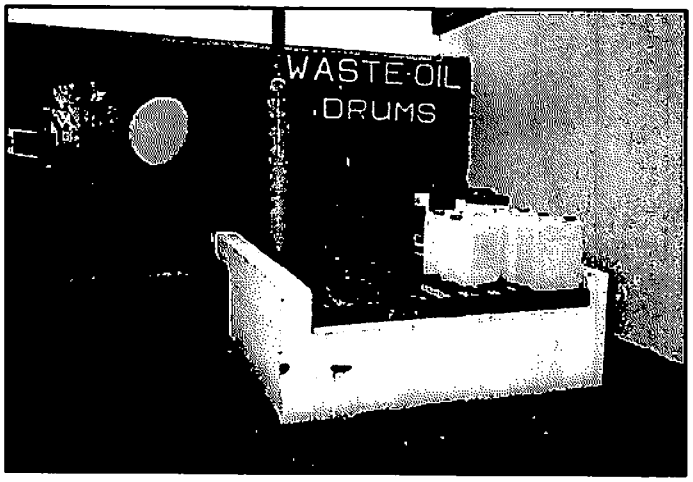


Figure 9 – Waste oil facility

4.7 Distribution

The standard of transport and service provided for onward distribution by local contractors is excellent with refrigerated vehicles being used to Grampian, Humber and other regions of the country. Chilled holding is available at the distribution depot to the rear of the fish market (Figure 10).

Figure 10 – Modern distribution depot and chill store

4.8 Ice and Water

Tube ice is available 24hours per day from Simpsons Ice Ltd on the Ice Quay. The plant has production capacity of 100 tonnes per day and storage for 350 tonnes. The original plant is twelve years old but has been extended since that time to meet increased demands.

Water is available at the Ice Quay, from the Fish Market Quay and at a number of other locations in the harbour.

5. Operating Practices

5.1 Landing and Handling

Vessels landing to the market use their own gear to land boxes, which are dragged into the market by the crew and/or lumpers. Two market staff members are on duty 24hrs per day to help organise the landing operations.

A computer model is used by the Harbour Trust to provide accurate information to skippers of the deeper draft class of vessels on tidal access windows.

Landing and handling operations generally cause no problems, with fish transferred across the quay and into the market without delay or risk of any contamination. There was occasion however when a few boxes were left exposed on the quay awaiting transfer when they were subject to the attentions of gulls (Figure 11).

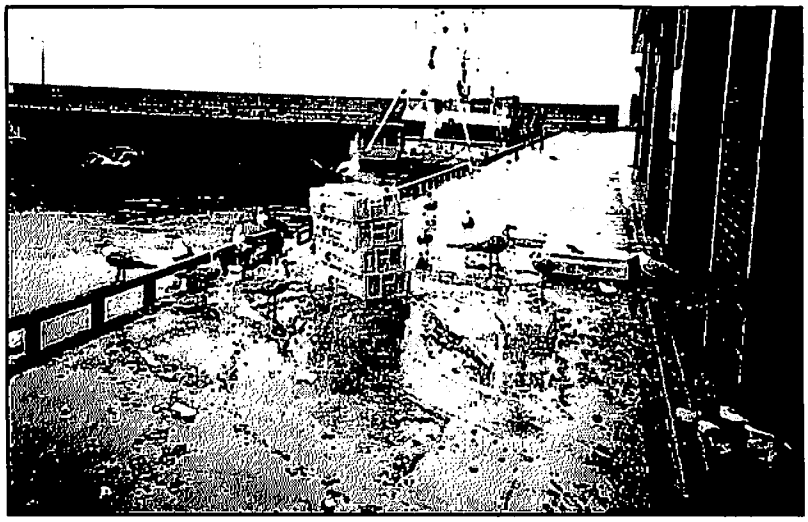


Figure 11 - Gulls on fish waiting transfer to market

5.2 Display for Sale

Although the space afforded by the new market is usually adequate, during peak operations the landing and sale may be run "back to back" in order to clear all the fish on the same day. Where possible boxes are stacked. Space is allocated to vessels by market staff by chalking lines on the market floor.

During the audit some shots had been laid out with insufficient space for anyone to pass at the end of isles and as a consequence walking on boxes was necessary. Halibut was also laid direct on the market floor. For reasons of hygiene they should have been laid on a bed of ice on plastic pallets.

5.3 Temperature Control on the Market

Ice is supplied to the market in bins for the re-icing of fish on display as required (Figure 12).

Generally temperature control was good but better control of the use of market doors is required.

Figure 12 - Re-icing of fish on the market

5.4 Sale and Despatch

Five agencies are represented in the port who can arrange auction sales or consignments. First sale is at 10.30 am and is by the traditional 'shout' method.

During the period of the audit landings were relatively light, and the sale and subsequent despatch of fish from the market quick and efficient. It was reported however that for larger auction sales the sale and removal of fish from the market could sometimes last well into the afternoon.

5.5 Cleaning and Waste Control

The standards of cleaning and tidiness of; the market, equipment, transport, quays and the dock estate were all commendably high.

A new gear store provides secure under-cover storage for fishing gear convenient to the inner and fish docks. Adjacent to the store is an unsurfaced area which can be, but is not normally used for net mending and working on gear.

5.6 Hygiene and Pest Control

Standards of hygiene on the market were generally good although there were occasional infringements of smoking and walking on boxes. The standard of dress was fair. No instances of eating or drinking on the market were noted outside of the designated canteen facility provided.

Figure 13 - Fish laid direct on the market floor

Pest control is contracted to the local authority and no signs of infestation were apparent. Gulls were observed on fish boxes on the market quay as reported in 5.1 and fish should not be laid direct on the market floor as reported in 5.2.

Better control of the use of doors would improve both temperature control within the market and any possible nuisance caused by gulls on the market.

6. Organisation and Management Control

Scrabster is a trust port managed by a board of appointed members that includes representatives of various sectoral interests within the port. The daily running of the port is under the control the Harbour Master and his staff. Duties of the fish market staff include: assistance with landing, laying-out, record keeping, cleaning and maintenance. The control office and the port are open 24 hours per day.

Fish sales, box supplies, engineering, fuel, ice and ancillary services are in private ownership.

A fish industry Port User Group exists but is currently not active. Mention was made by a number of trade interests that they would welcome more frequent visits to the fishmarket by the Harbour Master. The Harbour Master however operates an 'open-door' policy in dealing with all port users.

There are no formal codes of conduct or market regulations as such, but prohibited practices are posted on the wall and enforced by market staff.

For a trust port particularly, Scrabster is very progressive and pro-active toward developing business opportunities and is keenly aware that the port's future in fishing is dependent upon continuing to offer a first class service to a visiting fleet. Straddling the boundary of two major ICES sea areas it is likely to benefit from proposed Government legislative requirements for larger vessels to report in. To promote the use of the port by visiting vessels a loyalty bonus scheme has been introduced that offers preferential rates to vessels making more than 20 landings to the market in a year. The Trust has also developed an innovative web-site to advertise port facilities and to provide direct e-mail links between vessels at sea and the various service providers in the port. Average fish prices on the market are listed on the web-site which are updated daily and also broadcast on Radio Scotland.

An area in which the Trust have had limited success is that of providing advance notification of landings to the market. Producers are still reluctant to provide details of catches and buyers are required to phone the fish market or the vessel agent on the morning of the sale. Details of vessel catches are chalked up on a board in the market as they become available on landing.

Documented policy and procedures exist with regard to: cleaning, waste management, the environment, water sampling and pest control.

The cleaning schedules specify what is to be cleaned, the frequency of cleaning, chemicals used and the requirement for any protective clothing to be worn by staff. The schedule also requires any defects to be reported and logged with the harbour office. It is not clear from the schedule what checks are made on performance.

The waste management plan lists facilities available in the harbour for the disposal of various forms of vessels' garbage and operational waste. It makes no estimate of generated wastes and would benefit from a map of the harbour indicating the location of facilities provided. It is

understood that the plan is in the process of revision and updating to meet MARPOL requirements.

Checks on the quality of potable water in the harbour are undertaken regularly with samples being sent to Raigmore Hospital and SEPA Laboratory for analysis.

Pest control is contracted to the local Council who maintain checks on baits at various locations within the harbour. The checks are made twice a year or upon any sightings.

7. Recommendations

7.1 Supplies

7.1.1 that those vessels producing quality scores below 7 TS should review the practice of working long trip lengths and/or examine their fishroom practices.

7.1.2 producers should support efforts for the introduction of uniform/standard box weights that are compatible with good practice.

7.1.3 greater efforts should be made by skippers and agents to improve the supply and quality of forward information of landings.

7.2 Physical Infrastructures

7.2.1 repair or replace the damaged timber buffers at the vehicle loading bays at the rear of the market. (consider compound rubber fenders that are shock absorbent, hygienic and longer lasting).

7.2.2 repair localised damage to quay and steelwork on the South Quay.

7.2.3 to keep under review the requirement for additional deep-water berths for the new classes of deep drafted fishing vessels.

7.2.4 to keep under review the requirement for extra fishmarket space.

7.3 Operating Practices

7.3.1 when laying out fish in the market make sure that sufficient space is left for access so that walking on boxes is not necessary.

7.3.2 keep market doors closed when not actively in use so as to exclude warm air and pests.

7.3.3 lay halibut and other large fish on plastic pallets on a bed of ice and not on the floor.

7.4 Organisation and Management

7.4.1 consider ways of improving communications and contact between the ports management and the fish trade either informally or by resurrection of periodic User Group meetings.

7.4.2 continue to enforce, and where necessary improve the standards of personal hygiene on the market (smoking, standard of dress, etc).

7.4.3 revise the port waste plan to meet the legal requirements of MARPOL.

7.4.4 for the ports management and the trade to cooperate in marketing the port and its facilities to further develop business with visiting east coast vessels and those of the islands to the north.

Appendix I

Torry Freshness Assessment Scoring System

Torry Freshness Assessment Scoring System

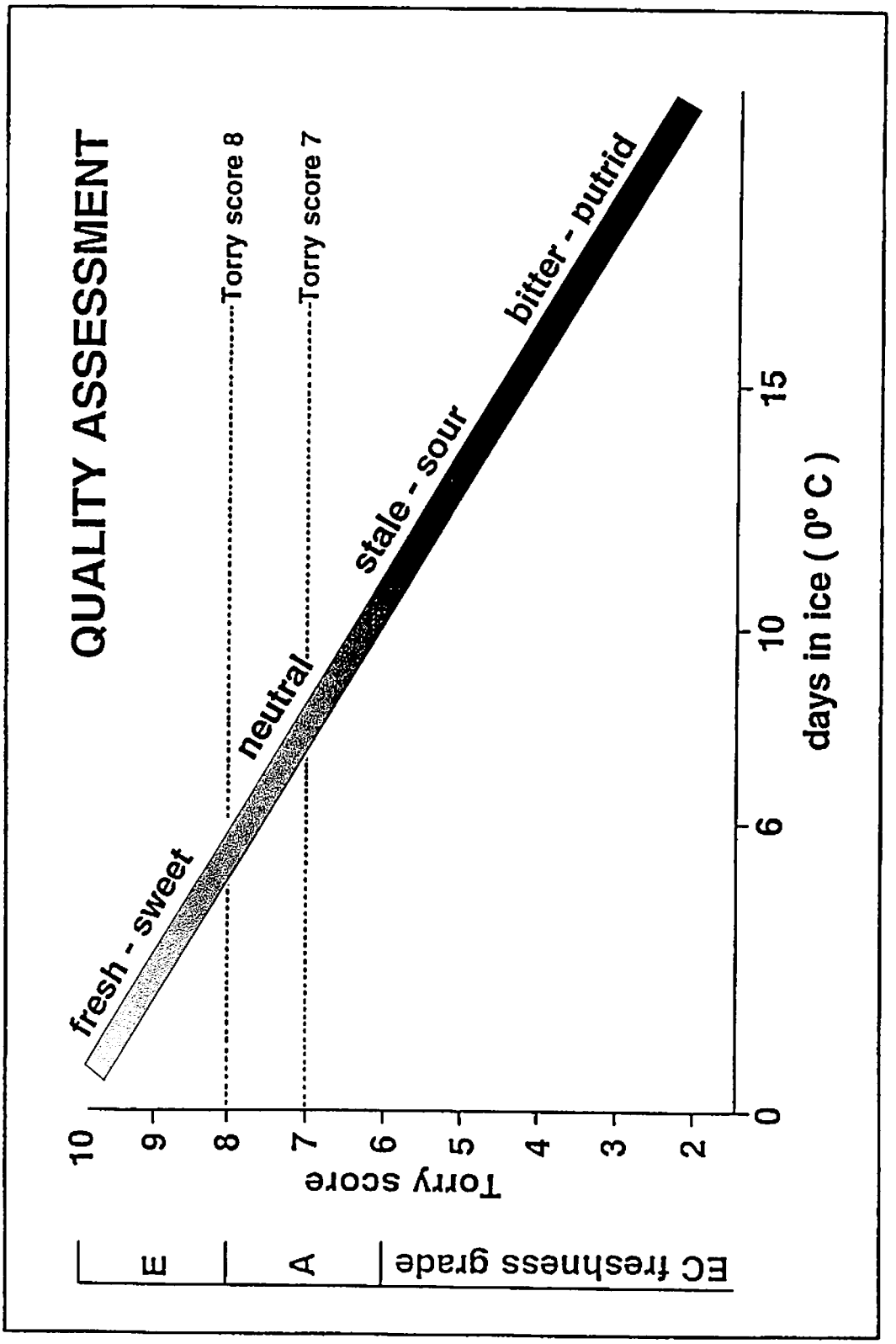
The Torry Freshness Scoring system judges freshness quality using external appearance and odours as indicators of freshness on a scale of zero to ten. Appendix I-ii shows the relationship between Torry Score, the number of days the fish is held in ice and the eating quality of white fish.

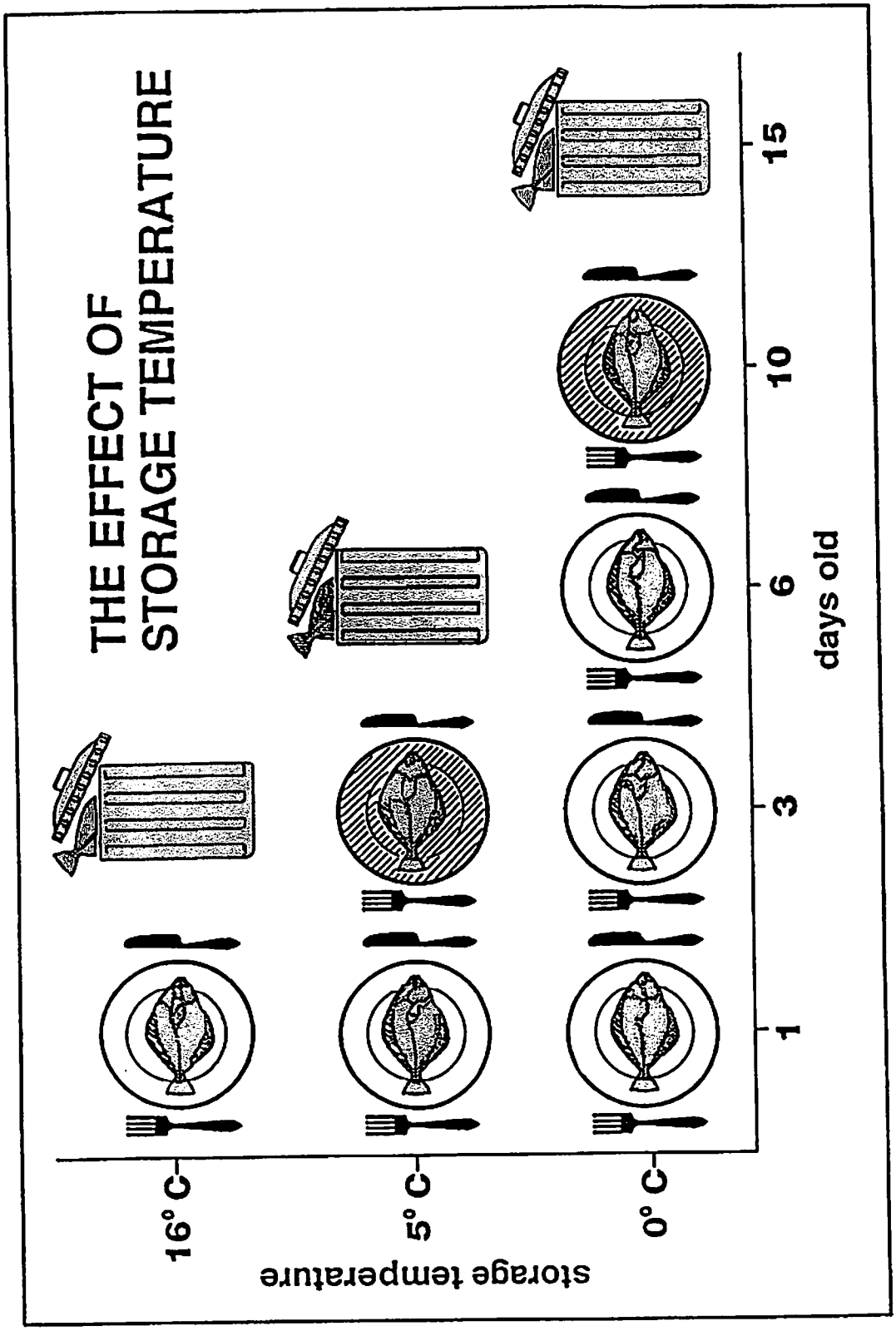
Seafish recommend that white fish sold on the market be of Torry Score 8 or above (EU freshness grade E) in order that the product reaching the consumer has a good chance of retaining sweet, desirable flavour and not have undesirable sour or bitter flavour.

Note that temperature control is by far the most significant factor affecting the rate of deterioration of fish and that at temperatures above that of melting ice, spoilage is greatly accelerated as described in Appendix I-iii.

Typically white fish remains acceptable for about 10-11 days after capture if well iced, but this can be reduced to a matter of a few days if left unprotected at summertime ambient temperatures.

For Nephrops fisheries quality is judged using external appearance and raw odours as indicators of freshness on a scale zero to five. Nephrops remain acceptable for consumption for up to eight days if they are held at the temperature of melting ice.


QUALITY ASSESSMENT
Torry score 8
Torry score 7
fresh - sweet
neutral
stale - sour
bitter - putrid
Torry score
10
9
8
7
6
5
4
3
2
0
6
10
15
days in ice (0° C)
EC freshness grade
A
B


THE EFFECT OF
STORAGE TEMPERATURE
storage temperature
16° C
5° C
0° C
1
3
6
10
15
days old