

**Boilers and Pressure Vessels (Amendment) Bill 2001**

**Administration's Response to the Issues raised by Members at the Bills Committee Meeting on 22 January 2002**

At its meeting on 22 January 2002, Members of the Committee requested the Administration to provide information on the following: -

- The intended purpose and criteria of a 'fit and proper' person under the proposed section 6(1)(b)(i) and the appropriateness of substituting 'fit and proper' with 'suitable'.
- The objective standards of the qualifications, experience and knowledge to be met by applicants for certificate for a particular class of boilers or steam receivers with or without having to sit the examination.
- The means to be adopted by the Authority and employers for verification of the validity of the certificate with respect to the length of continuous service of the certificate-holder in operating a particular class of boilers or steam receivers.
- Appeal mechanism to cater for any appeal against the 'deemed revocation' under section 6(4)(b) of the Ordinance.
- Availability of sufficient certificate-holders in the market for operating boilers and pressure vessels and the number of boilers and pressure vessels operated for a daily minimum of eight hours.
- Measures adopted by the Labour Department to ensure boilers and steam receivers are always operated under the supervision of a certificate holder.
- Viability of reduction of fees for issue and endorsement of certificates.

2. This paper aims to provide the necessary information and propose a few amendments in the Bill with a view to addressing Members' concerns raised in the last meeting.

**The intended meaning and criteria of 'fit and proper' person under the proposed section 6(1)(b)(i) and 6(3A)(b)(i)**

3. The policy intention of requiring certificate holders to be 'fit and proper' is to ensure that they are competent in operating the relevant type or class of boilers or steam receivers safely. The Administration agrees that the required competence depends mostly on the candidate's experience, knowledge and skill in operating the said equipment. In respect of these, the proposed subsections 6(1)(b)(ii) and 6(3A)(b)(ii) of the Bill have already stipulated the requirements. Having considered Members' views, the Administration considers it appropriate to delete the captioned two subsections to make it clear that experience, skill and knowledge are the only attributes that are statutorily required. If the proposed amendment is accepted, we see no need to consider the appropriateness of substituting 'fit and proper' with 'suitable'.

**Objective standards of qualification, experience and knowledge required for applicants of certificates, with or without passing examinations**

4. The required standards have been spelt out in the draft Guide and Syllabus modelled on the existing Guide and Syllabus compiled by the Labour Department in consultation with industry.

5. The draft Guide and Syllabus for Examination has laid down the 'knowledge', 'skill' and 'experience' requirements that a certificate-holder is required to meet. Candidates passing the examination will be considered as having met the above requirements. Local course providers have incorporated the core content of the existing Guide and Syllabus in their curriculum.

6. Candidates would be exempted from the examination if they can produce evidence to prove that they have acquired relevant qualifications, for example, qualification granted under the approved

courses run by the various local institutions such as Institute of Vocational Education (Haking Wong) and Occupational Safety and Health Council, or are in possession of the sea-going qualification of Class 2 or above Certificate of Competence for Marine Engineer Officer (Steam or Combined) issued by the Hong Kong Marine Department, or other Maritime Administrations.

7. Those who have the qualifications mentioned in paragraph 6 above will be accepted as having fulfilled the ‘knowledge’ and ‘skill’ requirements. The ‘experience’ requirement will be met if they satisfy the Authority that they have acquired the respective length of qualifying service as spelt out in the draft Guide and Syllabus.

**‘Deemed revocation’ of Certificate of Competence due to insufficient length of continuous service in operating a particular class of equipment**

8. Having considered the Members’ views and taken into consideration the following factors, this department agrees that the ‘deemed revocation’ provision made under section 6(4)(b) of the Ordinance should be repealed: -

(i) The Authority has not invoked such ‘deemed revocation’ provision in the past and anticipates that the chance of invoking such is rather remote in future.

(ii) Repealing such provision will not give rise to any significant adverse implication on the standard of competence of competent persons and will not affect the present regulatory environment in respect of boilers and steam receivers safety in industry.

9. After repealing section 6(4)(b), the problem associated with verification of the validity of certificates with reference to length of continuous service in operating a particular class of equipment will not arise.

## **Appeal Mechanism against Revocation of Certificate under section 6(4)(b)**

10. Again, if the aforesaid ‘deemed revocation’ provision is repealed, there is no need to introduce any appeal mechanism for the above provision.

## **Proposed amendments to repeal the ‘deemed revocation’ provision**

11. The Administration proposes that the whole subsection 6(4) be repealed and substituted by new subsections (4)(a) and (4)(b) which in the main stipulate that: -

-The Authority may revoke a certificate of competence if the certificate-holder no longer fulfils ‘skill’ or ‘knowledge’ requirements in respect of all classes and types of boilers and steam receivers specified in the certificate.

-The Authority may amend a certificate of competency by deleting a class or type of boilers or steam receivers specified in the certificate if the certificate-holder no longer meets the ‘skill’ or ‘knowledge’ requirements in respect of the class or type of boilers or steam receivers, as the case may be.

12. Introducing the above amendments in the Bill will more clearly reflect the policy intention regarding the attributes expected to be possessed by a competent person. It will also re-affirm the Authority’s flexibility in making amendment in the certificate to truly reflect a certificate-holder’s competence in operating the classes or types of equipment specified in the certificate.

## **Consequential amendment**

13. Sections 6(9), 6(10), 7(5) will also be amended in tandem with the above proposed amendments.

### **Availability of sufficient certificate-holders to operate boilers and steam receivers**

14. As at 2001, there were a total of 10300 different types of boilers and steam receivers registered in Hong Kong, including 282 water-tube boilers, 1498 fire-tube boilers, 5252 electric boilers and 3257 steam receivers. As at 2001, there were 15600 certificate-holders for operating various types of equipment in the market, including 200 for all types of boilers and receivers, 1400 for water-tube boilers, 5400 for fire-tube boilers and 7200 for electric boilers (with 4200 for both electric boilers and steam receivers) and 1400 for steam receivers only. Only one-third (33.3%) of the above equipment is actively in use. Based on these figures, we estimate that the ratios (R) of the number of certificate-holders for different types of equipment to the corresponding number of active equipment are as follows: -

<b><u>Types of boiler</u></b>	<b><u>R</u></b>	<b><u>In use for a minimum of 8 hr. daily</u></b>
<b>Water-tube</b>	<b>15</b>	<b>Yes</b>
<b>Fire-tube</b>	<b>11</b>	<b>Yes</b>
Electric	4	No
Steam Receiver	12	No

From the above figures, it is obvious that there is abundant supply of certificate holders in the market.

15. Members have raised concern on the adequacy of supply of certificate-holders for those types of equipment that have to be put in service for more than 8 hours daily. Equipment being operated for such long hours are mostly fire-tube boilers and water-tube boilers, the majority of which are installed at power plants, hospitals and hotels. It is obvious from the above table that **R** for these two types of boilers are greater than 10, i.e. the number of certificate-holders for these two types of equipment is more than tenfold the number of these types of active equipment in the market. Coupled with the fact that in actual practice,

one certificate-holder may supervise two to three pieces of equipment installed at the same location at a time, we are quite confident that there are sufficient certificate-holders to supervise all kinds of equipment in industry, including those being put to use for more than 8 hours daily.

### **Measures to ensure operation of boilers under the direct supervision of certificate holders**

16. In 2001, the Boiler Inspectors of the Labour Department conducted a total of 6500 inspections. In addition to this wide coverage, there are some 150 Occupational Safety Officers (OSO) currently deployed to inspect workplaces including those where boilers and pressure vessels are installed. In addition to carrying out their field duties, OSO will make referral to Boiler Inspector for action whenever they detect boilers being operated without the direct supervision of competent persons. With these pre-emptive inspection systems in place, we are confident that compliance can be secured.

### **Reduction of fees for Endorsement of Certificates**

17. This department has reviewed the situation in the past five years. We find that the administrative cost for the issue and endorsement of certificate has risen quite significantly from the year of 1997 to 1999. During that period of time, we have not increased the fees to cover the rise in cost. The said administrative cost has slightly dropped a bit subsequent to the economic downturn in recent years. We find that over the past five years, the rise has been roughly offset by the fall. The level of fees has been set in line with the Government policy to recover the cost of providing the service of issue and endorsement of certificates. In any case, this topic will be re-visited in the next fees and charges revision exercise, which will be conducted at the end of 2002.

18. The proposed CSAs to the Bill and the relevant parts of draft Guide and Syllabus for Examination of Certificate of Competence are at Appendices I and II respectively.

Education and Manpower Bureau

BOILERS AND PRESSURE VESSELS (AMENDMENT) BILL 2001

**COMMITTEE STAGE**

Amendments to be moved by the Secretary for Education and  
Manpower

Clause

Amendment Proposed

- 2(a) By deleting the proposed section 6(1) and substituting -
- "(1) The Authority may, upon application in writing, issue a certificate of competency to a person if that person -
- (a) has produced evidence that satisfies the Authority that he has substantial experience, skill and knowledge in the operation of all classes and types of boiler and steam receiver or of boilers or steam receivers, or both, of the class or type to be specified in the certificate, as the case may be; or
  - (b) has, by passing an examination conducted by the Authority, satisfied the Authority that he has

substantial experience, skill and knowledge in the operation of all classes and types of boiler and steam receiver or of boilers or steam receivers, or both, of the class or type to be specified in the certificate, as the case may be."

2(b) By deleting the proposed section 6(3A) and substituting -

"(3A) The Authority may endorse an existing certificate of competency of, or issue a new certificate of competency to, a person under subsection (3) only if that person -

(a) has produced evidence that satisfies the Authority that he has substantial experience, skill and knowledge in the operation of all classes and types of boiler and steam receiver or of boilers or steam receivers, or both, of the additional class or type, as the case may be; or

(b) has, by passing an examination conducted by the Authority, satisfied the Authority that he has



substantial experience, skill and knowledge in the operation of all classes and types of boiler and steam receiver or of boilers or steam receivers, or both, of the additional class or type, as the case may be."

2

By deleting paragraph (c) and substituting -

"(c) by repealing subsection (4) and substituting -

"(4) The Authority may -

- (a) revoke a certificate of competency if it ceases to be satisfied that the holder of the certificate has substantial skill or knowledge in the operation of all classes and types of boiler and steam receiver specified in the certificate;  
or
- (b) amend a certificate of competency by deleting a class or type of boiler or steam receiver specified in the

certificate if it ceases to be satisfied that the holder of the certificate has substantial skill or knowledge in the operation of that class or type of boiler or steam receiver, as the case may be."."

2(d) (a) In the proposed section 6(9), by adding "or (b)" after "(4)(a)".

(b) In the proposed section 6(10), by deleting everything before "shall" and substituting -

"(10) A revocation or amendment of a certificate of competency by the Authority under subsection (4)(a) or (b), as the case may be,".

New

By adding immediately after clause 2 -

**"2A. Authority to keep certain registers, and particulars to be entered in register of boilers and pressure vessels**

Section 7(5) is amended by repealing everything after "revoked" where it first appears and substituting "under section 6(4)(a).".

7(b) In the proposed paragraph (c), by deleting everything after "revoke" and substituting "or amend a certificate of competency under section 6(4)(a) or (b), as the case

may be. " .

## APPENDIX II(a)

**The various periods of qualifying service for the issue or endorsement of a Certificate of Competency in respect of the classes of equipment enumerated in Appendix II are as follows:-**

- ♦ *All Classes – valid for all types of boilers and steam receivers, 12 MONTHS, of which at least 6 months must have been spent operating a water-tube type boiler with superheater and at least 3 months operating a fire-tube type boiler and the rest operating any other type of boiler.*
- ♦ *Class I – valid for all water tube boilers and steam receivers, 9 MONTHS, of which at least 6 months must have been spent operating a water-tube type boiler with superheater and the rest on any other type of boiler.*
- ♦ *Class I(A), I(B), II, II(A), II(B) or III – valid for the type of boiler specified and steam receivers, 9 MONTHS, of which at least 6 months must have been spent operating the type of boiler specified in the particular class of equipment for which the certificate is required and the rest on any other type.*
- ♦ *Class III(A), (IV) or (V) – valid for the type of boiler specified, 6 MONTHS, the whole of which must have been spent operating the type of boiler specified in the particular class of equipment for which the certificate is required.*
- ♦ *Class VI – valid for steam receivers only, 1 MONTH, the whole of which must have been spent operating a steam receiver.*

## APPENDIX II(b)

**The types of certificate which are valid and the items in the syllabus relevant to the types of certificate and on which candidates may be examined are as follow:**

<i>Class of Equipment</i>	<i>Type of Boiler/Steam Receiver for which Certificate Valid</i>	<i>Items in Syllabus on which candidate may be examined</i>
All Classes (I to VI)	All Boilers (including automatically controlled with superheaters) and Steam Receivers	Items (1) to (23) inclusive
Class I	All Water-tube Boilers (including automatically controlled with superheaters) and Steam Receivers	Items (1) to (16) inclusive, (19), (20), (21), (22) and (23)
Class I(A)	Water-tube Boilers (including automatically controlled but without superheaters) and Steam Receivers	Items (1) to (16) inclusive, (19), (21), (22) and (23)
Class I(B)	Manually Controlled Water-tube Boilers (without superheaters) and Steam Receivers	Items (1) to (16) inclusive (21), (22) and (23)
Class II	All Fire-tube boilers (including automatically controlled) and Steam Receivers	Items (1) to (23), excepting (7), (8), and (20)
Class II(A)	Automatic Fire-tube Boilers and Steam Receivers	Items (1) to (23), excepting (7), (8) and (20)
Class II(B)	Manually Controlled Fire-tube Boilers and Steam Receivers	Items (1) to (23), excepting (7), (8), (19) and (20)
Class III	All Electrically Heated Boilers (including automatically controlled) and Steam Receivers	Items (1) to (6), (10), (12), (14), (16), (17), (19), (21) and (22)
Class III(A)	Manually Controlled Electrically Heated Boilers	Items (1) to (6), (10), (12), (14), (16), (17), (21) and (22)
Class IV	Sterilizing and Vulcanizing Boilers	Items (1) to (5), (10), (12), (14), (16), (17), (19), (21) and (22).
Class V	Special Purpose Boilers as specified	Selected items

<i>Class of Equipment</i>	<i>Type of Boiler/Steam Receiver for which Certificate Valid</i>	<i>Items in Syllabus on which candidate may be examined</i>
Class VI	Steam Receivers	depending on the type of boiler Items (1) to (5) and (22)

### SYLLABUS

- (1) The principles involved in the operation of and the use, management and constructional details of the fittings of boilers and steam receivers. Precautions to be taken before entering a boiler or a steam receiver.
- (2) The operation of stop valves and drain valves with particular reference to the danger arising from water hammer action.
- (3) Constructional details and operation of steam receivers, which are used for containing steam under pressure greater than atmospheric pressure. Preparation for cleaning, inspection and putting back a steam receiver into service.
- (4) Methods used to verify the indications of a water level gauge and action to be taken in the event of shortage of water.
- (5) Measures adopted to prevent contamination of boiler feed water. The possible sources of the different contaminating agents.
- (6) Method of controlling boiler water composition. Tests required and typical figures for boiler water. Methods of sampling water and interpretation of results. Application of routine treatment. Effects of scale, corrosion, deposits, pitting and incrustation on boiler surfaces.
- (7) Constructional details and management of the different designs of water tube boilers. The arrangement and purpose of their fittings and mountings.
- (8) Arrangement of a water tube boiler feed system and the principles of controls.
- (9) Care and maintenance of furnace refractories.
- (10) Action to be taken in the event of abnormal conditions arising in a boiler.
- (11) Constructional details and management of oil fuel combustion equipment, including forced and induced draught systems.
- (12) Precautions to take when using solid or pulverized fuel, gas, electric or any other means of combustion.
- (13) Routine operation and maintenance to prevent excessive deposits of soot or moisture in air heaters, economizers and boilers.
- (14) Preparation required before (i) laying up a boiler, and (ii) putting back into service a boiler after cleaning or repairs.
- (15) Precautions to be taken with combustible materials. The dangers of (i) entering an oil tank which has previously held oil, and (ii) oil leakage from tanks and other appliances, particularly in unventilated places.
- (16) Method of operating the fire fighting arrangements, appliances and equipment normally available in a boiler house, and the use of other resources in fighting fires which may occur in a boiler house, air heater, uptake or furnace fronts. Why and under what circumstances should different types of fire extinguishing appliances be used?
- (17) Constructional details and management of the various types of boiler, other

than the water tube type. The construction and purpose of their mountings and fittings with special reference to water level gauges and safety valves. The arrangement and operation of pumps and other apparatus incorporated in any boiler feed systems used for such boilers.

- (18) The dangers of, and measures to prevent overheating of furnace crowns, combustion chamber tops, fire tubes and uptakes. Action to take if overheating is indicated, such as the distortion of a furnace.
- (19) The function, method of operation and testing of equipment and fittings of an automatically controlled boiler.
- (20) Special attention required to be given to superheaters, economizers and air heaters fitted to water-tube boilers:
  - (i) before the boiler is put into service, and
  - (ii) while the boiler is in operation.
- (21) Particular attention required in the case of electrical equipment associated with boilers. Precautions and safety measures to be taken in the event of abnormal conditions arising.
- (22) The International System of Weights and Measures (SI). Basic concept of the new system, including conversion from Imperial to SI metric units and their practical application in respect of boilers and pressure vessels, e.g. pressure, temperature, etc.
- (23) The principles involved in the operation of the use, management, and constructional details of the fittings of Thermal Oil Heater. i.e. a pressure vessel in which oil is heated, at a pressure greater than atmospheric pressure, for use as a heat transfer medium.