MYANMAR BOILER RULES, 1912.

No. 138

The 19th August 1912.

[Amendment : 18.06.1989]

No. 138.-In exercise of the powers conferred by section 21 of the Myanmar Steam-boilers and Prime-movers Act, 1910, and in supersession of this department Notification No. 134, dated the 28th March 1906, as subsequently amended, the Lieutenant-Governor is pleased to make the following rules for the purpose of carrying into effect the provisions of the Act:-

PRELIMINARY.

1. These rules may be cited as the Myanmar Boiler Rules, 1912. They shall come into force with effect from 1st September 1912.

<Amendment 18.06.1989>

2. In these rules unless there is something repugnant in the subject or context:-

(a) **"The Act"** means the Myanmar Steam-boilers and Prime-movers Act, 1910:

(b) "Commissioner" means a member of the Boiler Commission constituted under section 4 of the said Act and "Commission" means the Boiler Commission:

(c) **"Section"** means a section of the said Act:

(d) **"The Office"** means the office of the Boiler Commission:

(e) **"Board"** means any general or special Examining Board whose members are appointed under section 5 (c) :

(f) **"The Fund"** means the Steam-boiler Inspection Fund as constituted by Rule 6 (b).

<Amendment 18.06.1989>

Powers and Procedure of the Boiler Commission.

Section 21 (a).

3. The Deputy Commissioner, Rangoon Town, shall be the Chairman, and the Superintending Engineer and Shipwright Surveyor, Secretary of the Boiler Commission.

4. A Commissioner shall hold office until he resigns or ceases to reside in Rangoon or is removed by the Local Government.

5. Each Commissioner other than the Secretary shall receive from the Fund a fee of Rs.40 for attending any meeting at which business is transacted.

Three members shall form a quorum.

6. It shall be the duty of the Commissioners:-

(a) to meet at least once in a month and keep minutes of their proceedings;

(b) to cause all receipts to be credited to a fund called the Steam-boiler Inspection Fund and all disbursements to be charged against it;

(c) to cause a statement of demands, collections and outstandings for each month to be prepared by the Secretary and to scrutinize the same;

(d) to check the statement of demands, comparing the arrear demand with the statement of outstandings for the previous month, and the current demand with a statement of work done prepared by the Secretary from the diaries of the Inspectors;

(e) to see that the cash book balance agrees with the bank pass book every month;

(f) to pass such orders as they may think fit for realizing or otherwise disposing of outstandings;

(g) to comply with such rules as may be framed from time to time by the Account-ant-General with the previous approval of the Local Government as to the system of accounts to be adopted and to refer any question relating to accounts to the Accountant-General;

(h) to scrutinize the sufficiency or otherwise of the work done by the Inspectors as shown in their diaries;

(i) to instruct Inspectors and to arrange their work;

(j) to report any case of suspected fraud to the Local Government through the Accountant-General.

7. The Commissioners shall have power, with the previous sanction of the Local Government, to create such appointments as may be necessary for their establishment to carry out the purposes of the Act, and they shall also have power to appoint any suitable person to fill any such appointment and like power to suspend, remove or dismiss any such person.

8. Whenever any additional establishment is required the Commissioners shall submit their proposals with regard to the same through the Accountant-General, Myanmar, for the sanction of the Local Government. <Amendment 18.06.1989>

9. The Secretary to the Commission shall, under the orders of the Chairman, superintend the accounts of the Fund. He shall see that all notices are duly served and that all fees are duly brought to account and paid into the Bank. He shall himself daily verify, from the account kept by him, the balance at the credit of the

Fund with the balance in the Bank and a similar verification shall be carried out at the end of each month by the Chairman. The Secretary shall refer all matters of importance for the orders of the Chairman who shall bring them, if necessary, before the Commissioners in meeting.

Powers and Duties of Inspectors.

Section 21 (b).

10. No Inspector shall undertake any professional work unconnected with his duties under the Act.
11. No Inspector shall receive fees or money due to the Fund.
12. Subject to any order passed by the Commissioners under Rule 6 (i) every boiler or prime-mover shall be in charge of the Inspector who issued the last license for it.
13. It shall be the duty of an Inspector to search for unlicensed boilers.
14. When an Inspector becomes aware that a boiler or prime-mover is unlawfully used without a license he shall draw the attention of the owner to sections 6 and 14 of the Act and shall at once report the facts to the Commissioners including the owner's explanation if ascertainable. He shall take similar action with regard to any other contravention of the Act or Rules which comes to his notice.
15. On receipt of sanction to prosecute the Inspector shall file a complaint with the sanction attached before a Magistrate.
16. Every Inspector shall conform to such instructions regulating the conduct of his work, correspondence and upkeep of registers as may be issued from time to time by the Commission.
17. In particular and without prejudice to the generality of the foregoing rule it shall be the duty of every Inspector to keep-
    (a) A weekly diary in which he shall enter the places visited, the inspections carried out, the results thereof, the amount of fees payable for the same and such other particulars, if any, as the Commission may from time to time direct;
    (b) A register of lapsed licenses in such form as the Commission may from time to time direct;
    (c) A register in such form as the Commission may from time to time direct, showing the dimensions, including thickness of plates, and other particulars of every boiler and prime-mover with regard to which he exercises his powers. Such register shall be written up from time to time and shall include relevant extracts from the weekly diary referred to in sub-rule (a).
18. Each Inspector shall be provided with a testing pump, indicator and gauges.
19. An inspection of a boiler shall include:-

(a) a thorough examination inside and outside to be made by the Inspector in person while the boiler is cool:

(b) an examination while the boiler is under steam.

The standard pressure gauge shall be applied and the condition of the safety valve and steam gauge noted.

20. When the Inspector is satisfied as to the condition of the boiler or prime-mover he shall on payment of the prescribed fees issue a license to the owner through the office.

21. Where the owner fails to pay the fees or where the Inspector is not satisfied as to the condition of the boiler or prime-mover he shall refuse to issue a license and shall enter in his report the grounds for such refusal.

22. A copy of his report shall be given at once by the Inspector to the owner.

23. If reasonable facilities for examination are not given, or if necessary information is withheld, the Inspector shall stay his inspection and refuse to grant a license.

24. Whenever an inspection is to be held under the preceding rules otherwise than at the request of an owner under section 7 of the Act, the Inspector shall give one week's notice of such intended inspection, and every such inspection shall take place between the hours of sunrise and sunset.

Term of, and Fees for, Licenses.

Section 21 (c).

25. Every license granted shall be for twelve months unless it appears to the granting officer that it should be for a shorter period.

The following fees are prescribed:-

(a) (i) Rs.32 for one boiler of not less than 30 H.P. registered;

(ii) Rs.20 for every boiler of less than 30 H.P. and for every additional boiler of whatever power belonging to a mill where a fee of Rs.32 has been paid for one boiler;

(iii) Rs.16 for one prime-mover and Rs.10 for every additional prime-mover belonging to a mill where a fee of Rs.16 has been paid for one prime-mover:

(b) where the license is endorsed on the Engineer's report as provided for in section 11-one –eighth of fees in (i), (ii) and (iii):

(c) a special fee of Rs.50 for inspections made at the owner's request on Sundays and gazetted holidays.

26. The fee for inspection or testing under section 20 shall be Rs.32 for each boiler, and Rs.20 for each prime-mover. The Inspector shall test the boiler or indicate the prime-mover as may be required and shall send his report and diagrams in duplicate through the office which will record one copy in the Register of Boilers, and forward the other to the owner.

27. Whenever the Commissioners appointed under section 16 (2) of the Act are satisfied, on the appeal of an owner, that a license should be granted to him, they shall issue a certificate in the following form:-

"We the undersigned, having been duly appointed under section 16 (2) of the Act to hear an appeal from the Inspector's order dated do hereby authorize the use of the boiler (or prime-mover) described below ."

and they shall direct the Inspector upon the authority of such certificate forthwith to issue a license to the owner, and the said license shall be in the form prescribed in the First Schedule to the Act, save that, in place of a certificate granted by the Inspector, it shall contain an entry made by him as follows:-

"Issued under the orders of the Boiler Commission passed in appeal under section 16 of the Act and dated the day of 19000."

Examining Boards.

Section 21 (d).

28. A Board of Examining Engineers shall be constituted in Rangoon, consisting of the Superintending Engineer and Shipwright Surveyor to the Government of Myanmar as Chairman and of four other members to be appointed from time to time by the Commission. A member of the Board shall ordinarily hold office so long as he is resident in Rangoon, and shall vacate his office if he resigns by letter addressed to the Chairman of the Commission or if he is absent from Rangoon for more than 30 days continuously, but the Commission shall have power to remove any appointed member of the Board if it thinks fit.

The Chairman and any two members of the Board shall form a quorum at Rangoon.

<Amendment 18.06.1989>

29. A special Examining Board may, under the orders of the Commission, be constituted at any time at the Yenangyaung or other oil-fields when the number of applications for examination warrants it, or in the alternative the Commission may, on payment of the travelling expenses to be incurred, depute two or more members of the general Board to constitute a special Board to proceed to the oil-fields for the purpose of holding an examination, granting certificates and issuing orders under Rule 47, in respect of

Engine-Drivers and Engineers, and for that purpose two of the members so deputed shall form a quorum and one of the members so deputed shall be appointed Chairman of such Special Board.

Issue of Certificates.

Section 21 (e).

30. The Board may at their discretion grant certificates of service without examination:-

(1) As Engine-Drivers:- To Engine-Drivers who possess a sea-going Engine-Driver's certificate under the Indian Steam-ships Act, 1884, or to holders of 1st or 2nd class Engine-Drivers' certificates under the Inland Steam-vessels Act, 1884.

(2) As Engine-Drivers of steam motor vehicles:-To persons who in the opinion of the Board may safely be entrusted with the control of such vehicles.

(3) As Engineers of the Second Class:-

(a) To persons holding certificates as second class Marine Engineers, or certificates issued under the Inland Steam-vessels Act, 1884, who have been in charge of engines and boilers of 30 N.H.P. and upwards for a period of not less than two years.

(b) To persons who have satisfactorily passed through a course of training of not less than five years in an engineering establishment of recognized position.

(4) As Engineers of the First Class:-

(a) To persons holding first class Marine Engineers' certificates, or certificates issued under the Inland Steam-vessels Act, 1884.

(b) To persons who have satisfactorily passed through a course of training of not less than five years duration in an engineering establishment of recognized position and have been for not less than two years in sole charge of engines and boilers of not less than 80 N. H.P. and can produce certificates of good character and conduct.

31. Except as provided by Rule 30, no certificates shall be issued by the Board otherwise than after examination.

32. The following shall be the qualifications required for entry for the different examination for certificates of competency:-

(A) A candidate for an engine-driver's certificate of competency must prove to the satisfaction of the Board:-

(a) that he is not below 21 years of age;

(b) (i) that previous to his application he has been for five years employed as fireman on boilers, or

(ii) that he is in possession of a certificate from a recognized Technical Institute signed by the Principal or Superintendent, stating that he has completed a full three years' course of instruction and that during that time he has been continually instructed in the management of engines and boilers and that in addition to the above he has had at least twelve months' practical experience as a fireman.

(B) A candidate for a second class engineer's certificate of competency must prove to the satisfaction of the Board:-

(a) that he is not below 21 years of age;

(b) (i) that he has served an apprenticeship to an engineer of not less than four years, devoting his time to the work of an apprentice and not being simultaneously employed on other duties unconnected with the profession of engineering, and that during that time he has been employed on the making and repairing of engines, or

(ii) that he has been employed for not less than four years as a journeyman fitter in some factory or workshop on the making or repairing of engines, or

(iii) that he has for not less than three years fulfilled the requirements either of clause (i) or clause (ii) as to service or employment, and has for not less than one year in addition thereto served as an engineer in charge or assistant engineer in a mill or factory with boilers under steam.

NOTE.-A candidate may in lieu of any of the qualifications under clause (b) above produce the following qualification, namely, a certificate from the Principal or Superintendent of a recognized Technical College or School that he has completed three full years' course in the workshop of that school and that during that period he has been constantly instructed in the management of boilers and engines and, in addition to such certificate, a certificate or certificates showing that for a period of not less than two years he has obtained practical experience in either of the ways laid down in sub-clauses (i) and (ii).

(C) A candidate for a first class engineer's certificate of competency must be not less than 22 years of age and must also prove to the satisfaction of the Board that previous to his application he has received such training as is required in the case of a candidate for a second class engineer's certificate of competency and that he possesses or is entitled to possess a first class engineer's certificate of service or has had one of the following periods of practical service:-

(i) service for at least one year with boilers under steam as engineer with a second class engineer's certificate of competency, or

(ii) service for at least two years with boilers under steam as engineer with a second class engineer's certificate of service, or

(iii) service for at least one year with boilers under steam as engineer with a second class engineer's certificate of service and in addition for at least six months as engineer in the chief charge of boilers under steam which are by law required to be in charge of an engineer holding a certificate.

33. In cases in which an applicant is able to satisfy the Chairman and Members as to the nature and extent of his service and experience but, has in, consequence of "service abroad" been unable to obtain a second class certificate of competency or of service he may be allowed, if the Chairman and Members see fit, to be examined for a first class certificate of competency or be given a first class certificate of service although he has not obtained a certificate of the lower grade.

Explanation:- The words "**service abroad**" shall for the purposes of this rule be deemed to mean service in a territory, or territories, in which the Act or an Act to the same purpose is not in force.

34. Any candidate may appear for examination in a lower class than his qualifications entitle him to enter for.

35. Every one who qualifies for admission to the examination by engine room service must show by testimonials that he has been regularly employed in the stokehold as a fireman or as an engineer of a certain grade.

36. Service with boilers not continuously under steam shall count as service of half the same length with boilers continuously under steam, unless the candidate proves that more than half of such service was actually under steam. The candidate must show by his testimonials whether the boilers with which he has worked were or were not continuously under steam.

37. Service as an engineer means service in those capacities only which afford opportunities of obtaining practical experience as an engineer on engines, boilers and their appurtenances. It does not include service as fireman, stoker, donkey man, greaser or engineer labourer.

38. Service performed in places where the Act is not in force may be accepted as qualifying service subject to the same rules as those which apply to service performed in places where the Act is in force.

39. The examination for engineers' certificates will consist both of questions to be answered in writing and of questions to be answered viva voce, forty per cent, of the total marks being allotted for the viva voce part of the examination.

40. In the examination for a **second class engineer's certificate** the candidate:-

(a) must be able to give a satisfactory description of boilers, and the method of staying them together with the use and management of their different valves, cocks, pipes and connections;

(b) must understand how to correct and repair defects from accident, decay, etc;

(c) must understand the use of the water gauge, pressure gauge, thermometer and salinometer and the principles on which they are constructed;

(d) must stable the causes, effects and usual remedies for incrustation and corrosion;

(e) must be able to explain the method of testing and altering the setting of the slide valves and the method of testing the fairness of shafting;

(f) must be able to calculate the suitable working pressure for a boiler of given dimensions and the stress per square inch on crank shafts when the necessary data are furnished;

(g) must understand the construction of centrifugal, bucket and plunger pumps and the principle on which they act;

(h) must be able to state how temporary or permanent repair could be effected in case of a derangement of part of the machinery, or of a total break down;

(i) must write a legible hand and have a good knowledge of arithmetic up to and including vulgar fractions and the square root;

(j) must possess a creditable knowledge of the prominent facts relating to combustion, heat and steam.

41. In the examination for a first class engineer's certificate the candidate:-

(a) will be required to make an intelligible hand sketch, or a working drawing of one or more parts of the steam engine, and to mark in without a copy all the necessary dimensions in figures so that the sketch or drawing could be worked from;

(b) must be able to take off and calculate indicator diagrams;

(c) must be able to calculate safety valve pressures, and the strength of the boiler shell stays and rivetting;

(d) must be able to state the general proportions borne by the principal parts of the machinery to each other, and to calculate the direct stress, the torsional stress and the bending stress in round bars and the direct and bending stress in rectangular bars with given loads;

(e) must be able to explain the method of testing and altering the setting of slide valves and to show approximately by sketch the difference any alteration in the slide valve will make in the indicator diagram;

(f) must be conversant with surface condensation, superheating and the working of steam expansively;

(g) must show a knowledge of the mensuration of superfices and solids and the extraction of the cube root and the application of these rules to questions relating to power, duty and economy of engines and boilers and to the stresses in rods, shafts and levers of the engine;

(h) must have a general knowledge of the construction of internal combustion engines;

(i) must have a good knowledge of the dynamo and must be able to write an intelligible account on any part of the machinery or boiler placed under his control;

(j) must be able to explain the formation of scale and the precipitation of salt and the precautionary measures adopted in respect thereto.

42. The examination for a driver's certificate will be wholly viva voce and the candidate will be required to show that:-

(a) he fully understands the working and management of boilers, the use of the best means of firing for the prevention of smoke, the separate use of the gauge glass, blow off cocks, scum cocks and other appliances;

(b) he is able to some extent to explain the actual working of engines and the separate uses of feed pumps, slide valves, pistons and other appliances;

(c) he knows how to act in case of breakdown of any portion of the machinery, etc.

Fees for Examinations.

43.	The following fees shall be paid:-		Rs.
(a)	For every application presented to the Board asking for a certificate	…	4
(b)	For every first class certificate granted without examination	…	10
(c)	For every first class certificate granted after examination	…	20
(d)	For every second class certificate granted without examination	…	6

(e) For every second class certificate granted after examination … 15

(f) For every engine driver's certificate … 3

The fees shall be divided among the members of the Board, other than the Chairman, taking part in the examination of the candidate, or candidates, by whom they are paid, or constituting the quorum of the Board which grants the certificate where there is no examination as the case may be.

44. Application for certificates shall be made and fees shall be paid to the Chairman of the Board.

45. Candidates for certificates shall send in their applications not less than one week previous to the date of the meeting of the Board at which they desire to appear. Applications should be accompanied by copies of the candidates' certificates; the originals shall be produced before the Board.

46. The Chairman of the Board shall keep accounts of the fees received and of the payments made to members, shall appoint days and hours for holding examinations, and shall summon his colleagues for examinations and for the consideration of applications for the grant of certificates without examination.

Cancellation or Suspension of Certificates.

Section 21 (f).

47. The Board may cancel either permanently or temporarily any certificate granted under the Act when they are satisfied that the holder of such certificate is, by reason of insobriety or carelessness or for any other cause, unfit to retain it. The Board may enquire into the desirability of cancelling a certificate on the report of an Inspector or on the report of the holder's employer or of their own motion, but they shall not cancel any certificate until they have given the holder opportunity to show cause why his certificate should not be cancelled. The Board may after enquiring grant a new certificate to any person whose certificate has been cancelled.

Appeals.

Section 21 (g).

48. Every appeal under section 16 shall be made in writing either in English or in Myanmar. <Amendment 18.06.1989>

49. An appeal may either be presented personally or sent by post to the office.

50. The petition of appeal shall be accompanied by the original order, notice or report appealed against or by a certified copy thereof.

51. The petition shall state clearly the grounds of appeal and the relief prayed for.

52. On receipt of an appeal the papers shall be forthwith circulated to the Commissioners for appointment of members under section 16 (2) to hear the appeal. Such members by arrangement with the Secretary shall fix a date for hearing of the appeal. Such date shall if possible be within fifteen days of receipt of the appeal.

53. The Secretary shall issue a notice to the appellant under registered cover inviting him to appear and to produce evidence on the date fixed and warning him that failing his appearance the appeal may be decided in his absence.

54. Failing appellant's appearance on the date fixed the members appointed shall first determine whether the appellant was duly notified as required by section 16 (2) and, if so, the appeal shall ordinarily be decided in his absence.

55. For the purpose of summoning and examining witnesses and for all such other purposes as may be necessary for the due and effective disposal of an appeal under the Act, members appointed under section 16 (2) shall collectively have the powers conferred on a Civil Court by the Code of Civil Procedure. The proceedings shall be in writing and shall be signed by the members so appointed. A copy of the final order shall be given to appellant if he applies for it and pays such fees as may be prescribed by the Commission.

56. Members appointed under section 16 (2) shall be entitled to receive the same fees for meeting to hear the appeal as for attending a meeting of the Commission.

Calculation of the N.H.P. of Engines and Boilers.

Section 21 (h).

57. The following is the prescribed method of calculating nominal horse power (N.H.P.):-

Compound Condensing Engines.

The sum of the squares of the diameters of the cylinders in inches divided by 30= N.H.P.

Compound Non-Condensing Engines.

The same as above less 10 per cent.

Simple and Non-Condensing Engines.

The sum of the squares of the diameters of cylinders in inches divided by the following divisors:-

Cylinders below 10" in diameter ÷ 9 = N.H.P.

Cylinders between 10" and 14" ÷ 10 =N.H.P.

Cylinders above 14" ÷ 11 =N.H.P.

Nominal H.P. of Boilers, Cornish.

The sum of the squares of the diameter of furnaces multiplied by 25 divided by 75= N.H.P.

Marine Type.

Grate Area ÷ 75.

Conditions of Inspections.

Section 21 (i).

A. Inspection of Fittings.

58. Every boiler shall be fitted with at least two safety-valves, one of which must be locked, a glass water-gauge, a steam pressure gauge, at least two gauge or test cocks or in lieu thereof a second glass water-gauge, a man-hole, if possible, a blow-off (or sludge) cock, a steam stop-valve, a non-return feed valve on the feed pipe and fitted close to the shell, and such hand-holes and mud-holes as are necessary for effectively cleaning out the boiler. The boiler shall ordinarily be provided with a scum-cock (especially with foul feed-water heated by exhaust steam), a water stop-valve on the feed pipe, and a fusible plug.

59. If two or more boilers are connected, each boiler shall be fitted complete with all the above fittings as if it were an entirely separate boiler, and also with a water stop-valve which may be fitted either between the non-return feed valve and boiler, or immediately outside the former, provided always that one or the other of these valves shall be fitted direct on the boiler flange; a valve combining the offices of these two valves in one casting is allowable.

60. No boiler, or steam chamber, shall be so constructed, fitted or arranged that the escape of steam from it through the safety valves can be wholly, or partially, intercepted by the action of any other valve, or constructive detail.

61. The Inspector, in his examination of a boiler and its appurtenances, shall particularly direct his attention to the safety-valves and at every inspection shall satisfy himself that they are in good working order, and if he has any doubts as to the pressure on them he shall see them tried under steam and satisfy himself that they blow off properly at the pressure assigned to them. The steam test shall invariably be applied before granting the first certificate under the Act for the boiler and on all occasions when the pressure is altered.

62. When carrying out such tests, Inspectors shall use pressure gauges similar to those supplied for the same purpose by the Board of Trade in England.

63. The Inspector shall declare the limits of the resistance to steam pressure to which the safety-valves may be regulated.

64. When the Inspector has determined the amount of pressure, he shall require the valves to be weighted accordingly and the weights or springs to be fixed in such a manner as to preclude the possibility of their shifting or in any way increasing the pressure, and if necessary he shall see this order carried out. The Inspector shall enter in the certificate issued under the Act particulars of his requirements regarding the regulation of the valves with a statement of the pressure and weights, and further that their condition is as required by the rules in force.

65. Should it come to an Inspector's knowledge that the weights have been shifted, or the loading of the valves otherwise altered or that the valves or constructive details have been in any way interfered with so as to increase the pressure without sanction of the Commission, he shall examine the whole of the valves, weights and springs at each subsequent inspection and satisfy himself that they are correct and in good order.

66. In all new boilers, and in boilers wherein alterations can be easily made, the safety-valves shall be placed directly on the boiler, and the neck (or part between the valve and the boiler flange) shall be as short as possible. Old boilers which have been previously passed without complying with this condition shall not be thrown out of work to enable the necessary alteration to be made unless the Inspector is of opinion that it is positively dangerous to continue to have a length of pipe between the boiler and its safety-valve.

67. In the case of all boilers for which no certificate has previously been issued the combined area* per square foot of fire grate surface of the safety-valves shall be not less than that shown in Schedule I opposite the sanctioned boiler pressure; provided that the valves shall be not less than two inches in diameter. In ascertaining the fire grate area the length taken shall be the average length of the grate measured from the inner edge of the dead plate to the front of the bridge and the width taken shall be the average width from side to side of the furnace on the top of the bars.

68. (1) Applications to fit valves of less than two inches diameter to small boilers shall be submitted for the consideration and orders of the Commission.

(2) The registry number of every boiler shall be cut in the front plate thereof in such position as shall be pointed out by the Inspector. The device to be so engraved shall consist as shown in the margin of the letters "B.B.C." above the letters "No." divided by a horizontal line, the whole being enclosed in a

rectangular figure one-sixteenth of an inch clear from the letters and figures. The engraving shall be not less than one-sixty-fourth of an inch deep.

B.B.C
No.

(3) The letters and figures in the engraving shall be at least one-half inch in height except in the case of small boilers where they may be reduced to one-quarter of an inch.

69. If there is only one safety-valve on a boiler which was not licensed before the Act came into force, the Inspector shall not grant a certificate.

70. Each safety-valve shall have a lift equal to at least one-fourth its diameter, and the openings for the passage of steam to and from the valves and the waste steam pipe, shall each have an effective area of discharge not less than the area or combined area of the valve or valves they serve; where there is a length of waste steam pipe above a valve box sufficient to enable an appreciable pressure to be exerted on the top of the valve by condensed steam, rain-water, or other cause, a drain pipe shall be fitted at the bottom of the waste steam pipe.

71. In the case of lever valves, if the lever is not bushed with brass, the pins shall be of brass; iron and iron working together must not be passed.

72. When practicable the valve seats shall be secured by studs and nuts.

73. The Inspector shall see that the bottom fitting of the glass water-gauge and the lowest gauge-cock are fixed at a safe level and at every subsequent inspection shall verify that they are in working order.

74. All man-holes, and openings of 20 square inches area or over, shall be stiffened with compensating rings of at least the same effective sectional area as the plates cut out, and in no case shall the plate rings be less in thickness than the plates to which they are attached. Openings in the shells of cylindrical boilers when oval shall have their shorter axis placed longitudinally and ordinarily the compensating rings round openings in flat surfaces shall be made of L or T iron.

75. Cast-iron doors shall not be passed.

76. The neutral part of boiler shells under steam domes shall be efficiently stiffened and stayed.

77. The flat ends, etc, (especially when they are of steel), of all boilers, as far as the steam space extends, shall ordinarily be fitted with shield or baffle plates where exposed to the hot gases in the uptake.

78. At every inspection the Inspector shall see that the blow-off (or sludge) cock, hand-holes and mud-holes are in order.

79. A steam stop-valve shall always be fitted between the boiler and the steam-pipe, and where two or more boilers are connected with a steam-receiver or superheater between each boiler and the steam-receiver or superheater.

80. Where two or more boilers are connected, a water stop-valve shall be fitted to each boiler to facilitate its isolation for inspection or repairs.

81. The provisions of Rule 66 respecting the "necks" of safety-valves shall apply to the "necks" of steam stop-valves, which valves shall be as close on to the boiler as possible.

82. The Inspector shall verify at each inspection that the non-return feed valves of boilers are in working order.

83. In all cases in which a socket expansion joint is fitted to a bent steam-pipe, the Inspector shall require a fixed gland and bolts to be fitted in order to prevent the end of the pipe being forced out of the socket. Fixed glands and bolts shall also be fitted to the expansion joints of straight steam-pipes.

84. The Inspector shall see that when a fusible plug is provided it is placed at that part of the boiler where the heat of the fire produces the greatest effect.

85. The Inspector shall frequently examine the steam pressure-gauges to see that their readings are reliable and shall verify that safety-valves are not over-weighted to comply with the readings of incorrect pressure-gauges. (See Rule 62.)

86. The Inspector shall see that the safety-valves of economisers and superheaters are in proper working order.

B. Testing of Boilers.

87. All hydraulic tests shall be conducted only after the erection of the boiler in situ, but the setting of a boiler shall not be disturbed for purposes of a hydraulic test unless on a report from an Inspector the Commission considers it essential.

88. Before granting a certificate Inspectors shall see that (a) boilers which have not previously had a working certificate under the Act, (b) boilers that have been cleared for a thorough repair, and (c) boilers under examination for a certificate, after re-erection in a position different to that under which they previously obtained a certificate, are tested by hydraulic pressure (in accordance with Rule 96) previous to the boilers being set and before they are covered in, to test the workmanship, etc.

89. When the internal construction or size of a boiler will not allow of the Inspector getting inside it, he shall see it tested by hydraulic pressure at every certificate inspection.

90. Boilers shall have their lagging removed at the first certificate inspection, unless specially exempted from this requirement. The lagging shall not be removed on the second, third and fourth, sixth and seventh and ninth annual inspections, provided no leakage occurs during the hydraulic test, but at all other annual inspectious it shall be completely removed, unless the Commission otherwise direct.

91. A hydraulic test shall be made before granting an increased pressure certificate. In all other cases the Inspector shall decide as to the necessity for such a test before granting a certificate, and he may subject to the limitations of Rule 96, if he considers it necessary, apply the hydraulic test to any boiler at any inspection.

92. Hydraulic tests shall always be accompanied by careful sets of gaugings and measurements taken before, during and after each test to ascertain the amount of bulging, and also the permanent set, if any. The tests shall not consist of a mere pumping up of the pressure.

93. Before testing a boiler the Inspector shall examine it, take the necessary measurements and calculate what the working pressure should be (in accordance with the regulations in force), and only test it with reference to that pressure in accordance with Rule 96. If the test is not satisfactory the working pressure allowable by calculation shall be suitably reduced, unless the owner is willing to make such alterations as will enable the boiler satisfactorily to stand the hydraulic test. After alteration the boiler shall again be examined, the pressure being re-calculated (if necessary) and tested to the satisfaction of the Inspector.

94. The Inspector who determines the pressure shall examine the boiler thoroughly during the test, specially with regard to any doubtful detail or place not easy of access during the prior examination.

95. No Inspector, who has not after the application of the hydraulic test been able to examine, or who has not examined, the boiler inside and outside shall be competent to determine the allowable working pressure of such boiler for the purpose of granting the certificate. When any Inspector who, after such complete examination as is above prescribed, has determined the working pressure is replaced or succeeded by another Inspector, he may record in writing his decision as to the amount of such pressure allowable, and such decision shall be communicated to the markers, owners or agents concerned and to his successor, who may then proceed to grant the certificate in respect of such boiler, as if the determination of working pressure had been made by himself. In the event of the original Inspector having had no opportunity to examine the boiler inside and outside after the hydraulic test the Inspector

granting the certificate shall re-test the boiler hydraulically and examine the boiler inside and out before determining the working pressure and granting a certificate.

96. New boilers shall be tested by hydraulic pressure in accordance with the following standards:-

(i) Boilers intended to work up to 100 lbs. pressure per square inch, or any pressure below that shall be tested to double the working pressure, but care shall be taken that the pressure is not allowed to go above this limit, or is maintained longer than is necessary for a satisfactory test.

(ii) Boilers intended for working pressure above 100 lbs. per square inch shall be tested to not less than 100 lbs. above such working pressure.

(iii) In the case of old boilers, the Inspector shall fix the necessary pressure to be applied, care being taken not to overstrain them, but the test must always exceed the working pressure.

(iv) The amount of the hydraulic pressure and the date of test shall be inserted in the Inspector's certificate (in the remarks column) and recorded in the dimension sheet of the boiler.

97. An Inspector, in making his calculations prior to granting a certificate under the Act, shall employ the formulae, factors and constants appropriate to the several parts as given in Schedule II.

98. The certificate granted under section 20 shall be in the form set forth in Schedule III.

Inspector.

G. B. H. FELL,

Offg. Secy. to the Govt. of Myanmar.

----- Attachment -----

[ATTACH LIST 1] 01 SCHEDULE I. SAFETY-VALVE AREAS. (RULE 67.)

[ATTACH LIST 2] 02 SCHEDULE II. FORMULAE, FACTORS AND CONSTANTS FOR CALCULATIONS. SHELL PLATES AND JOINTS. Factors of safety for shell plates and rivet sections.

[ATTACH LIST 3] 03 SCHEDULE III. Certificate of Inspection under section 20, Burma Steam-boilers and Prime-Movers Act, 1910.