

NATIONAL BUREAU OF STANDARDS REPORT

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REPORT ON LATIN AMERICAN TRAVEL
CONCERNING
LATIN AMERICAN STANDARDS
FOR PIPE AND TUBING
AND
TECHNICAL ASSISTANT (COLOMBIA)

November 5 - December 3, 1965

by

LeRoy L. Wyman
Special Assistant to the Director
(for International Standards)

I

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Special Assistant
to the
Office of Engineering Standards
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1. ABSTRACT:

The first part of this report covers the activities concerned in the third standards-writing seminar on steel pipes and tubes, held in Santiago, Chile, under the auspices of the Pan-American Standards Commission (PASC, or COPANT (Sp.)) - the Organization of American States (OAS) - and the Latin American Iron and Steel Institute (ILAFA). Officially this group is entitled COPANT Committee C13. on Pipe and Fittings.

This session accomplished a complete overhaul of specifications (known as "recommendations" in COPANT) written in previous seminars, and also wrote several new specifications, resulting in 34 much-improved and up-to-date documents.

The second part of the report concerns conferences in Bogota, Colombia, with officials of U.S. AID (UID), the Colombian Standards Institute (ICONTEC) and the National University concerning the technical assistance program for ICONTEC and the Weights and Measures training program for calendar year 1966.

2. SPONSORSHIP:

This trip was under the sponsorship of the Institute for Applied Technology, National Bureau of Standards, Department of Commerce.

The American Standards Association represents the United States in international standards affairs, thus is the official U.S. member of COPANT. Accordingly, the writer was designated by ASA as the chief of the two-man U.S. delegation; this delegation having been chosen by the U.S. National Committee for International Standards for Steel (in ASTM).

The Bogota stop-over was at the specific request and sponsorship of the U.S. AID (UID) mission in Colombia.

3. OBJECTIVES OF TRIP:

Participation in the pipe and tube seminar is a continuation of similar sessions held in 1963 and 1964 (See NBS Reports 8182 and 8572).

As head of the U.S. delegation, the writer was responsible for presenting the viewpoints of the USA National Committee for International Standardization of Steel, as well as of other bodies represented in ASA. In this, it was essential that every effort be made to maintain the manifold interests of the U.S. in the formulation of COPANT standards.

The Urban and Industrial Development division of U.S. AID, Colombia has a program of technical assistance to the standards institute, ICONTEC, and has been relying on NBS for guidance and technical assistance. Furthermore, this mission has sponsored the establishment of the Weights and Measures Laboratory at the National University, and relies on NBS experts for guidance and for conducting W&M training courses for L.A. participants.

The objectives of the Bogota visit concerned the formulation of these programs for the ensuing year.

4. SEMINAR REPRESENTATIVES

The following list notes the delegates and the ILAFA staff concerned with the seminar, as well as their classification according to Producer, Consumer, or General Interest.

<u>NAME</u>	<u>AFFILIATION</u>	<u>CLASSIFICATION</u>	<u>TUBE SEMINARS ATTENDED</u>
<u>Argentina:</u>			
Fructuoso <u>Berganza</u>	(1) Representative of the Chamber of Steel Pipe and Tube Producers	(P)	2
	(2) TUBOMET, S.A. Cabildo 575 - Xvellaneda Buenos Aires	(P)	
Hugo <u>Conesa</u>	ACINDAR, S.A. Villa Constitucion Km. 247 Ruta 9 Prov. Santa Fe	(P)	1
Pedro J. <u>Panza</u>	Yacimientos Petroliferos Fiscales Avda. Roque Saenz Pena 777 Buenos Aires	(C)	3
Joaquin <u>Rodriguez G.</u>	DALMINE-SIDERCA 25 de Mayo 386 Buenos Aires	(P)	3
Julian Tychojkij (Head of Delegation)	Instituto Argentino de Racio- nalizacion de Materiales, (IRAM) (Standards Institute) Chile 1192 Buenos Aires	(G.I.)	1 1
<u>Brazil:</u>			
Arnaldo <u>Correa</u>	FORNASA S.A.I.C. Calixa Postal 73 Volta Redonda	(P)	3
Jamil <u>Hallage</u> (Head of Delegation)	(1) Representative of the Brazilian Standards Institute, (ABNT) (2) Mineracao Geral do Brasil, Ltda. Caixa Postal 71 Mogi das Cruzes Sao Paulo	(G.I.) (P)	3

NOTE: Surnames are underlined

<u>NAME</u>	<u>AFFILIATION</u>	<u>CLASSIFICATION</u>	<u>TUBE SEMINARS ATTENDED</u>
<u>Chile:</u>			
Hugo <u>Brangier</u> M. (Head of Delegation)	Cia. Acero del Pacifico, (CAP), S. A. Casilla 167-D Santiago	(P)	3
Fernando <u>Cisternas</u> B.	Cia. Productos de Acero (COMPAC), S. A. Avda. Las Americas 1022 Santiago	(P)	3
Anibal <u>Gomez</u> G. (Seminar Director)	Latin American Iron and Steel Institute (ILAFSA) Casilla 13810 Santiago	(G.I.)	3
<u>Mexico:</u>			
Samuel <u>Alazraki</u>	Camas y Tubos, S.A. Apartado Postal 11 Santa Clara, Edo. de Mexico	(P)	3
Jose M. <u>Alcala</u> A.	Sociedad General Mexicana de Control, S.A. Isabel la Catolica 43 - 7° Piso Mexico, D.F.	(G.I.)	1
Arnaldo H. <u>Espinoza</u>	Cia. Fundidora de Fierro y Acero de Monterrey, S.A. Balderas 68 Mexico 1, D.F.	(P)	1
Rafael <u>Monroy</u> C.	Tubos de Acero de Mexico (TAMSA), S.A. Paris 15 Mexico 4, D.F.	(P)	3
Manuel <u>Quiros</u>	Direccion General de Normas (DGN) (Standards Institute) Avda. Cuauhtemoc 80 Mexico 7, D. F.	(G.I.)	3
Guillermo <u>Reyes</u>	Comision Federal de Electricidad Rodano 14 Mexico, D.F.	(C)	1
Manuel <u>Romero</u> M.	Tubos ALFA, S.A. Apartado Postal 636 Monterrey, N. L.	(P)	1

<u>NAME</u>	<u>AFFILIATION</u>	<u>CLASSIFICATION</u>	<u>TUBE SEMINARS ATTENDED</u>
<u>Uruguay:</u>			
Hans R. <u>Eggers</u> T.	(1) Representative of the Uruguayan Standards Institute (UNIT)	(G.I.)	3
	(2) CINOCA, S.A. Coronel Raiz 959 Montevideo	(P)	
<u>United States of America:</u>			
Edward V. <u>Pineda</u>	American Society for Testing and Materials (ASTM) 1916 Race Street Philadelphia, Pa. 19103	(G.I.)	1
LeRoy L. <u>Wyman</u> (Head of <u>Delegation</u>)	National Bureau of Standards (NBS) 200 N. W. Building Washington, D.C. 20234	(G.I.)	3

According to COPANT regulations at least five countries must be represented in order to draw up these proposed standards; and if there are but five, then their deliberations must be circulated and approved before being accepted as proposals.

In the present instance, with six countries represented, the documents resulting from the seminar can jump this intermediate circulation and proceed directly to final discussion.

It was well noted that three of the steel-producing countries -- Colombia, Peru, and Venezuela -- were not represented at this seminar.

5. SEMINAR PROGRAM

This 1965 seminar has two primary objectives, as set forth at the end of the 1964 meeting. These were:

1. Detailed review and revision of earlier proposals
 2. The completion of new proposals for mechanical tubing, conduit, and refrigeration tubing
- 1.1. Review of the following draft recommendations which were approved in the 1963 Seminar:

<u>Designation</u>	<u>Title</u>
COPANT 13:3-001	Seamless Carbon-Molybdenum Steel Tubes for Heating, for Refinery Service
COPANT 13:3-002	Seamless Chromium-Molybdenum and Chromium-Molybdenum-Silicon Steel Tubes for Heating, for Refinery Service
COPANT 13:3-003	Seamless Chromium-Nickel Steel Tubes for Heating, for Refinery Service
COPANT 13:5-001	Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes
COPANT 13:5-002	Seamless, Cold-Drawn, Chromium-Molybdenum and Chromium-Molybdenum-Silicon Steel Heat-Exchanger and Condenser Tubes
COPANT 13:5-003	Welded Carbon Steel Heat-Exchanger and Condenser Tubes
COPANT 13:5-004	General Requirements for Carbon, Ferritic Alloy and Austenitic Alloy Steel Tubes
COPANT 13:5-005	Welded and Seamless Steel Pipes for Ordinary Uses
COPANT 13:5-006	Classification of Steel Tubes

- 1.2. Review of the following draft recommendations which were approved in the 1964 Seminar:

<u>Designation</u>	<u>Title</u>
COPANT 13:5-008	Seamless Carbon Steel Pipe for High-Temperature Service
COPANT 13:5-009	Electric-Resistance-Welded Carbon Steel Pipe having Circular Section for Structural Uses and Mechanical Applications in General
COPANT 13:5-010	Seamless Carbon Steel Tubing of Circular Section Hot-Finished for Structural Uses and Mechanical Applications in General
COPANT: 13:5-011	Hot-Formed Carbon Steel Tubing of Circular Section with Butt-Welded Seams for Structural Uses and Mechanical Applications in General
COPANT: 13:5-012	Preferential Outside Diameters and Thicknesses for Steel Pipe
COPANT 13:5-013	ISO Thread for Steel Pipe, External Conical Thread and Internal Conical and Cylindrical Thread
COPANT 13:5-014	Steel Couplings with ISO Threads for Pipes of Common Use
COPANT 13:5-015	Electric-Resistance-Welded Carbon Steel Boiler Tubes
COPANT 13:5-016	Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for High-Pressure Service
COPANT 13:5-017	Steel Pipe with and without Seams, Used for Conduction
COPANT 13:5-018	Malleable Cast Iron Couplings with ISO Thread
COPANT 13:5-019	ASA Thread for Steel Pipe
COPANT 13:5-020	Welded and Seamless Steel Pipes for the Protection of Electrical Conductors, Heavy Type

Designation

Title

COPANT 13:5-021

Welded Steel Pipes for the
Protection of Electrical Conduc-
tors, Medium-Heavy Type

COPANT 13:5-022

Welded Steel Pipes for the Protec-
tion of Electrical Conductors,
Light and Medium-Light Types

COPANT 13:5-023

Seamless Carbon Steel Boilers and
Superheater Tubes

COPANT 13:5-024

Seamless Carbon Steel Tubes for High-
Pressure Boilers

COPANT 13:5-025

Seamless Medium-Carbon Steel Boiler
and Superheater Tubes

COPANT 13:5-026

Seamless Carbon-Molybdenum Steel
Boiler and Superheater Tubes

COPANT 13:5-027

Malleable Cast Iron Couplings with
ASA Thread

COPANT 13:5-028

Characteristics and Testing Methods
of the Zinc Coatings on Tubular
Steel Products and their Accessories

2.1. Study of the following new proposed recommendations:

COPANT 13:5-029	Seamless Steel Pipe for Low-Temperature
COPANT 13:5-030	Seamless Carbon Steel Tubing of Circular Section, Cold-Drawn, for Structural Uses and Mechanical Applications in General
-----	Method for Estimation of Grain Size (ASTM E112, in Spanish and in COPANT format)
-----	Method for Evaluating Inclusions in Steel (ASTM E45, in Spanish and in COPANT format)

Before the 1965 Seminar all the draft recommendations approved in the 1964 Seminar and the new proposed recommendations were circulated for review and comments among the members of COPANT Committee C 13 on Pipe and Fittings.

Long before the opening of this present seminar it had become obvious in several countries that many of the '63 and '64 proposals which were the result of much compromising were, in actuality, poor and unworkable specifications. As the consequence of this, the review program held the highest priority -- and how to accomplish this was the first question before the delegates.

It was agreed that the seminar would have sub-groups; one for seamless tubing, the other for welded tubing, and that these groups could set up small Task Groups to prepare specific items.

When either of the groups had revised or written new proposals and approved them, these proposals were then presented to plenary sessions at which all delegates were present.

Upon being approved by the plenary meeting, these proposals were turned over to an editorial group for final polishing, typing, duplicating, etc.

It was fully agreed that no one was to make any change whatsoever in these resulting documents.

As work began, it became quite evident that those having had previous experience in these seminars had learned two important lessons:

1. Not to compromise a recognized specification.
2. Not to deviate from a recognized specification which involved a code.

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The recognition of these factors, the proposal-review phase of the work very soon took on the appearance of a general inspection of most of the proposals -- in favor of reducing recognized specification to COPANT-like formats. In this it was agreed that the stipulated COPANT format for specifications was not suitable for standards for these products.

Each working group established a general outline of work on the old and new proposals, then attacked them by associated groups; adding new proposals wherever needed, in order to hopefully meet all of the demands for pipe and tube specifications presently urgent.

For the U.S. delegation, Mr. Pineda was assigned to the welded-tube group, while Mr. Wyman handled the seamless and mechanical tubing, in addition to pinch-hitting in the welded tube group on numerous occasions.

Due to the heavy program which was initially adopted, it was agreed that we would work a 9- to -5 schedule for the subcommittees and task groups, Monday through Friday, with plenary sessions at 5-7 P.M. when needed. Also, it was agreed to have a 9-1 session each Saturday, with 3-5 P.M. plenaries, when necessary.

The schedule was not interrupted by any Chilean holidays, and we from the U.S. celebrated Veterans' Day and Thanksgiving hard at work on seminar chores.

6. SEMINAR PROGRESS

As previously noted, it was quite evident during the first few days of the seminar that the group was not quite satisfied with the "compromise proposals" originated in the '63 and '64 seminars. As the consequence of this, quite some time was spent in a plenary session to lay out a complete pattern of work for the seamless and welded groups.

In essence, these patterns consisted of listing the appropriate ASA, ASTM, ISO, DIN, etc. specs. necessary to give at least a minimum coverage of the pipe and tube field. Next, these were interpreted in terms of existing COPANT proposals, and the blanks noted as new proposals to be prepared.

At this point some of the "new look" of this seminar became most evident because in discussing a needed spec. covering metric sizes, it was quickly agreed to do this by using an appropriate ASTM spec. for the test requirements, etc. and inserting the metric sizes.

In subsequent review activities, there was, in general, a discarding of the original documents; these being replaced by adopting ASTM specs. into the format that this group had decided upon for COPANT tube, specs.

Another significant change was the complete agreement that there should be a Basis of Purchase section in these specs. So, in order to get around a rather bothersome COPANT ruling, this was combined into another section.

As mentioned in the reports covering previous seminars, the earlier proposals were loaded with "by previous agreement" statements: that is, "open-end agreements" that we have thrown out of ASTM. Now, however, my several years of objecting have borne fruit, and the current seminar had a busy time deleting these terms.

During the first three days of work the two groups had re-written 13 specs.; these being turned over to the editorial group for editing and then typing for final plenary study and approval.

It was fully agreed that these specs., as approved in plenary session, were to go to COPANT -- together with the stern admonition that they were not to be changed!

At the half-way point in the seminar there was much discussion concerning the proposed specs. for mechanical and structural tubing -- especially on how to handle these items.

It is unfortunate that the definitions of these types are so hazy in our ASTM specs. because referral to these statements was of little help in trying to differentiate the two types. This was most poignant in the face of the contention by one delegation that both types should be in the same spec. -- as the British had done. However, after much lengthy argument, it was decided to have separate specs. for these types of tubing.

Another factor concerning mechanical tubing is that most of the L.A. mills cannot hold the dimensional tolerances which we have last adopted, but can come close to those which we had in '64, thus the tolerances used are the best these mills can produce. Also, our demands on straightness are much more stringent that can be produced in these mills.

The subject of elongation vs. test specimen width caused many hours of polemic discussion -- a good measure of this being caused by lack of understanding of some of the fundamentals of the tension test. The net result of this was that Wyman was impressed into the job of a 2 1/2 hour lecture on the subject. Resulting from this (whether due to elucidation or utter confusion is not reportable) the matter was satisfactorily resolved.

Another turning point in this seminar concerns specifications that are code-connected; the cardinal point being that some delegates wanted to make changes that to us from the U.S. could only be done by inter-society cooperation. This subject took up several hours of convincing argument - to the end that it was finally agreed that "code" items would not be changed in any significant manner and, having adhered to this concept, the finished proposal would reference the code designation as in ASTM specs.

In attacking the problem of specs. for mechanical tubing there was much discussion -- but it finally ended in agreement to accept the work of the Mexican steel committee that had prepared a COPANT version of ASTM A-519. This, of course, greatly accelerated the work of our 5-man task group (Monroy, Eggers, Hallage, Rodriguez, Wyman).

During the last week it became increasingly obvious that the work-load could not be completed by the weekend, thus, it was decided to extend the meeting; working all through the weekend and to Tuesday night -- for those who could delay their departure.

Fortunately, delegates from five countries could stay over, thus meeting the minimum COPANT requirements. For the U.S., Wyman had urgent business in Bogota, Colombia, so Pineda stayed through Tuesday, acting as head of delegation after Wyman's departure.

6.0.SEMINAR ACCOMPLISHMENTS

The following drafts, prepared in COPANT format and in Spanish by ASTM are to be submitted to the COPANT Secretariat for processing and adopted as Recommendations:

1. Estimation of the Average Grain Size of Metals (ASTM, E112) (ASA)
2. Determination of the Inclusion Content of Steel (ASTM, E45) (ASA)

6.1.Recommendations Completed

By the conclusion of the seminar 28 drafts had been approved and were ready for COPANT circulation for final vote. They are:

<u>Designation</u>	<u>Title</u>
COPANT 13:3-001	Seamless Low-Carbon and Carbon-Molybdenum Steel Still Tubes for Refinery Service
COPANT 13:3-002	Seamless Chromium-Molybdenum and Chromium-Molybdenum-Silicon Steel Still Tubes for Refinery Service
COPANT 13:3-003	Seamless Chromium-Nickel Steel Still Tubes for Refinery Service
COPANT 13:5-001	Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger
COPANT 13:5-002	Seamless Cold-Drawn Chromium-Molybdenum-Silicon Steel Heat-Exchanger and Condenser Tubes
COPANT 13:5-003	Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes
COPANT 13:5-004	General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes
COPANT 13:5-005	Welded and Seamless Carbon Steel Pipe for Ordinary Uses, Suitable to be Threaded According to COPANT Recommendations 13:5-019, (ASA Thread), Black and Hot-Dipped Zinc Coated
COPANT 13:5-008	Seamless Carbon Steel Pipe for High-Temperature Service

Designations

Title

COPANT 13:5-013	ISO Thread for Steel Pipe, Tapered External Thread and Tapered or Straight Internal Thread
COPANT 13:5-014	Steel Couplings with ISO Thread for Pipe for Ordinary Uses
COPANT 13:5-015	Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for Low-Pressure Service
COPANT 13:5-016	Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for High-Pressure Service
COPANT 13:5-017	Welded and Seamless Carbon Steel Pipe Suitable to be Threaded
COPANT 13:5-018	Malleable Cast Iron Couplings with ISO Thread
COPANT 13:5-019	ASA Thread for Steel Pipe
COPANT 13:5-020	Welded and Seamless Steel Conduits (Electrical), Heavy Type
COPANT 13:5-021	Welded Steel Conduits (Electrical), Medium-Heavy Type
COPANT 13:5-022	Welded Steel Conduits (Electrical), Light and Medium-Light Types
COPANT 13:5-023	Seamless Carbon Steel Boiler and Superheater Tubes for Low-Pressure Service
COPANT 13:5-024	Seamless Carbon Steel Boiler and Superheater Tubes for High-Pressure Service
COPANT 13:5-025	Seamless Medium-Carbon Steel Boiler and Superheater Tubes
COPANT 13:5-026	Seamless Carbon-Molybdenum Steel Boiler and Super-heater Tubes
COPANT 13:5-027	Malleable Cast Iron Couplings with ASA Thread

Designations

Title

COPANT 13:5-028

General Characteristics and Testing
Methods of Zinc Coatings on Steel
Tubular Products and Fittings

COPANT 13:5-032

Welded and Seamless Carbon Steel
Pipe for Ordinary Uses Suitable to
be Threaded According to COPANT
Recommendation 13:5-013 (ISO Thread)

COPANT 13:5-033

Supplementary Requirements for
Seamless and Electric-Resistance-
Welded Carbon Steel Tubular Products
for High-Temperature Service Confor-
ming to ISO Recommendations for Boiler
Construction

COPANT 13:5-034

Carbon Steel Couplings for Pipe with
ASA Thread

6.2. Recommendations Continuing

In addition to the foregoing, three other drafts were studied and their revisions outlined for subsequent attention. They are:

COPANT 13:5-009	Electric-Resistance-Welded Tubing for Constructions and General Mechanical Applications
COPANT 13:5-010	Seamless Carbon-Steel Tubing for Constructions and General Mechanical Applications
COPANT 13:5-011	Butt-Welded Carbon Steel Tubing for Constructions and General Mechanical Applications

6.3. Recommendations Not Considered

Because of considerable difference of opinion as to both the advisability of having and the eventual usefulness of two earlier drafts, they were not considered for revision and advancement by this seminar group. These are:

COPANT 13:5-006	Classification of Steel Tubes
COPAR COPANT 13:5-012	Preferential Outside Diameters and Thicknesses for Steel Pipe

6.4. Recommendations to be Prepared

Looking ahead to the next seminar suggested for March, 1967 in Montevideo, Uruguay, plans were made for other much-needed specifications to be prepared by certain organizations or individuals. These are:

Specifications for

1. Electric-Resistance-Welded Carbon Steel Tubing for Constructions and General Mechanical Applications (as outlined, work by IRAM)
2. Seamless Carbon Steel Tubing for Constructions and General Mechanical Applications (by Eggers, Monroy, Rodriguez)
3. Butt-Welded Carbon Steel Tubing for Constructions and General Mechanical Applications (as outlined, work by Espinoza, Conesa, Pineda)
4. Cold-Drawn Butt-Welded Carbon Steel Tubing for Constructions and General Mechanical Applications (as per ASTM, A512) (by Conesa and IRAM)

5. Electric-Resistance-Welded Carbon and Alloy Steel Tubing for Constructions and General Mechanical Applications (to add missing types) (as per ASTM, A513) (by IRAM)
6. Welded and Seamless Carbon Steel Pipe Suitable to be Threaded According to COPANT 13:5-013 (ISO Thread)
7. Seamless Pipe for Low Temperature Service (Refrigeration) (by Eggers)
8. Couplings and Connectors for Conduit (per Mexican proposal)
9. Structural Tubing for Civil Engineering Applications (as per ASTM, A500 and A501) (DGN)
10. Seamless Ferritic Alloy Steel Pipe for High Temperature Service (as per ASTM, A335) (by Monroy)
11. Seamless Ferritic--and Austenitic--Alloy Steel Boiler, Super-heater and Heat-Exchanger Tubes (as per ASTM, A213) (by Monroy)
12. Electric-Resistance-Welded Steel Pipe (as per ASTM, A135) (by Brangier, Correa, Romero)
13. Test Methods for Tubes: -- Tension Test Reverse Flattening Test, and Crush Test (Eggers & IRAM)
14. Test Methods existing as COPANT Test Methods are to be reviewed and made applicable to tube testing:
 1. Brinell Hardness Test
 2. Rockwell Hardness Test
 3. Flanging Test
 4. Flaring Test
 5. Flattening Test
 6. Bending Test (COPANT, R1)
 7. Tube Bending Test

7. SEMINAR RECOMMENDATIONS

- 7.1. ILAFA and COPANT are requested to establish and maintain liaison with ASTM to the end that latest revisions in ASTM specs are available.
- 7.2. That ASTM be requested to furnish Spanish translations of specs. A500, A501, A512, A513, A335, A213, and A135.
- 7.3 That the pipe and tube seminar be re-convened at least every two years to revise specs and prepare new items; the next meeting recommended for mid-March, 1967, in Montevideo, Uruguay, with pre-arranged schedule for review items.
- 7.4. ILAFA and COPANT should prepare standards for thicknesses of flat products.
- 7.5. COPANT should have a Recommendation based on ASTM, A422, Butt Welds in Still Tubes for Refinery Service, for necessary referencing of Projects 13:3-001, 13:3-002, and 13:3-003 prepared by this seminar.
- 7.6. COPANT should organize a seminar on malleable cast iron, tests therefore, and standardize fittings thereof for malleable C.I. pipe - supplementing the coupling work of this seminar as reference sources.
- 7.7. The present COPANT format having been proven inadequate at three pipe and tube seminars, COPANT should authorize the seminar to prepare a format which is satisfactory for these products.
- 7.8. A Basis of Purchase section was incorporated into Ch. 2. of the specifications by unanimous approval as being indispensable and is not to be altered.
- 7.9. Revisions of Recommendations will carry the same designating number, but the year of approval should be added to the designation.

8. SUMMARY AND RECOMMENDATIONS

In addition to accomplishing a tremendous workload and projecting continued efforts for more than a year ahead, probably the outstanding feature of this seminar lies in "what and how" this was achieved. Succinctly, this came about because the "veteran" seminar attendees have come to the realization that patch-work specifications are worthless, and that full reliance can only be placed on reference specifications that have resulted from and stood the tests of a sound technology.

Another manifestation of the interest in our standards activities was that the delegates were deeply interested in current standards revisions, new proposals, and committee activities as reflected in the minutes thereof. In fact, in more than a few instances, current changes which were nearing final adoption were incorporated into the proposals being written by the seminar.

Probably the most important factor in accomplishing these ends lies in the continued association of delegates who are technically competent and enjoy the personal respect, confidence and companionship of their fellow-delegates from all countries. This personal factor is of outstanding importance, and every effort should be made to select technically and personally competent delegates -- and to keep them on the job, as well as to provide for their successors.

The fact that so much reliance is now being placed on ASTM standards well-bespeaks the high regard the delegates have for these documents. However, this reliance on the part of our good L.A. associates also incurs some responsibilities on the part of ASTM standards writers. For example, our elimination of "killed" steel in A161 ('65 version) because we knew all of us used this practice caused considerable consternation at the seminar - because they did not know this! Furthermore, if killed steel is stated, then there can be no mistake or substitution.

Much of our terse phraseology, and especially our poor definitions, products, or scopes of specifications make for trouble in translation to another language; this being particularly true with Spanish because that language is quite lacking in steel-making terms. In essence, in writing U.S. standards we must pay far more attention to the probability of these being translated into other languages - and guide ourselves accordingly.

For other specific recommendations, we should

1. Approve of and designate delegates to the March, 1967 seminar
2. Make every effort to have both producer and consumer industry representatives present
3. Thoroughly indoctrinate any new delegates prior to the meeting
4. Render technical assistance when requested, including
5. Translations of requested specifications into Spanish, etc.
6. Insure that current changes in our specifications are well distributed
7. The U.S. should, through its official representation in COPANT, request that COPANT adopt the recommendations made by the seminar delegates for the improvement of COPANT documents, operation, etc.

PART II

BOGOTA, COLOMBIA

November 28, 1965 - December 3, 1965

1. Background

At the request of the Urban and Industrial Division (UID) of the U.S. AID Mission, Bogota, Colombia, the writer was requested to stop over on his return from the steel seminar in order to formulate the program for AID assistance to the standards movement in Colombia by assisting the operations of the Instituto Colombiano de Normas Tecnicas (ICONTEC). This program is the continuation of that initiated last year, and detailed in NBS Report No. 8938 by L.L. Wyman.

To save reference-searching, it may be briefly stated that the 1965 program consisted of a series of 10 two-week seminars held in collaboration with the standards institution, ICONTEC, on as many subjects, conducted by experts from the National Bureau of Standards and the Department of Agriculture (ARS). Additionally, the ICONTEC library was supplied with a selection of U.S. and International (ISO) standards.

In addition to the assistance to ICONTEC, AID also sponsored the establishment of a Weights and Measures Laboratory at the National University, to be administered jointly by the N.U., ICONTEC, and AID for demonstration and training available to all L.A. countries.

2. GENERAL CONSIDERATIONS

In continuing this program of technical assistance which was originally drawn up two years ago (See NBS Report No. 8564), we now had the results of last years activities to serve as a guide for the 1966 program. Specifically, the items which needed decision and subsequent planning were:

1. Seminar Program
2. Additions to Standards Library
3. Program for Weights and Measures Training
4. Program for ICONTEC Personnel Training
5. Assistance to Testing Facilities
6. Supplementation of ICONTEC facilities

3.0. SEMINAR PROGRAM

In conferences with Mr. George Fitch, Acting UID Officer, Dr. Javier Henao L., Executive Director of ICONTEC, Dr. Fernando Ospina H., Board Member, and with the Board of Directors, the various responses to the first series of seminars -- as well as the ideas for the next series -- were fully discussed.

3.1. SEMINAR TYPE

Last year, the two-week seminars on each subject were roughly divided into two halves; the one being primarily concerned with the indoctrination of business executives into the technological and economic aspects of standardization; the other being devoted to the actual specification writing at committee meetings.

During the discussions as to the tenor of the 1966 seminars, it became clear that the consensus favored actual committee work. This was a most satisfactory conclusion because it was my own opinion that actual committee work on standards-writing was presently the most important effort to be exerted by ICONTEC.

As to the seminar topics, agreement was reached on the following:

1. Iron and Steel
2. Copper and Products
3. Concrete
4. Modular Construction
5. Food (National Codes, etc.)
6. Textiles (Medellin & Bogota)
7. Quality Control
8. Electrical Code
9. Sanitary Engineering

It was contemplated that this program would begin about May 2, 1966, each meeting consisting of one full work-week with each committee of ICONTEC.

Several of these subject areas represent activities which are new in ICONTEC -- a few of them being initiated last year but the committees are not fully organized and operating. Hence, it was agreed that ICONTEC would immediately proceed with these efforts so that real working organizations would be in readiness when the experts arrived from the U.S. to work with them.

It was also agreed that the U.S. personnel would be advised concerning the standards needs of these committees, their problems, etc. well ahead of the seminars in order that these individuals could come "well prepared".

ICONTEC does feel the need of more high-level business contacts and liaison and Mr. Fitch and I are in full agreement with this concept. To effectuate this, it was proposed that I would devote one week to lecturing to selected business executives in the most

important industrial centers in Colombia. First prior to the opening of the seminar series for 1966.

3.2. STANDARDS LIBRARY

The following items were approved for additions to the ICONTEC Standards Reference Library:

1. Standard of the International Electrotechnical Commission
2. U.S. Federal Specifications
3. Encyclopedia of Technology
4. Making, Shaping, and Treating of Steel

3.3. WEIGHTS AND MEASURES TRAINING

This Program, which is distinct from the ICONTEC assistance program in concept and sponsorship by AID, will have two phases during 1966.

The first of these will consist of a training program for Professor Silva, National University, whereby he will spend preferably 4-6 weeks at NBS for Weights and Measures training, then visit various standards groups in the U.S.A.

This phase is to be planned for initiation in February, 1966.

The second phase deals with a W&M training seminar for applicants from L.A. countries to be held from July 25 - August 13, 1966 at the University. The program will be under the direction of Mr. Thomas Stabler, NBS, who will be assisted by Professor Silva and, hopefully, by Dr. Briceno of the Venezuelan Metrology Department.

These plans were adopted during a meeting at the University between Prof. Dr. Hernando Franco and Prof. Silva of the staff, and Messrs. Fitch, Henao, Ospina, and Wyman.

3.4. ICONTEC PERSONNEL TRAINING

In 1965, this portion of the program consisted of bringing Dr. Henao to the U.S. on a training trip wherein he participated for a full week in the Society and committee work of the American Society for Testing and Materials. Following this he spent some time at NBS, and then visited such standards-institute headquarters as ASTM, ASA, Consumers Union, etc. before returning to Colombia.

The results of this mission were most beneficial to ICONTEC, resulting in a number of operational changes which were much needed.

For 1966, it is proposed that two members of the technical staff of ICONTEC be sent on a similar training mission.

3.5. ASSISTANCE TO TESTING FACILITIES

The writing of standards is but one phase of standardization for, while the specification sets forth certain requirements that the product must meet, there must also be established the proper test methods by which to check the product, and there must be adequate laboratory facilities in which to employ these test methods.

At the present time, there are two urgently needed improvements in testing facilities; the one concerning compliance testing for the now mandatory standard hydraulic brake fluid. This work is centered at the Instituto de Investigaciones Technologicas (IIT)k and is the test method established in the U.S. through the Society of Automotive Engineers.

Various materials and additional equipment parts are needed to supplement the presently almost complete testing facility. The purchase of these will be explored by Mr. Wyman and arrangements made for procurement.

The second area of assistance for testing facilities consists of several instrumentation items to supplement those presently at the National Chemical Laboratory in order to permit the testing of the full range of petroleum-base fuels.

The need for these was well demonstrated when I visited Dr. Bernardo Fajardo P., Director, at this laboratory which is located on the National University campus.

3.6. ICONTEC FACILITIES

The effectiveness of ICONTEC operations is severely hampered by inadequate facilities for preparing and duplicating copies of draft specifications for conciliation and discussion -- as well as for the final publication of approved standards. The final assistance item is to help ICONTEC to modernize these services.

On my departure from Bogota, after four very busy days of meetings, it was agreed that we would immediately proceed to put the foregoing plans into operation.

