

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 8-K

CURRENT REPORT
PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

Date of report (Date of earliest event reported): December 15, 1999

American Superconductor Corporation

(Exact Name of Registrant as Specified in Charter)

Delaware

0-19672

04-2959321

(State or Other Jurisdiction
of Incorporation)

(Commission
File Number)

(IRS Employer
Identification Number)

Two Technology Drive, Westborough, Massachusetts

01581

(Address of Principal Executive Offices)

(Zip Code)

Registrant's telephone number, including area code: (508) 836-4200

(Former Name or Former Address, if Changed from Last Report)

Item 5. Other Events.

On December 15, 1999, American Superconductor entered into an agreement with Pirelli Cavi e Sistemi S.p.A.

Item 7. Financial Statements, Pro Forma Financial Information and Exhibits.

(c) Exhibits.

The exhibit listed in the Exhibit index is filed as part of and is included in this report..

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

American Superconductor Corporation

(Registrant)

Date: January 19, 2000

By: /s/ Stanley D. Piekos

Stanley D. Piekos
Vice President, Corporate Development and
Chief Financial Officer

EXHIBIT INDEX

Exhibit No.	Description
----- 99.1*	----- 1999 Program Addendum between between Pirelli Cavi e Sistemi S.p.A. and American Superconductor Corporation dated as of October 1, 1999.

* Confidential treatment has been requested with respect to certain portions of this exhibit, which portions are omitted and have been filed separately with the Commission.

1999 PROGRAM ADDENDUM

This Addendum effective as of October 1, 1999, between Pirelli Cavi e Sistemi S.p.A. a corporation organized under the laws of Italy ("Pirelli") and American Superconductor Corporation, a corporation organized under the laws of Delaware ("ASC").

WHEREAS, ASC and Pirelli are parties to an amended research, development and exploitation agreement, dated as of October 1, 1995 (the "Agreement");

WHEREAS, the parties wish to extend the Research and Development Program I pursuant to Section 8 of the Agreement, and to have Pirelli participate in the funding of a Subsequent Research and Development Program with respect to [**] conductors pursuant to Section 2.17 of the Agreement (hereinafter, collectively, the 1999 Programs);

Whereas, the parties accordingly wish to further delineate certain terms and conditions of the Agreement with respect to the 1999 Programs and to provide certain additional provisions with respect to provisions of the Agreement concerning third parties;

NOW, THEREFORE, for and in consideration of these premises, which are part and parcel of this Addendum, and of the mutual covenants and agreements contained in this Addendum, and subject to the terms and conditions set forth in this Addendum and the Agreement, the parties agree as set forth below.

1. Extension of the Research and Development Program I. Pursuant to section

8 of the Agreement, the Research and Development Program I, due to expire on September 30, 1999, is extended for a further period of four years from October 1, 1999 through September 30, 2003. Exhibit 2.1-A to this Addendum, attached hereto, set forth goals, milestones and further details of research and development activities to be performed by ASC in cooperation with Pirelli under the extended Research and Development Program I. For the purposes of the extended Research and Development Program I, Section 2.1 shall be understood to state that the extended Research and Development Program is more specifically described in Exhibit 2.1-A, and any reference to Exhibit 2.1 in Section 2 of the Agreement shall be considered reference to Exhibit 2.1-A as well.

2. Funding of Extended Research and Development Program I. Pirelli shall,

subject to the provisions of Section 8.3 of the Agreement and the timely performance by ASC of all its obligations under the Agreement, pay to ASC for its performance under the extended Research and Development Program I in each contract year of the extensions period under point 1 above, starting from the effective date of this Addendum the following amounts:

	Year 1	Year 2	Year 3	Year 4
US\$	[**]	[**]	[**]	[**]

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

The above payments shall be invoiced quarterly in advance, and payments shall be made within sixty (60) days of the date of invoice in accord with the above payment schedule. To the extent not inconsistent with this Addendum, the provisions of Section 2.12(a) of the Agreement shall apply with respect to payment of amounts under this point 2.

3. Subsequent Research and Development Program. Pursuant to Section 2.17 of

the Agreement, Pirelli has elected to participate in the funding of a Subsequent Research and Development Program (hereinafter Subsequent Research and Development Program I) concerning [**] conductors. Exhibit 2.1-B to this Addendum, enclosed hereto, set forth goals, milestones and further details of research and development activities to be performed by ASC in cooperation with Pirelli under Subsequent Research and Development Program I which, subject to section 8.4 of the Agreement, shall extend from October 1, 1999 through September 30, 2004, but shall also include work performed by ASC with respect to Subsequent Research and Development Program prior to October 1, 1999. For the purposes of Subsequent Research and Development Program I, Section 2.1 shall be understood to state that Subsequent Research and Development Program I is more specifically described in Exhibit 2.1-B, and any reference to Exhibit 2.1 in Section 2 of the Agreement shall be considered reference to Exhibit 2.1-B as well.

4. Funding of Subsequent Research and Development Program I.

Notwithstanding any contrary provisions set forth in Section 2.12 (b), Pirelli shall, subject to the provisions of Section 8.3 of the Agreement and related provisions of this Addendum, and to the timely performance by ASC of all its obligations under the Agreement, pay to ASC for its performance under Subsequent Research and Development Program I detailed in Exhibit 2.1-B in each contract year, starting from the effective date of this Addendum the following amounts:

	Year 1	Year 2	Year 3	Year 4	Year 5
US\$	[**]	[**]	[**]	[**]	[**]

Of the amount for each year, US\$[**] is for research and development work performed by ASC with respect to Subsequent Research and Development I prior to October 1, 1999 and US\$[**] is for work to be performed subsequent to October 1, 1999.

The above payments shall be invoiced quarterly in advance, and payments shall be made within sixty (60) days of the date of invoice in accord with the above payment schedule. To the extent not inconsistent with this Addendum, the provisions of Section 2.12(a) of the Agreement shall apply with respect to payment of amounts under this point 4.

If Pirelli terminates Subsequent Research and Development Program I prior to September 30, 2004, it shall pay to ASC, in quarterly payments of \$[**] each as provided above, an amount equal to \$US[**] less any amounts as Pirelli may have previously paid under this point 4 for work prior to October 1, 1999. This amount shall be in addition to any amounts that may remain unpaid with respect to work performed on Subsequent Research and Development Program I subsequent to October 1, 1999.

5. Success payment for Subsequent Research and Development Program I. In

addition to the amounts under point 4 above, Pirelli shall pay to ASC a further amount of US\$[**] in case the Success Performance Milestone set forth in Exhibit 2.1-B has been achieved. ASC shall provide Pirelli a written report comparing performance results to the Success Performance Milestone goals and stating that the Success Performance Milestone has been met. Payment shall be due within 60 days as from completion of the Subsequent Research and Development Program I, or 30 days from Pirelli's receipt of such report, whichever is later, unless Pirelli communicates in writing to ASC within said term that Pirelli deems that the Success Performance Milestones have not been met. If ASC does not agree with Pirelli's assessment, ASC may request that the relevant determination be made by an independent expert agreed upon by the parties or, failing such agreement, by arbitration as provided in the Agreement.

6. Third Party and Governmental Research and Licensing Rights. With respect

to third parties, whether licensors of Contract Technology in the Field or performing activities under a Program (whether 1999 Programs or any further Subsequent Research and Development Program), ASC and Pirelli intend hereto to amend and/or to clarify certain provisions of the Agreement as follows.

A. Section 4.11

Under Section 4.11 of the Agreement, with respect to any third party rights, ASC will inform the Project Review Board of its intent to take action with respect to obtaining license rights from a third party in the Field before taking any such action, will work with the Project Review Board to consider the strategy to be followed with respect to obtaining such license rights, and thereafter will keep the Project Review Board fully informed, including with respect the status of ASC's efforts to obtain such license rights. For three (3) months from the date that ASC informs the Project Review Board of its intent to take action with respect to obtaining such license rights, ASC and Pirelli will work together with respect to obtaining such license rights. If ASC and Pirelli fail to reach agreement with the third party with respect to such license rights within such three (3) month period, both ASC and Pirelli shall thereafter be free separately to negotiate and reach an agreement with such third party. Paragraphs 6.B and 6.C below, and not Section 4.11, shall apply to ASC's efforts to obtain from third parties license rights under background technology that must be used to practice technology produced by the third party in the performance of a Third Party Research and Development Agreement.

B. Third Parties

a. A "Third Party" shall mean any entity other than a Governmental Entity, ASC, Pirelli or an Affiliate of ASC or Pirelli.

b. A "Third Party Research and Development Agreement" shall mean an agreement between ASC and a Third Party pursuant to which the Third Party conducts research and development relevant to the Field under a Subsequent Research and Development Program.

c. Subsequent to December 1, 1999, ASC shall not enter into any Third Party Research

and Development Agreement unless, subject to U.S. security and export control laws and regulations, all know-how produced by ASC and the Third Party in the performance of the Third Party Research and Development Agreement will be Technology and, consequently, Contract Technology as these terms are defined in the Agreement. Accordingly:

- (i) The last line of Section 1.28 of the Agreement is amended to read "or license or sublicense";
- (ii) For sake of clarity, ASC undertakes to cause to be free to disclose, any and all data and information, whether or not patentable and whether or not copyrightable arising from the performance by ASC and the Third Party of the Third Party Research and Development Agreement used by ASC in connection with the manufacture (whether in production or on an experimental basis) of Cable Wire, to provide status reports on Third Party research, to permit Pirelli to review any other such data or information in ASC's possession upon Pirelli's request, and to disclose any additional such data and information to Pirelli upon Pirelli's request and expense.
- (iii) For further sake of clarity, ASC and Pirelli acknowledge that Section 4 of the Agreement shall apply with respect to any Technology: (a) owned by ASC and exclusively licensed to Pirelli in the Field; (b) owned by a Third Party or a Governmental Entity (as defined hereunder) and exclusively licensed to Pirelli in the Field either by ASC or by the Third Party or Governmental Entity; (c) owned by a Third Party or a Governmental Entity and non-exclusively licensed to Pirelli in the Field either by ASC or by the Third Party or Government Entity; (d) owned by a Governmental Entity and not licensed to Pirelli in the Field. In case circumstances under (d) occur with respect to Contract Technology arising from a Governmental Research and Development Agreement, ASC shall not have the right to exploit the concerned Contract Technology in the Field until, and if, Pirelli has obtained, or has obtained the ability to obtain, said exploitation rights by the Governmental Entity concerned.

d. In connection with any Third Party Research and Development entered into by ASC subsequent to December 1, 1999, ASC shall make all best efforts to grant or have granted to Pirelli an exclusive license in the Field with respect to any Contract Technology produced in the performance of the Third Party Research and Development Agreement. In the event that such exclusive license cannot be acquired in spite of best efforts from ASC, ASC undertakes to grant or have granted to Pirelli at least a non-exclusive license in the Field with respect to any Contract Technology produced in the performance of the Third Party Research and Development Agreement. In any case the above license, whether exclusive or non-exclusive, shall include a non-exclusive license under any background technology of the Third Party to the extent that such background technology must be used to practice the Contract Technology produced in the performance of the Third Party Research and Development Agreement in the Field, and in any event background rights not less than those granted in the Field to ASC with respect to such Third Party. The Third Party shall not knowingly direct the work under the Third Party Research and Development Agreement in a way that would make ASC's or Pirelli's use of the technology developed under the Third Party Research and Development Agreement to make Cable Wire dependent on any background technology that the Third Party is not willing to license to ASC and Pirelli, and shall agree that the Third Party will grant to

ASC on terms that will permit ASC to sublicense Pirelli, or to both ASC and Pirelli, a non-exclusive license of sufficient scope to permit ASC and Pirelli to make and sell Cable Wire which uses the technology developed under the Third Party Research and Development Agreement. Not later than the conclusion of work under the Third Party Research and Development Agreement, ASC and Pirelli will work together to determine what, if any, additional background rights should be obtained from the Third Party with respect to any improvements and evolutions of such Contract Technology and will negotiate with the Third Party in an effort to obtain such additional background rights.

e. In the event that ASC decides itself not to seek exclusive rights, or an option to obtain exclusive rights, or not to exercise such an option to seek exclusive rights in the Field with respect to Contract Technology produced in the performance of a Third Party Research and Development Agreement as provided in paragraph d, above, but Pirelli wishes ASC to obtain exclusive rights with respect to such Contract Technology for the benefit of Pirelli in the Field, Pirelli shall pay all of ASC's additional costs, including additional initial payments and additional future royalties, arising out of the acquisition of such an option or rights. In the event that ASC directly grants Pirelli a non-exclusive sublicense to Pirelli with respect to such Contract Technology, or ASC is itself unable to grant a non-exclusive license to Pirelli with respect to such Contract Technology and causes the licensor to grant non-exclusive license to Pirelli with respect to such Contract Technology, Pirelli shall pay the additional costs related to the acquisition of such non-exclusive license or sublicense.

C. Governmental Entity
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a. A "Governmental Entity" means a U.S. National Laboratory, such as but not limited to Oak Ridge National Laboratory, Los Alamos National Laboratory and Brookhaven National Laboratory, and any other entity owned by or operated by or under contract with the U.S. Government.

b. A "Governmental Research and Development Agreement" shall mean an agreement between ASC and a Governmental Entity that is a Cooperative Research and Development Agreement (CRADA), or pursuant to which ASC funds the Governmental Entity, to conduct research and development relevant to the Field under a Subsequent Research and Development Program.

c. Subsequent to December 1, 1999, ASC shall not enter into any Governmental Research and Development Agreement unless, subject to U.S. security and export control laws and regulations, all know-how first produced by ASC or specifically used by ASC in the performance of the Governmental Research and Development Agreement will be Technology and consequently Contract Technology as these terms are defined in the Agreement. If the U.S. Government's standard Rights in Data clause should be amended by the U.S. Government such that ASC's rights to use know-how developed by the Governmental Entity are more restrictive than in the clause presently in effect, ASC shall be deemed to have complied with this provision if it has acquired such rights as are permitted by the then-current Rights in Data clause. The Rights in Data clause presently in effect provides that ASC "shall have the right to use, release, reproduce, distribute, or publish any data first produced by the Participant [ASC] or used by the Participant in the performance of this cooperative agreement, except to the extent such data may be subject to the Federal export control or national security laws or regulations...". ASC agrees to obtain for Pirelli the right for Pirelli to use in the Field all know-how first produced by ASC or specifically used by ASC in the performance of a particular

Governmental Research and Development Agreement, or, if the U.S. Government's Rights in Data should be amended, to use any know-how which ASC is permitted to use under the then-current Rights in Data clause.

d. In connection with any Governmental Research and Development Agreement entered into subsequent to December 1, 1999, ASC will grant or cause to be granted to Pirelli at least a non-exclusive license in the Field with respect to any patentable Contract Technology created in the performance of the Governmental Research and Development Agreement that is pertinent to the Field, such license to include any background technology of the Governmental Entity to the extent that such background technology must be used to practice the Contract Technology produced in the performance of the Governmental Research and Development Agreement in the Field, and in any event background rights not less than those granted in the Field to ASC with respect to such Third Party. Not later than the conclusion of the Governmental Research and Development Agreement, ASC and Pirelli will work together to determine what, if any, additional background rights should be obtained from the Governmental Entity with respect to any improvements and evolutions of such Technology and will negotiate with the Governmental Entity in an effort to obtain such additional background rights. The provisions of paragraph 6 B. e. with respect to ASC obtaining exclusive rights for Pirelli and with respect to Pirelli's obligations to pay costs associated with exclusive and non-exclusive licenses shall apply.

D. Further Provisions

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a. ASC agrees that, in any calendar year, its total funding of Third Party and Governmental Entity Research and Development Programs shall not exceed [**] percent of ASC's total expenditures (including Pirelli funds) for work related to the Subsequent Research and Development Program for that calendar year.

b. ASC will inform the Project Review Board with respect to any Third Party or Governmental Research and Development Agreements before taking any action with respect to entering into a license agreement under such Agreements, will agree with the Project Review Board regarding the strategy to be followed with respect to such license agreement, and if the Project Review Board cannot agree on strategy it will submit the question to Managements of Pirelli and ASC for Final decision. ASC will keep the Project Review Board fully informed, including with respect the status of ASC's efforts to obtain license rights as provided in paragraphs 6 B and 6 C above.

c. If Basic IPR (i.e., a patent or piece of secret know-how which solves a problem which is needed to be solved to practice the Technology produced from the concerned Subsequent Research and Development Program, such technical problem being such that it cannot be solved otherwise as shown in the art) arises from work done by ASC alone or in conjunction with a Third Party under a Third Party Research and Development Agreement under the Subsequent Research and Development Program concerned, then ASC will obtain or make available to Pirelli an exclusive license in the Field with respect to at least one (1) Basic IPR relevant to the Subsequent Research and Development Program concerned.

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

d. ASC and Pirelli recognize that, in many instances, any exclusive rights will be subject to a non-exclusive license to the U.S. Government and/or a non-exclusive license permitting a university or other research organization to use technology for its own internal purposes. For the purposes of this Addendum, rights extensible or assignable to Pirelli that are subject to such a non-exclusive license but are otherwise exclusive shall be considered to be exclusive.

e. ASC will seek to reach agreement with [**] on terms and conditions that will provide an option for Pirelli to obtain a sublicense for Pirelli under terms no less advantageous than those set forth in the [**] on or before[**]. If ASC does not reach such agreement, then Pirelli may direct that all remaining funding provided by Pirelli to ASC for further work under the Subsequent Research and Development Program, plus equal amounts provided by ASC additional to the amounts which ASC had already committed to provide to the Subsequent Research and Development Program in Schedule 2.1-B, be directed to provide an alternative path to avoid the need for such a license. ASC and Pirelli shall jointly use their best efforts to insure that a license or sublicense granted to Pirelli by [**] includes the right for Pirelli to import Cable Wire in the circumstances provided in Section 4.6 of the Agreement. In parallel with this action, Pirelli and ASC shall consider alternative business arrangements which would allow Pirelli to import Cable Wire as provided in Section 4.6 even in the event that an agreement with [**] that would permit Pirelli to do so is not reached. If ASC and Pirelli do not obtain such license or sublicense, or determine an alternative business arrangement, by 31 December 2000 then, if Pirelli has not already done so pursuant to the previous provisions of this paragraph, Pirelli may direct that all remaining funding provided by Pirelli to ASC for further work under the Subsequent Research and Development Program, plus equal amounts provided by ASC additional to the amounts which ASC had already committed to provide to the Subsequent Research and Development Program in Schedule 2.1-B, be directed to provide an alternative path to avoid the need for a license that would allow Pirelli to import Cable Wire as provided in Section 4.6. Pirelli shall be responsible for all option fees, up-front payments, and minimum and running royalties relating to any such license or sublicense to Pirelli.

f. Recognizing that ASC's potential use of technology developed by a Third Party or a Governmental Entity may extend to use outside the Field, nothing in this agreement shall prohibit ASC from funding a Third Party or a Governmental Entity, or from entering into a license agreement outside the Field with respect to technology developed by a third party, including technology developed under a Third Party or Governmental Research and Development Program.

7. Applicability of Provisions of the Agreement. To the extent not

inconsistent with this Addendum, the provisions of the Agreement shall remain unchanged and shall apply to this Addendum and to the 1999 Programs. However, for the purposes of the 1999 Programs:

- (i) The Business Development Plan referred to in the Agreement shall be the Business Development Plan enclosed as Exhibit 2.3-A to this Addendum, and references in the Agreement to the Business Development Plan shall be considered reference to Exhibit 2.3-A as well.

- (ii) Section 2.4 shall apply to the period from 1 October 1999 through September 30, 2004 (or during a shorter period if Pirelli terminates both the extended Research and Development Program I and Subsequent Research and Development Program I before September 30, 2004);
- (iii) In Section 8.1, the period referred to in line 5 thereof shall extend to October 1, 2003.
- (iv) In Section 8.5.1, the words "upon termination (but not expiration) of Research and Development Program I as provided in Section 8.5.2 or 8.5.3, or" in lines 2 through 4 thereof shall have no effect;
- (v) In Section 8.5.3, the words "(including the provisions of Section 8.3(a)), or Research and Development Program I (including any redirection thereof as provided in Section 2.17) expires prior to the supply by ASC to Pirelli of Cable Wire meeting the Specifications and ASC elects not to continue Research and Development Program I)" in lines 2 through 4 thereof shall be considered to read "the Extended Research and Development Program I and Subsequent Research and Development Program I (or any redirection thereof as provided in Section 2.17) expire prior to the supply by ASC to Pirelli of Cable Wire meeting the goals of the 1999 Programs and ASC elects not to continue either of the Programs."

In the event that ASC is unable to obtain acceptable license rights for Pirelli from [**] with respect to [**] technology, such event shall not provide the basis of "a determination by Pirelli that the results of the clearance in section 2.16 for such Program does not justify the further financing."

For the purposes of the extended Research and Development Program I, in Section 8.3, the words "Program, the Business Plan and this Agreement upon" in lines 2 and 3 thereof shall be considered to read "Program I upon".

For the purposes of Subsequent Research and Development Program I, the following point 6 shall be added to Schedule 2.9: As of the effective date of this Addendum, ASC has provided, and the Project Review Board has approved, a detailed statement of work for Subsequent Research and Development Program I. The Project Review Board has the responsibility of periodically reviewing the statement of work and the actual work performed, and approving the on-going work plan.

8. Machinery. In case ASC intends to sell any significant equipment or

machinery employed by either of the 1999 Programs, or any equipment and machinery employed by any of the Programs having an expected sales price not less than US\$[**], ASC shall provide Pirelli a written statement detailing which machinery and equipment ASC intends to offer for sale, and Pirelli, within 30 days of the receipt of such statement, may offer to purchase such machinery on such terms and conditions as Pirelli may choose. ASC, at its sole option, may accept or reject such offer, but ASC will not sell any of such machinery and equipment to any third party for 30 days after it has provided the above written statement to Pirelli.

9. Capitalized terms. Capitalised terms, unless otherwise agreed hereabove,

will have the same meaning as in the Agreement.

IN WITNESS WHEREOF, the parties have caused this Addendum to be executed
and delivered by their duly authorized officers as of the date first written
above.

PIRELLI CAVI E SISTEMI S.p.A.

AMERICAN SUPERCONDUCTOR
CORPORATION

By: [illegible]

By: G. Yurek

Its: _____

Its: President

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

Exhibit 2.1-A
EXTENDED RESEARCH AND DEVELOPMENT PROGRAM I

STATEMENT OF WORK FOR PERIOD OCTOBER 1999 - SEPTEMBER 2003

Date: 31 October 1999

Issue: Final

Foreword
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The existing Research and Development Program on BSCCO concludes in September 1999, and has brought the technology to the point where it has been decided to "consolidate" the technology and to seek improvements which will enable its implementation in "demonstrator" and "pilot" projects until such time as more cost-effective technologies such as [**] Conductors are a practical reality.

Thus, considering the progress achieved in the initial BSCCO program (Research & Development Program I), new objectives and targets have been set for an ongoing 4-year program which focuses on incremental performance improvement, reliability, and the routine availability of BSCCO tapes in lengths commensurate with cable system installation limits.

Accordingly the funding level for the ongoing BSCCO program is reduced to \$[**]per annum for the 4-year period commencing October 1999, against which the following Objectives and Milestones have been set:

Objectives
- - - - -

Objectives have been defined to reflect the strong desire of Pirelli and ASC to: (a) maintain critical current performance leadership in the world, (b) improve the tape design and manufacturing technology to achieve a high level of BSCCO tape reliability[**], (c) increase the effective current density of the Cable Wire by [**] over the four year Agreement period, and (d) increase the piece length that can be ordered by Pirelli for prototype manufacture by [**] over the four year period.

Critical Current (minimum end-to-end I_c): The critical current performance will be increased by invoking "evolutionary" manufacture improvements. These improvements will be centered on observations obtained during production manufacture campaigns. Key focus areas will include [**].

Width (maximum mm): The current lamination process will be optimized to provide the minimum width [**]. The focus of effort for the first year will be determining the minimum possible lamination width [**] and [**] the [**] in the narrower final tapes, and demonstration of the optimized minimum width tape. The second year of the program will be to qualify this minimum width lamination process for all future Pirelli Cable Wire (BSCCO) manufacture.

Piece Length (meters): Whilst "demonstrator" field trials may typically require BSCCO tape lengths of [**], in line with ASC's previous supply capability, "pilot" and "commercial" installations will require cable (and hence tape) lengths commensurate with conventional cables. ASC will work to establish a capability to supply Pirelli routinely with high-performance tapes in lengths of less than or equal to [**]. It is anticipated that Pirelli will continue to purchase wire in "engineered" piece lengths (exact lengths), specific to each cable to be manufactured. To increase the minimum unit piece length offered to Pirelli, ASC will need to (a) eliminate all significant sources of defects and wire breaks, and (b) increase the physical size of the multifilament billet package. Defect and wire

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

breakage elimination will continue throughout the Agreement period. The larger billets will be available in the calendar years 2002 and 2003 (billet yield will exceed [**]vs. the current [**] capability).

Tape Current Density (minimum Amps per mm width of tape): The intent for "Critical Current" and "Width" targets listed above is to significantly increase the effective current density of the tape (and hence the cable conductor); this is [**] are required [**]. It is recognized that the optimization of Cable Wire may create conflicting requirements, therefore, as further guidance for Cable Wire development, Pirelli has defined a new parameter to resolve this potential conflict. Pirelli has requested that ASC maximize the Tape Critical Current (at current tape thickness) per mm of tape (calculated by Amps per finished tape divided by width of finished tape). The [**]. The [**].

Confirmation of Tape Performance Levels: In order for the above performance improvements to be validated against the targeted milestones, and in order to demonstrate the "manufacturing process capability" (as opposed to "champion results" on single tape samples), at periodic intervals (nominally at the end of each program year), Pirelli will authorize ASC to embark on a tape production campaign to produce [**] of cable wire against which the actual performance with respect to the relevant milestones will be judged. The targeted yield to deem that the milestone has been met is greater than or equal to [**]%; Pirelli will purchase from ASC the tape which has met the milestone target. The commencement date of each production campaign can be amended by the Project Review Board in the light of relevant program parameters (such as the BSCCO technological status and likelihood of meeting the targeted tape performances).

Milestones
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The performance milestones are defined and listed by year in Table 1 below. This table augments the current Pirelli/ASC Cable Wire specifications.

Table 1 - BSCCO Development Targets

Agreement Year	September 1999	September 2000	September 2001	September 2002	September 2003
Ic (Amps minimum)	[**]	[**]	[**]	[**]	[**]
Width (mm Maximum)	[**]	[**]	[**]	[**]	[**]
Piece Length (meters)	[**]	[**]	[**]	[**]	[**]
Cable Current Density (Amp/mm width)	[**]	[**]	[**]	[**]	[**]

Program Costs
- - - - -

Pirelli will pay ASC \$[**] for BSCCO wire development effort conducted between October 1, 1999 and September 30, 2003. ASC commits to at least match the total \$[**] Pirelli funding (within the four year period) to complete the proposed milestone tasks.

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Asterisks
denote omissions.

Exhibit 2.1-B
SUBSEQUENT RESEARCH AND DEVELOPMENT PROGRAM I

STATEMENT OF WORK FOR PERIOD OCTOBER 1999 - SEPTEMBER 2004

Date: 31 October 1999

Issue: Final

Foreword

Pirelli has elected to participate in the funding of a Subsequent Research and Development Program concerning [**]. The demonstrated performance and potential low cost of these developmental conductors have justified the establishment of this program. This program has been designed to produce a [**] by [**], consistent with the requirements for commercial power transmission cables.

The critical program Milestones and Statement of Work are defined in the following sections. However, it is understood that the [**] cable wire concept is still being developed and understanding of the fundamental properties of the [**] conductor are still emerging. It is further understood that the specific target items may be modified over time based on new information relative to the cable wire or commercial cable. The Project Review Board (PRB) will have the responsibility for; (a) assessing and approving the Subsequent Research and Development Program I direction and (b) modifying (if necessary) the target specifications for the program.

The program provides for three types of payment for ASC; (a) \$[**]. for work performed prior to October 1, 1999, (b) \$[**]. for work performed during the program period (October 1999 to September 2004), and (c) a "Success Payment" to be paid if the "Proving Level" performance is achieved by the end of the program.

Subject of the Research & Development Program

The program will focus on the development of process technologies to produce in long-lengths high-performance HTS tapes meeting Pirelli's product, performance and cost targets using an [**] suitable HTS superconducting material. Currently the selected HTS material is [**] but the use of alternative materials is not precluded should such a change be technically advantageous to the achievement of the program objectives.

Whilst the project Statement of Work refers throughout to the [**] technology [**] technology), this is understood to include alternative routes for the preparation of a [**], and the use of the term [**] is understood to include the possibility of using HTS materials, including other [**].

Objectives

The objectives of this effort are to develop a commercially viable cable wire and establish pilot manufacture capability [**] for this wire. ASC will investigate and develop low cost manufacturing practices for building the [**] cable wire. The [**] conductor is composed of [**], including; [**]. Each conductor [**] will be optimized and scaled-up to yield long length manufacturing capability.

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. Asterisks denote omissions.

Milestones

The performance milestones are defined and listed in Table 1. This table augments the current Pirelli Cable Wire Product "Pirelli Target" specifications listed in Table 2. These milestones reflect the strong desire of Pirelli and ASC to rapidly develop the next-generation HTS product that can enable broad commercial penetration of HTS Cables into the global cable market. Wire production at the end of the 5 year program will be consistent with ASC direct cost (labor, materials, vendors) of \$[**] when projected to [**] production quantities.

'99-'00	'00-'01	'01-'02	'02-'03	'03-'04
	[**]			
		[**]		
		[**]		
			[**]	
			[**]	[**]
			[**]	[**]
				[**]
				[**]
				[**]

Program Target Specifications

The Program Target Specifications (Table 2) define the objective attributes for the program, two sets of data are presented for the key parameters:-

1. "Proving Levels" which together comprise the final [**] Project Targets by which the "Success Payment" will be judged,
2. "Pirelli Targets" which describe the targets which Pirelli has set for the eventual commercial volume production of [**] tapes for commercial applications.

Table 2: Properties to be measured over every length

Parameter	Proving Level	Pirelli Target	Comments
Dimensions			
Total width	[**]	[**]	[**]
Width tolerance	[**]	[**]	
Total thickness	[**]	[**]	[**]
Thickness tolerance	[**]	[**]	

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Single Length	[**]	[**]	
Electrical Properties			
Critical current (Ic)	[**]	[**]	[**]
Critical current uniformity	[**]	[**]	[**]
Ageing Tests on every length			
[**]	[**]	[**]	

Table 2: "Type Approval Tests" (TAT) on Representative Samples

Parameter	Proving Level	Pirelli Target	Comments
[**]	[**]	[**]	
A.C. Losses	[**]	[**]	[**]
[**]	[**]		[**]
[**]	[**]	[**]	
Temperature dependence of Ic, Ic(T)	[**]	[**]	[**]
Straightness	[**]	[**]	
Filaments bundle thickness	[**]	[**]	[**]
Thermo-Mechanical properties			
Coefficient of Thermal Expansion	[**]	[**]	
Stress tolerance at room temperature	[**]	[**]	
Critical strain at room temperature	[**]	[**]	
[**]	[**]	[**]	
Thermal aging	[**]	[**]	
[**]	[**]	[**]	[**]
[**]	[**]	[**]	
Projected Direct Cost (labor, material, vendor) for Volume Manufacture	[**]	[**]	

It should be noted that certain parameters and performance levels for [**] cannot be precisely defined at present because the worldwide state of [**] technology has yet to reach the level where fundamental experimentation and analysis can determine the "intrinsic" performance limits. (For example, we consider the [**] one important point that has to be addressed in detail to

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establish the best design of the [**]) In this regard, performance targets, milestone evaluation levels, and precise test criteria will be agreed by mutual consent as the program proceeds.

SUCCESS PAYMENT FOR SUBSEQUENT RESEARCH AND DEVELOPMENT PROGRAM I

Basis of Evaluation: In order to evaluate the results of the Subsequent R&D Program I against the final [**] Project Targets milestone, to demonstrate the [**] process technology and the related Cable Wire product performance, and in order to demonstrate the "manufacturing process capability" (as opposed to "champion results" on single tape samples), at the end of the program period the Project Review Board will authorize ASC to embark on a tape production campaign to produce [**] of cable wire against which the actual performance with respect to the final [**] Project Targets will be judged. Moreover, the projected costs of the resultant [**] tape will be evaluated, calculated using the established models, on the basis of an annual production volume of [**].

The targeted process yield against the "Proving Criteria" to demonstrate that the performance milestone has been met is greater than or equal to [**]%; Pirelli will purchase from ASC the tape which has met the milestone target. If the actual tape performance levels, process yield, and projected costs satisfy the evaluation criteria defined Table 2 (above), Pirelli will pay to ASC the "Success Payment" of \$[**].

Evaluation of the cable wire performance will be determined through joint work by Pirelli and ASC. The decision on achievement of the target will be determined by the Project Review Board. In the event of disagreement, the matter can be put to arbitration under the established contractual procedure.

Program Costs

Table 3 provides a listing of the estimated total Program R&D expenses and the Pirelli payment schedule for the period between October 1, 1999 and September 30, 2003.

Table 3. ASC [**] Development Program Year (Oct.-Sept.) Expenditures (\$k)

Category	'99-'00	'00-'01	'01-'02	'02-'03	'03-'04
Program Labor and Expenses	[**]	[**]	[**]	[**]	[**]
Pirelli payment for work performed prior to October 1, 1999	[**]	[**]	[**]	[**]	[**]
Pirelli payment for work performed during the period.	[**]	[**]	[**]	[**]	[**]
Pirelli "Success Payment" to be paid if the "Proving Level" performance is achieved by the end of the program.					[**]

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denote omissions.

Detailed [**] Work Scope

- - - - -

I. Scope of Work/Task Description Year I, October 1999 to September 2000
(completion of Phase I).

Program First Year - September 2000 Objective:

- . Demonstrate [**] using [**] and [**] and all ASC [**].

During this period, work will focus on the basic R+D to establish the low-cost fabrication and [**] approaches for [**] in a [**] demonstration, using low-cost fabrication techniques, fully performed at ASC (to demonstrate completed tech-transfer from collaborative organizations). Although this basic materials R+D will be the main focus, applications, manufacturing and [**] issues will be analyzed in parallel to insure that the R+D paths are consistent with a practical and manufacturable long-length conductor.

II. Scope of Work/Task Description Year II, October 2000 to September 2001
(Phase II)

Program Year-end Objectives:

Demonstrate [**] at [**] by [**]

Deliver [**] by [**].

During this period, the principal focus is to address process scale-up issues. These include configuring the [**] to a [**], establishing statistics for defects and performance, and optimizing processing techniques for low cost. Basic R+D work will also continue to optimize performance parameters and identify improved process paths. Some work will start on equipment design for manufacturing.

III. Scope of Work/Task Description Years III, IV, and V, October 2001 to
September 2004 (Phase III)

Principal program-end objectives:

- . Install and [**] for [**] by [**]

- . Demonstrate [**] by [**]

- . Qualify [**] for [**] by [**]

- . Demonstrate [**] by [**]

During this final portion of the program, the pilot manufacturing facility design will be finalized, equipment ordered and installed, the facility activated and process capability established. Statistical process control will be established. Actual manufacturing cost will be determined. Some R+D will continue. The first applications prototypes will be built using initial output from the manufacturing facility.

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Exhibit 2.3-A

Business Development Plan

Date: 31 October 1999

Issue: Final

Pirelli and ASC will form a Development Review Board, which shall meet on a quarterly basis. The results of the quarterly meetings will be reported to Pirelli and ASC senior management. The objective for this effort, which anticipates the concurrent achievement of the technical targets established for the 1999 R&D Programs, is to prepare Pirelli and ASC for the exploitation of the HTS Cable market and in particular to exchange information concerning:

1. the market for Cable Wire and Power and Control Cables made therefrom with particular reference to market needs, requirements, and product attributes;
2. market development;
3. definition of technical specifications of Cable Wire and cables to meet such market needs/requirements;
4. status of competing or potentially competing products and solutions;
5. review of intellectual property rights of third parties which may affect the activities of Pirelli and ASC;
6. programming of the time necessary to reach the market and the actions necessary to prepare for manufacturing;
7. forecast requirements to permit Cable and Cable Wire manufacture capacity planning
8. defining more HTS Business opportunities and starting additional cable demonstration trials to; (a) prove technical feasibility, reliability, and end-user benefits and (b) build manufacturing expertise and establish commensurate volume capacity.

It is anticipated that success in the above combination of technical and business efforts will lead to the initiation of [**] in the period 2000 to 2003.